ENVIRONMENTAL ASSESSMENT/
ENVIRONMENTAL ASSESSMENT WORKSHEET

TRUNK HIGHWAY 55 FROM PLYMOUTH TO ROCKFORD
State Project: SP 2722-68 and SP 27-596-03
Minnesota Project: NCPD005(210)

Trunk Highway 55 from the Crow River to Interstate (I)-494
Cities: Rockford, Greenfield, Corcoran, Medina, Plymouth
in County: Hennepin of Minnesota
Section(s), Township(s), Range(s):
T119N, R24W, Sections 28,29,33,34,35,36; T119N, R23W, Sections 31,32 ; T118N, R23W, Sections 2,3,4,5,6,11,12; T118N, R22W, Sections 7,17,18,20,21,22,27

Submitted pursuant to 42 U.S.C. 4332 and M. S. 116D
By the
U.S. Department of Transportation
Federal Highway Administration and
Minnesota Department of Transportation
For

Right of way protection for a four-lane expressway between the Crow River and County Road (CR 116) and a four-lane freeway between CR 116 and I-494, approximately 16 miles total. Right of way acquisition will occur as soon as funding is available; construction is not programmed.

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I. REPORT PURPOSE

This Environmental Assessment/Environmental Assessment Worksheet (EA/EAW) provides background information including:

- need for the proposed project
- alternatives considered
- environmental impacts and mitigation
- agency coordination and public involvement

The purpose of this report is to identify and address any social, economic, or environmental impacts that the proposed design concept improvements to TH 55 may cause and to identify the needed right of way for the future expansion of TH 55 so that community planning can be well informed. Mn/DOT's involvement in right of way protection activities does not represent a commitment by Mn/DOT to fund the proposed improvements discussed in this EA.

This EA was prepared as a part of the National Environmental Policy Act (NEPA) process and state environmental review process to fulfill requirements of both 42 USC 4332 and M.S. 116D. At the federal level, the EA is used to provide sufficient environmental documentation to determine the need for an Environmental Impact Statement (EIS) or that a Finding of No Significant Impact (FONSI) is appropriate.

At the state level, this document also serves as an EAW. Minnesota Rules 4410.1300 allows the EA to take the place of the EAW form, provided that the EA addresses each of the environmental effects identified in the EAW form. This EA includes each of the environmental effects identified in the EAW form. The EA/EAW is used to provide sufficient environmental documentation to determine the need for a state EIS or that a Negative Declaration is appropriate.

Hennepin County is the proposer and the Minnesota Department of Transportation (Mn/DOT) is the Responsible Governmental Unit (RGU) for this project. Preparation of an EAW is considered mandatory under the following subsection(s):

Minnesota Rules 4410.4300 subp.22 (B) – *For the construction of additional travel lanes on an existing roadway for a length of one or more miles.*

Minnesota Rules 4410.4300 subp.22 (C) – *For the addition of one or more new interchanges to a completed limited access highway*.

This document is made available for public review and comment in accordance with the requirements of 23 CFR 771.119 (d) and Minnesota Rules 4410.1500 through 4410.1600.

II. PURPOSE AND NEED FOR PROJECT

Trunk Highway (TH) 55 runs in a northwest diagonal parallel to Interstate (I-) 94 and serves the growing communities in western Hennepin County, as well as those in Wright County, west of the project area (Project Location Map, Figure 1). TH 55 is a High Priority Regional

Corridor[1] serving Western Minnesota. It is one of three major roadways (TH 55, I-94, and TH 12) that serve the western suburbs of the Twin Cities. As documented in the *TH 55 Future Traffic Demand Study*, (June 2005) (2005 Traffic Study) and additional traffic studies conducted for this EA/EAW, improvements to TH 55 will be necessary to support the growth and increasing traffic volumes of the western metropolitan area.

The proposed project area is TH 55 between the Crow River in Rockford, Minnesota, and I-494 (specifically, County State Aid Highway [CSAH] 61) in Plymouth, Minnesota. TH 55 is currently a two-lane section between the Crow River and 1,500 feet west of Arrowhead Drive where it becomes a four-lane expressway to I-494. Major cross streets include CSAH 19, CR 116, CSAH 101, and Vicksburg Lane. TH 55 also has numerous direct access points (driveways and local roads). See Figures 2A-2C for a detailed project location map.

A. Project Need

Capacity and Operations

As discussed in detail in the 2005 Traffic Study, population has been increasing outward from the urban areas of the Twin Cities, causing large growth in suburban and rural areas along TH 55. Figure 3 shows the year 2000 population and the expected additional population growth by the year 2030. [2]

As population grows, the transportation needs of the area will also increase. Table 1 shows 2000 and forecast 2030 No-Build traffic volumes as well as 2030 "unconstrained" travel demand (i.e., the 2030 volume that would use TH 55 if capacity were available) for various locations along the corridor.

TABLE 1
AVERAGE DAILY TRAFFIC (ADT) VOLUMES, 2000, 2030 NO-BUILD, 2030 UNCONSTRAINED
Existing and Forecast Maximum Volume on Segment

Segment	Year 2000	Year 2030 No-Build	Unconstrained 2030 Travel Demand(1)
Rockford to CSAH 19	14,800	19,700	30,000
CSAH 19 to CR 116	25,000	37,000	51,000
CR 116 to Vicksburg	34,000	48,000	62,000
Vicksburg to I-494	58,000	67,000	76,000

(1) i.e. the 2030 volume that would use TH 55 if capacity was available.

Under No-Build conditions, the increased traffic volumes will result in congestion throughout the corridor and diversion of regional trips to the local system.

A traffic operations analysis was performed for a.m. and p.m. peak hours under existing and No-Build conditions, as detailed in the October 16, 2007 Traffic Operations Analysis (Appendix C). As shown in Table 2, under existing (2004) morning peak hour

[1] High Priority Regional Corridors play significant roles in providing regional transportation services to communities.
[2] Source: Metropolitan Council

conditions, many of the intersections in the project area experience congestion. This is indicated by poor Levels of Service (LOS), a measure of intersection capacity and congestion. LOS D or better is generally considered acceptable by drivers. Under existing conditions, morning delays are especially lengthy at CR 116 intersection (LOS E) and the I-494 east ramp intersection (LOS F).

TABLE 2
INTERSECTION CAPACITY
A.M. and P.M. Peak Hour Intersection Level of Service[1]

Location	Existing (2004)				No-Build (2030)			
	A.M.		*P.M.*		*A.M.*		*P.M.*	
	LOS	*Delay (sec)*	*LOS*	*Delay (sec)*	*LOS*	*Delay (sec)*	*LOS*	*Delay (sec)*
CR 50	C	25	**F**	130	**F**	>180	**F**	>180
CSAH 92	C	30	**F**	>180	**F**	>180	**F**	>180
Vernon Street[2]	A/C	10	**F/F**	115	A/C	10	**F/F**	>180
Greenfield Road[2]	A/C	5	A/C	5	A/C	5	**E/F**	40
Lake Sarah Heights Drive[2]	A/B	10	A/C	10	A/C	10	B/D	15
Town Hall Drive[2]	A/C	5	A/D	10	A/C	5	A/**F**	10
Town Line Road[2]	A/B	10	A/C	10	**E/F**	40	B/D	15
CSAH 19	**E**	65	C	35	**F**	>180	**F**	>180
Willow Drive	C	25	C	25	**F**	115	**F**	>180
Arrowhead Drive	B	10	B	20	C	35	**E**	80
CR 116	**F**	100	C	25	**F**	>180	**F**	150
CSAH 101 (N)	C	30	C	25	**F**	>180	**F**	105
CSAH 101 (S)	D	45	D	45	**E**	75	**E**	75
CSAH 24/CSAH 9	D	55	D	50	**E**	60	**F**	140
Vicksburg Lane	D	45	**F**	95	**E**	80	**F**	>180
Plymouth Blvd.	D	45	D	45	**E**	65	**E**	160
Fernbrook Lane	D	45	**F**	175	D	55	**F**	180
I-494 West Ramp	C	35	B	20	**F**	160	D	40
I-494 East Ramp	**F**	115	**F**	>180	**F**	>180	**F**	>180
CSAH 61	D	50	**F**	105	D	45	**F**	>180

[1] LOS is a measure of congestion. LOS D was assumed to be the limit of acceptable operations.

[2] Indicates an unsignalized intersection, which has different LOS criteria than a signalized intersection. The overall LOS is followed by the worst approach LOS.

Under existing (2004) conditions, eight of the 15 signalized intersections along the TH 55 corridor currently operate at LOS E or F during either the morning or afternoon peak hour. During the existing morning peak hour, the signalized TH 55 intersections with CSAH 19, CR 116, and the I-494 east ramp each operate at LOS E or F. During the existing afternoon peak hour, the signalized TH 55 intersections with CR 50, CSAH 92, Vicksburg Lane, Fernbrook Lane, I-494 east ramp, and CSAH 61 operate at LOS E or F.

Under 2030 No-Build morning peak hour conditions, only three of the 15 signalized intersections will operate at acceptable levels of service (LOS D or better) – these TH 55 intersections include Arrowhead Drive, Fernbrook Lane, and CSAH 61. The remaining 12 signalized intersections along the TH 55 corridor will all operate at LOS E or F during the 2030 No-Build morning conditions. Under the 2030 No-Build afternoon conditions, all of the signalized intersections except the I-494 west ramps will operate at LOS E or F with very long delays.

In addition to increased delays and poor levels of service, travelers will also experience lower average speeds and more frequent stops under No-Build 2030 conditions as compared to existing conditions. As shown in Tables 3A and 3B, average speeds under the 2030 No-Build peak hour conditions are two to 13 miles per hour (mph) slower than the existing conditions. These decreases in speeds result in increased travel times along the corridor equal to just over eight minutes in the morning peak hour and 35 minutes in the afternoon peak hour, under the 2030 No-Build versus the existing conditions.

TABLE 3A
TRAVEL ON HIGHWAY 55 MAINLINE[1] (Averages)

Scenario	A.M.[2]			P.M.[3]		
	Speed (mph)	Travel time (min)	Delay/ Vehicle (min)[4]	Speed (mph)	Travel time (min)	Delay/ Vehicle (min)[3]
Existing (2004)	27	18.3	9.3	23	22.7	13.7
No-Build (2030)	20	26.6	16.7	10	57.7	48.1

[1]Willow Drive to CSAH 61.
[2]Eastbound results are used for the morning peak hour since the majority of traffic flows in that direction.
[3]Westbound results are used for the afternoon peak hour since the majority of traffic flows in that direction.
[4]This represents the delay compared to free flow conditions (assuming travel at the posted speed of the roadway with no congestion and no traffic control measures, such as stoplights).

TABLE 3B
TRAVEL WITHIN NETWORK
Highway 55[1] Plus Cross-Street Approaches (Averages)

Scenario	A.M.[2]			P.M.[3]		
	Speed (mph)	Stops/ Vehicle	Delay/ Vehicle (min)[4]	Speed (mph)	Stops/ Vehicle	Delay/ Vehicle (min)[3]
Existing (2004)	23	2.2	3.4	20	2.2	4.6
No-Build (2030)	21	3.1	7.8	13	5.0	10.1

[1]Willow Drive to CSAH 61.
[2]Eastbound results are used for the morning peak hour since the majority of traffic flows in that direction.
[3]Westbound results are used for the afternoon peak hour since the majority of traffic flows in that direction.
[4]This represents the delay compared to free flow conditions (assuming travel at the posted speed of the roadway with no congestion and no traffic control measures, such as stoplights).

Improvements and access management measures that increase capacity on TH 55 would allow for greater volumes of traffic to flow through the area and decrease these operational delays.

Safety

A three-year (2001 through 2003) safety analysis detailed in the 2005 Traffic Study found that the crash rate on TH 55 from Buffalo to Plymouth is 2.6 per million vehicle miles (MVM), and the severity rate is 3.7. These rates are near the average for this type of road; however, there are a high number of rear-end crashes in the eastern segment of the corridor; a high rate of head-on crashes occurring between CSAH 19 and Arrowhead Drive in Medina; and, despite frequent signalized intersections, a high rate of right-angle crashes near Vicksburg Lane in Plymouth.

The highest average severity rate (4.6) in the Rockford to Plymouth corridor is found in Rockford and Greenfield between the Hennepin County boundary and CSAH 92, and is due to a high number of right-angle crashes.

Though the crash rates are currently near average, it is expected that increased traffic volumes over the next several years will also increase the number of crashes. In particular, right-angle crashes are likely to increase as it becomes more difficult for drivers on side streets and access drives to find gaps in traffic on TH 55.

Functionality

Currently, TH 55 functions as a Minor Arterial; however, as more urbanization occurs, it will need to carry much more traffic. The parallel routes (I-94 and TH 12) are spaced three miles north or south in urban areas and up to 12 miles north or south in suburban/rural areas and are, therefore, insufficient to serve the future traffic needs of the urbanizing area. To address this insufficiency, Mn/DOT Metro District has requested reclassification of TH 55 in the Twin Cities area from a Minor Arterial to a Principal Arterial. This reclassification is pending a review of larger regional systems as provided in the current Metropolitan Council Transportation Policy Plan.

The Federal Highway Administration (FHWA) guidelines for a Principal Arterial state that access to abutting land should be secondary to mobility (i.e., ability to get from one location to another). Currently, there are few restrictions to direct access on TH 55. From 1984 to 2006, the number of traffic signals on TH 55 was increased from two to 16 in order to manage traffic and access needs; however, the additional signals also further impede the dominant flow of traffic. Access management, as well as capacity improvements, are needed in order for TH 55 to fulfill the guidelines of its classification as a Principal Arterial and prioritize “major traffic movements.”

Between Fernbrook Lane and CSAH 61, TH 55 functions as a collector for I-494 in Plymouth. As illustrated in Table 2, under existing and 2030 No-Build conditions, all intersections between Fernbook Lane and CSAH 61 operate at LOS F. The exception is the west ramp to I-494, which is currently operating at LOS B and is projected to be LOS C for 2030 No-Build conditions. Under 2030 No-Build conditions, modeled delays at these intersections reach up to eight minutes. (Note: These modeled delays would not

occur in actual conditions since drivers will generally divert to alternative routes when delays at signalized intersections exceed three minutes; however, the modeled results are an indication of how poorly this segment would function). Functionality in other parts of the corridor depends on the interchange capacity; therefore, an increase in capacity at the I-494 interchange is needed to maintain the functionality of TH 55 as a Principal Arterial.

Communities and Local Roadways

In addition to causing congestion on TH 55, increases in traffic volumes throughout the project area will also lead to diversion of traffic to local streets, therefore increasing congestion and decreasing safety in other locations. As noted, intersection delay times are not expected to exceed three minutes in reality, because travelers will likely divert to other routes when delay times become lengthy. As discussed in Section II.C, specific safety concerns for the communities include access to TH 55 and ability to cross TH 55 at unsignalized intersections. These two problems will likely worsen over time with increases in traffic congestion and decreases in gaps.

Another concern for the local roadways is the impact of heavy use by TH 55 overflow traffic on the rural character of the western communities. These cities have designated TH 55 as a commercial/industrial corridor in their comprehensive plans, with the aim to concentrate urban uses there while protecting the rural character outside of the corridor. If traffic congestion on TH 55 influences commuters to use alternate routes on local roadways, some of this character would be lost.

Additionally, community bicycle and pedestrian connections across TH 55 would experience long delays and be impacted by heavy traffic congestion.

B. Project Purpose

The purpose of the proposed project is to address capacity and operational issues, improve safety, maintain the functionality of TH 55 as a planned Principal Arterial High Priority RC within the project limits, and be compatible with local road networks and local land use character. These needs are detailed above.

The current project identifies a design concept that will be the basis for right of way protection and will inform local transportation network plans. The primary local tool for right of way protection is official mapping, which cities and counties have the authority to conduct under Minnesota Statute Section 462.359. In general terms, official mapping is a formal process used to preserve a future roadway corridor, thereby enabling property owners to adjust their building plans equitably and conveniently before investments are made, and allowing local governments to encourage compatible land uses and development adjacent to the proposed corridor. For the TH 55 project, official mapping will allow right of way protection to occur efficiently when funding is available.

III. ALTERNATIVES

A. No-Build

The No-Build Alternative would maintain TH 55 in its existing design as a two-lane section, with numerous direct access points, from the Crow River to approximately 1,500 feet west of Arrowhead Drive and as a four-lane expressway east of this point to the I-494 interchange area.

B. Alternatives Development

Preliminary Concept Work

In early 2001, Mn/DOT, Wright County, and Hennepin County began work on ways to protect TH 55 from encroachment of development that was occurring along the corridor, particularly in Wright County. The TH 55 Coalition was formed in mid-2001 with membership from both counties and all of the townships and cities along the corridor between Annandale and Plymouth.

With the idea that an official map was needed to establish future right of way needs, Mn/DOT identified an alternative that would use the existing alignment as part of a future four-lane divided highway. A typical section and right of way limits were established. The decision to have the two new lanes generally north of the existing road was based on the number of wetlands and water bodies on the south side and the railroad tracks that run parallel to TH 55 on the south side.

Mn/DOT held open houses in 2002 to allow the public to comment on the concepts and to establish the boundaries for the official maps.

After comments were received, Mn/DOT and Hennepin County met individually with the cities of Rockford, Greenfield, Corcoran, Medina, and Plymouth to seek endorsement for an official map. After meeting with the various cities, it quickly became apparent that the official maps were not developed enough for cities to adopt resolutions of support for the proposed concept.

To further inform project development, Mn/DOT performed cultural resource studies, contaminated properties research, and a traffic demand study. In early 2006, Mn/DOT determined that the best way to protect the corridor was to continue through the environmental process and establish a Preferred Alternative alignment for TH 55.

2005 Traffic Study Scenarios

The 2005 Traffic Study was prepared to provide an understanding of traffic impacts associated with future improvements and expansion of TH 55. The study corridor extended between Annandale in Wright County and I-494 in Hennepin County. Ten scenarios were modeled for year 2030. The improvements included in each scenario for the three TH 55 segments addressed in the 2005 Traffic Study are shown in Table 4. (Note that the project addressed in this EA includes only the segments between Rockford and I-494.)

TABLE 4
2005 TRAFFIC STUDY SCENARIOS MODELED [1]

Improvement Scenario Description	TH 55 Segment		
	Buffalo to Rockford (West)	**Rockford to CR 116 (Middle)**	**CR 116 to I-494 (East)**
1. No Build (Baseline)	2 Lanes	2 Lanes	4 Lanes
2. 6-lane East Segment	2 Lanes	2 Lanes	6 Lanes
3. 4-lane Middle Segment	2 Lanes	4 Lanes	4 Lanes
4. 4-lane Middle Segment and 6-lane East Segment	2 Lanes	4 Lanes	6 Lanes
5. 4-lane West and Middle Segments	4 Lanes	4 Lanes	4 Lanes
6. 4-lane West and Middle Segments and 6-lane East Segment	4 Lanes	4 Lanes	6 Lanes
7. 4-lane West Segment	4 Lanes	2 Lanes	4 Lanes
8. 4-lane West and Middle Segments and Schmidt Lake Road interchange	4 Lanes	4 Lanes	4 Lanes + Schmidt Lake Road Interchange
9. 4-lane West and Middle Segments, 6-lane East Segment plus Schmidt Lake Road interchange	4 Lanes	4 Lanes	6 Lanes + Schmidt Lake Road Interchange
10. CSAH 30 Extension and Bridge in Middle Segment	2 Lanes	2 Lanes + CSAH 30 Extension and Bridge	4 Lanes

[1] Shaded areas represent segment expansion or improvements relative to Scenario 1 (baseline) alternative.

Statistics and measures of performance were used to evaluate the results of the potential improvement scenarios. The results are detailed in the 2005 Traffic Study which is available from Mn/DOT. The key findings are as follows:

- There is a need for capacity expansion on TH 55 within the project area.
- Adding lanes west of Arrowhead Drive without increasing capacity in Plymouth would raise volumes on local arterials and collectors in Plymouth.

- Of the scenarios investigated, those that had six (6) lanes east of CR 116 and four (4) lanes west of CR 116 best reduced vehicle hours of travel and provided significant operational (speed, travel time, delay) advantages. (Note that no grade-separated scenario was investigated as part of the 2005 Traffic Study.)

- An improved connection between I-494 and TH 55 is critical to the function of the regional transportation system.

EA Build Alternatives

Development of the Build Alternatives was informed by previous Mn/DOT preliminary concept work described above, the 2005 Traffic Study, a framework to guide overall access decisions (see Appendix D), consultation with local communities to coordinate TH 55 planning with local transportation and development plans, and the objective of avoiding/minimizing impacts to existing wetlands and structures.

The development of Build Alternatives was an iterative process further informed by a public information meeting, ongoing consultations with city and agency staff, city elected officials, and individual property owners, and continued refinements to address design and impact issues.

In addition, a footprint was developed in the I-494 interchange area to provide for the expected range of potential I-494 interchange improvements (to be developed and analyzed as a separate project) in order to inform the design of Build Alternatives in the easternmost segment of the project area.

West of CR 116

The Build Alternative for the project area segment west of (and including) CR 116 is a four-lane section with a grade-separated interchange at CR 116 (further detailed in Section III.C.).

East of CR 116

Two Build Alternatives were considered east of CR 116:

1. A six-lane section with at-grade intersections at CSAH 101, Peony Lane N, Rockford Road, Vicksburg Lane, Niagara Lane, and Fernbrook Lane, and redirection of direct private driveway access to TH 55 to frontage/backage roads (wherever possible).

2. A four-lane hybrid with grade-separated interchanges and access closures as described in Section III.C. This concept represents a hybrid of a freeway that maintains good traffic flow by grade-separating TH 55 from local roads at key intersections, and an expressway that respects the community context with creative design that minimizes right of way impacts and has the objective of fitting with existing and planned development.

Table 5 presents an evaluation of the six-lane concept and the four-lane hybrid concept.

TABLE 5
EVALUATION OF EASTERN SEGMENT ALTERNATIVE CONCEPTS

Evaluation Criteria	6-Lane Expressway	4-Lane Hybrid
Purpose and Need		
Operations	• Longer green required for mainline as traffic increases on TH 55. • Intersections operate at LOS F when TH 55 ADT=50,000.	• Grade-separation results in better corridor operations and flow, less delay.
Safety	• More vehicle and pedestrian conflict points.	• Fewer vehicle and pedestrian conflict points.
Functionality	• Delays impair functionality as a Principal Arterial.	• Optimizes functionality as a Principal Arterial.
Communities and Local Roadways	• TH 55 acts as a barrier between the north and south side of Plymouth. • Difficult for pedestrians to cross TH 55 (9-lanes at intersections).	• Improves pedestrian safety and connectivity on cross-streets. • TH 55 "barrier" effect reduced due to grade-separation of cross streets.
Other Considerations		
Right of Way/ General Impacts	• Fits in existing right of way corridor.	• Mainline fits in existing right of way corridor. • Need to acquire right of way at on/off ramp locations.
Cost	• Lower cost than 4-lane hybrid	• Higher cost than 6-lane expressway due to bridge and wall construction and right of way.

C. Preferred Alternative

The No-Build Alternative was not chosen as the preferred alternative as it would not address traffic capacity, operational, and safety concerns along the existing roadways.

The four-lane hybrid was selected because it better meets the project's operational, safety, and community needs at a reasonable amount of additional cost and right of way impact. Based on the performance of alternatives in (1) achieving the purpose and need for the project and (2) minimizing adverse impacts as compared to other alternatives, the following proposed improvements were identified as the Preferred Alternative:

1. Four-lane expressway west of CR 116 including the following improvements:

   - Grade-separated interchange at CR 116.
   - Existing direct private access to TH 55 redirected to frontage/backage roads (whenever possible).
   - Full access intersection improvements at CR 50, 69th Avenue N., CSAH 92, Vernon Street, Greenfield Road, Townline Road, CSAH 19, Pioneer Trail, Willow Drive, Arrowhead Drive, and Tamarack Drive, including designated left-and right-turn lanes to improve safety.
   - Connections and depictions of potential local roadways and access connections (shown in Figures 4A–4I and discussed in Section IV.A.29).
   - Potential stormwater treatment facilities located throughout the corridor to best suit topography and drainage patterns.

2. Four-lane hybrid section roadway east of CR 116 with the following improvements:

   - Tight diamond interchanges at CSAH 101 North, CSAH 101 South/Peony Lane, CSAH 9 (Rockford Road) / CSAH 24, and Vicksburg Lane.
   - Button hook ramps at Fernbrook Lane and west of Niagara Lane.
   - One-way frontage road parallel to eastbound TH 55 between Vicksburg Lane and Niagara Lane and parallel to westbound TH 55 between Fernbrook Lane and Vicksburg Lane.
   - Existing direct private access to TH 55 redirected to frontage/backage roads (whenever possible).
   - Connections and depictions of potential local roadways and access connections (shown in Figures 4A–4I and discussed in Section IV.A.29).
   - Pedestrian/bicycle facilities on grade-separated crossings of TH 55.
   - Potential stormwater treatment facilities located throughout the corridor to best suit topography and drainage patterns.

3. Right of way footprint that will accommodate a range of reasonably foreseeable configurations for the I-494/TH 55 interchange (to be developed under a separate project).

The Preferred Alternative is illustrated in Figures 4A-4I and Figures 5A-5B.

D. Cost, Funding, and Benefit/Cost

1. Project Costs

   The anticipated cost of the project is $212 million for construction and design of the roadway and $54 million for right of way (2007 dollars).[3]

2. Funding

   Expansion of Highway 55 is not currently programmed in the Mn/DOT 20-year plan and there is currently no funding for construction of the Preferred Alternative. The EA/EAW process is intended to support the future use of federal funding for right of way protection and to allow for small improvement projects, consistent with the design concept, to be implemented as funding becomes available.

[3] Construction costs include those improvements shown in the layouts (Figure 4A through 4I) which include 59 miles of pavement and eight bridges. Partial right of way takes were estimated using an amount per acre, based on current Multiple Listing Service (MLS) sales and listings and property classification. Total takes were estimated using the cost of the property and building, plus relocation expenses. It is not possible to accurately predict future right of way costs since variables such as land use will impact future land values.

3. Benefit/Cost Analysis of Build Alternative

The purpose of a Benefit/Cost Analysis is to bring all of the direct effects of a transportation investment into a common measure (dollars), and to allow for the fact that benefits accrue over a long period of time while costs are incurred primarily in the initial years. The primary elements that can be monetized for transportation projects are travel time, changes in vehicle operating costs, accidents, and remaining capital value. The Benefit/Cost Analysis can provide an indication of the economic desirability of an alternative, but results must be weighed by decision-makers along with the assessment of other effects and impacts.

The Benefit/Cost Analysis that was completed for this project evaluated the difference in transportation user costs between the No-Build and Build Alternative and indicated that the Build Alternative would result in a positive benefit/cost ratio. The details of the Benefit/Cost Analysis are available from Mn/DOT.

E. Proposed Project Schedule

The following is a tentative schedule of activities for the project:

Concept Development	August 2006 – Spring 2007
Public Information Meeting	January 30, 2007
Environmental Assessment	Winter 2008
Public Hearing	Winter 2008
EIS Need Decision	Spring 2008
Right of Way Protection Activities	To be determined

IV. SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS (SEE)

This section discusses environmental impacts of alternatives identified in the Alternatives section. It contains two sub-sections;

- State Environmental Assessment Worksheet (EAW)
- Additional Federal Issues

The EAW is a standard format used in Minnesota for environmental review of projects meeting certain thresholds at Minnesota Rule 4410.4300. Federal environmental regulations not addressed in the EAW are addressed in the separate sub-section.

A. Environmental Assessment Worksheet

The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit (RGU) or its agents to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attach additional sheets as necessary. The complete question as well as the answer must be included if the EAW is prepared electronically.

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

1. Project Title: Trunk Highway 55 from Rockford to Plymouth

2. Proposer: Hennepin County Public Works Department

Contact Person:	James Grube, P.E.
Title:	County Engineer
Address:	1600 Prairie Drive
City, State, Zip:	Medina, MN 55340
Phone:	612-596-0307
Fax:	763-478-4000
Email:	James.Grube@co.hennepin.mn.us

3. RGU: Minnesota Department of Transportation (Mn/DOT)

Contact Person:	Daniel Rowe
Title:	Project Manager
Address:	1500 West County Road B2
City, State, Zip:	Roseville, MN 55113-3174
Phone:	651-234-7659
Fax:	651-234-7610
Email:	Daniel.Rowe@dot.state.mn.us

4. Reason for EAW Preparation: (check one)

EIS scoping ___ Mandatory EAW _X_ Citizen petition ___
RGU discretion ___ Proposer volunteered ___

If EAW or EIS is mandatory give EQB rule category subpart number and subpart name:

Response:

Minnesota Rules 4410.4300 subp.22 (B) – *For the construction of additional travel lanes on an existing roadway for a length of one or more miles.*

This project is 16 miles long.

Minnesota Rules 4410.4300 subp.22 (C) – *For the addition of one or more new interchanges to a completed limited access highway.*

This project proposes the addition of seven new interchanges.

5. Project Location: ***County:*** Hennepin
Cities: Plymouth, Medina, Corcoran, Greenfield, Rockford
Sections: T119N, R24W, Sections 28,29,33,34,35,36
T119N, R23W, Sections 31,32
T118N, R23W, Sections 2,3,4,5,6,11,12
T118N, R22W, Sections 7,17,18,20,21,22,27

Attach each of the following to the EAW:

- County map showing the general location of the project

  See Figure 1 – Project Location Map.

- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries

  See Figures 2A through 2C.

- Site plan showing all significant project and natural features.

  See Figures 4A–4I.

6. Description

a. **Provide a project summary of 50 words or less to be published in the *EQB Monitor.***

The proposed project reconstructs TH 55 as a four-lane expressway from the Crow River (in Rockford) to County Road 116, and a four-lane freeway from County Road 116 to I-494 (in Plymouth). The future right of way limits shown in Figures 4A-4I will be used as the basis of official mapping and right of way protection while money is sought to construct the project.

b. **Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.**

<u>Project Description</u>

Refer to Section II.C for a description of the proposed project.

Construction Staging/ Project Schedule

The concept design evaluated in this EA/EAW is for the purpose of right of way protection. Construction on TH 55 is not in Mn/DOT's current 20-year plan. Construction will occur when funding becomes available. The next step in the process is official mapping. Mn/DOT will work with local communities to officially map the corridor following the completion of the environmental process. Right of way protection in the approved corridor will begin after the conclusion of the environmental process and when funding becomes available.

Temporary Construction Impacts: Not applicable

c. **Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.**

Refer to Section II, Purpose and Need for the Project.

d. **Are future stages of this development including development on any outlots planned or likely to happen?** __Yes _X_No

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

Not Applicable.

e. **Is this project a subsequent stage of an earlier project?**
___Yes _X_No

If yes, briefly describe the past development, timeline and any past environmental review.

7. Project Magnitude Data

Total project acreage: 415 acres (within construction limits)
Total project length: Approximately 16.0 miles

Number of residential units: N/A unattached: N/A attached: N/A maximum units per building: N/A

Commercial, industrial or institutional building area (gross floor space): total square feet: N/A

Indicate areas of specific uses (in square feet):

Office: N/A	Manufacturing: N/A
Retail: N/A	Other industrial: N/A
Warehouse: N/A	Institutional: N/A
Light industrial: N/A	Agricultural: N/A
Other commercial (specify): N/A	Building height: N/A

If over 2 stories, compare to heights of nearby buildings: NA

8. **Permits and Approvals Required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.**

Refer to Section V.B for a list of permits and approvals required.

9. **Land Use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.**

Land Use and Compatibility

Current land use conditions along the TH 55 corridor from Rockford to Plymouth include commercial, industrial, agricultural, open space, and residential. As the proposed project is not programmed (i.e., not in Mn/DOT's 20-year plan), land use change is expected to occur prior to construction. The purpose of preparing a concept design for right of way protection is to help ensure compatibility of the proposed project with future land use.

Rockford

The project area includes the small portion of the city of Rockford that is located east of the Crow River. In this area, the majority of current land use is commercial and industrial. There are a few parcels with residential and multi-family land use.

Right of way impacts in Rockford amount to about two acres.

The *City of Rockford Comprehensive Plan* (2006) states that improvements to TH 55 are expected to have a major influence on commercial development in the city and emphasizes utilizing the TH 55 corridor as a commercial center because of the visibility and access it can provide businesses. Eleven (11) of 12 parcels along TH 55 in eastern Rockford are planned to be commercial in the future land use map in the comprehensive plan; one parcel is classified as low-density housing, but is currently in use as commercial and high density residential. There will be access impacts to land uses along the corridor. There is a potential access connection identified in Figure 4A; some accesses will be allowed to remain until a future land use change occurs. Also, residences within 500 feet of the roadway may be subject to noise levels above state standards. TH 55 improvements would be compatible with commercial land use along the corridor in Rockford; however, the city has expressed concern about the conversion of access from full access to right-in/right-out.

Greenfield

The current land use along the TH 55 corridor in Greenfield includes commercial and rural residential parcels. The city will be updating its comprehensive plan in 2008. The city's current comprehensive plan (2002) depicts a future land use plan that includes commercial land uses between the western city limits and Vernon Street and residential (both rural and sewered) for the remaining portion of the TH 55 corridor east of Vernon Street. One area north of TH 55 between Vernon Street and Dogwood Street (CSAH 92) is identified as Agricultural Preserve in the city's land use plan. The residential area between TH 55 and Lake Sarah is planned to be sewered, according to the city's land use plan.

Improvements to TH 55 would be compatible with commercial development in the corridor. Proposed city streets will provide access to properties that have direct access to TH 55 closed as part of the project. Impacts to residential areas may include changes in access; also, residences within 500 feet of TH 55 may be subject to noise levels above state standards. Total right of way impacts in Greenfield amount to about 41 acres. This includes about one acre of impacts to the Agricultural Preserve.

Medina

The *City of Medina 2000-2020 Guide Plan* identifies the following land uses along the TH 55 Corridor: Urban Commercial (UC), Urban Commercial 1 (UC), Multi-family Residential (MR), Rural Commercial (RC), Rural Commercial Holding Zone (RC), and Rural Residential (RR1/RR2). Commercial uses are the dominant form of land use along this portion of the corridor. The UC Zone and Business Park/Industrial Park (within UC1 area) have been established along TH 55 as areas for development of commercial businesses and industry that fit into a rural environment. Land use plans for the city also include the restoration of Uptown Hamel as a "rural village" where industry will be concentrated, near CR 116 and CSAH 101.

Improvements to TH 55 would be favorable for commercial development in the corridor. Impacts to residential areas may include changes in access. Alternative access to properties would be provided. As noted above, any residences within 500 feet of TH 55 may be subject to noise levels above state standards. Right of way impacts in Medina amount to about 40 acres.

Medina will be updating its comprehensive plan in 2008.

Corcoran

TH 55 runs along the southwestern border of the city of Corcoran for approximately one mile. The current land use in this portion of the project area is mostly vacant/agricultural spotted with farmsteads and industrial and commercial sites.

The *City of Corcoran Comprehensive Plan* recognizes the TH 55 corridor as a logical place for expansion of commercial and industrial uses because of transportation access, traffic volumes, and the community's desire for redevelopment of the area. The city's *2020 Land Use Plan* includes creating a Business Park and Light Industrial area along TH 55 between Rolling Hills Road and CSAH 19. The plans for this area include development of frontage roads and coordinating with growth and changes in access on TH 55. Improvements to TH 55 are incorporated into the city's land use plan and are anticipated to be compatible and beneficial for the economic development of the southwestern portion of the community. As noted above, any residences within 500 feet of TH 55 may be subject to noise levels above state standards. Right of way impacts in Corcoran amount to about 11 acres. As of the EA/EAW preparation, the city had not yet begun updating its comprehensive plan.

Plymouth

Current land use along TH 55 in Plymouth includes commercial businesses (including several major shopping areas), large office building complexes, independent businesses, and residential areas which are a mix of multi-family and single family buildings. The city hall-Plymouth Creek park complex is located north of TH 55.

The *2020 Land Use Guide Plan* (2007) for the city of Plymouth shows that planned land uses along TH 55 include commercial, industrial, residential, and public land**.**

As noted above, any residences within 500 feet of TH 55 may be subject to noise levels above state standards. Total right of way impacts in Plymouth amount to about 35 acres.

All Communities

Overall, the project will be compatible with the existing land uses within the project area. Local action to include the proposed project corridor in comprehensive planning documents will provide Hennepin County and Mn/DOT and existing and future landowners with better guidance in land use decision-making. This is especially timely given the desire of several of the project area municipalities to begin planning industrial and commercial developments along the TH 55 corridor. Official mapping is also a right of way protection option available to local governments.

<u>Potential Environmental Hazards</u>

A Phase I Environmental Site Assessment (ESA) was conducted to assess the likely presence of potential or known contaminated properties within or directly adjacent to (within 500 feet) the TH 55 corridor between Annandale and

Plymouth, a corridor approximately 40 miles long, within which the study area for the proposed project (i.e., Crow River to I-494) is located. The Phase I ESA was completed in April 2004 in general conformance with the scope of limitations of ASTM Practice E 1527 and Mn/DOT Agreement No. 86366. The Phase I ESA located several sites of potential concern that can be categorized into three risk areas: high, medium, or low potential for environmental risk. Table 6 provides definitions for properties considered to have a high, medium, or low potential for contamination that are located in the study area (Plymouth to Rockford).

TABLE 6
POTENTIAL FOR CONTAMINATION: DEFINITIONS

High Potential for Contamination	Sites where there are one or more of the following: • Documented releases to the subsurface, such as a leak or spill. • A large amount of chemicals known or inferred to be in use at the facility. • Stains, odors, stressed vegetation, or some other indication that a release has occurred. • Active or inactive dumps/landfills.
Medium Potential for Contamination	Sites where there are one or more of the following: • Known or inferred medium or small quantities of chemicals used or stored. • Underground storage tanks with no documented release. • Indications of poor housekeeping (poor housekeeping can indicate that any leaks or spills which occur may not be handled correctly). • Documented releases that have the potential to migrate to the corridor even though the site is located more than 500 feet from the existing corridor right of way.
Low Potential for Contamination	Sites where there are one or more of the following: • Known or inferred small or very small quantities of chemicals used or stored on the property. • Indications of good housekeeping (good housekeeping indicates that any leaks or spills which occur are more likely to be handled correctly).

Source: Mn/DOT Highway Development Process Handbook. Contaminated Properties, Appendix 1.

The Phase I ESA found 171 sites of documented or potential contamination within the current study area (Plymouth to Rockford). As noted above, each identified property was rated as having high, medium, or low risk potential for contamination. Eight (8) sites were identified as having high risk potential for contamination, 60 were identified as medium risk potential sites, and 103 were identified as low risk potential sites. Table 7 lists the properties rated as having high or medium potential for contamination, and their locations are shown in Figures 6A-6C. Twenty-two (22) of these properties will be affected by right of way impacts, including three that are proposed stormwater pond locations; these are indicated in Table 6 as well. Nineteen (19) of these, including the pond sites, are rated as medium risk potential sites. The three impacted sites identified as having high risk potential would be impacted by partial "strip" acquisitions.

The Canadian Pacific Railroad (CP Rail) corridor was identified as a medium potential of contamination because railroads are associated with herbicides, heavy metal, and oils; however, the railroad was not given a site number because it follows the corridor through most of the study area. In general, the project avoids the railroad corridor, though some intersection work would occur south of the current TH 55 right of way.

All potentially contaminated properties identified in the Phase I ESA will be evaluated for their likelihood to be impacted by construction and/or acquired as right of way. Any properties with potential to be impacted by the project will be drilled and sampled if necessary to determine the extent and magnitude of contaminated soil or groundwater in the areas of concern. The results of the drilling investigation will be used to determine if the contaminated materials can be avoided, or the project's impacts to the properties minimized. If necessary, a plan will be developed for properly handling and treating contaminated soil and/or groundwater during construction.

Once actual ponding locations are identified and further investigation of sites is completed, it will be determined whether any ponds should be lined to avoid flushing any existing contaminants into the groundwater.

If, during construction, contaminated soils are encountered, the response will be handled consistent with Minnesota Pollution Control Agency (MPCA) requirements.

TABLE 7
KNOWN OR POTENTIALLY CONTAMINATED SITES NEAR TH 55 CORRIDOR

Site ID	Site Name	Site Address	Risk Potential	Reason for Concern (Contaminant)
261	Diversiform Products	9091 County Road 50	Medium	Moderate quantities of chemicals uses, storage tanks
268	Holiday Station R	7955 Highway 55	Medium	Active gas station with USTs
272	Carpet Corner	6001 Highway 55	Medium	Former auto repair facility (1983)
273	Texaco	7850 Highway 55	High	An open LUST (1) and an active gasoline station
275	VSK Equipment Inc.	7825 Highway 55	Medium	Former auto repair facility
278	Auto Works Collision Center R	7780 Highway 55	Medium	Auto repair facility
279	Greenfield Homes	7711 Highway 55	Medium	Former auto repair facility
281	Mini Storage	7724 Commerce Circle	Medium	Former auto repair facility
284	Torgerson Well	6855 Dogwood Street	Medium	Has an unregistered ASTs
285	Truck warehouse	6805-6815 Dogwood Street	Medium	ASTs (2)
289	Commercial Building/Auto Repair	6955 Highway 55	Medium	Auto repair facility
290	Mark's Auto Body	6655 Highway 55	Medium	Auto repair facility
297	Ingleside Well & Septic R	4920 Highway 55	Medium	A closed LUST facility, also identified on the SPILLS, UST and generator databases (1)
298	Farmstead	4915-4985 Klaers Drive	Medium	SPILLS database – release of aviation gas, had poor housekeeping(1)
300	Farmstead R	23730 Highway 55	Medium	May involve the use of petroleum products, fertilizers, pesticides or herbicides, DPRA noted poor housekeeping
301	Farmstead	4695 Highway 55	Medium	May involve the use of petroleum products, fertilizers, pesticides or herbicides, DPRA noted poor housekeeping
304	Lakeland Multi-Tenant R	23580-23650 Highway 55	Medium	Auto repair facility
305	Station 2/Lee Allen/Mike's	23500-23510 Highway 55	Medium	Auto repair facility
308	Mothers Motors/Loretto Towing	4775 County Road 19	High	An open LUST site, RCRA and SPILLS databases(1)
309	Stop and Go Citgo R	4355 Highway 55	Medium	Closed LUST site, SPILLS database
311	Ess Brothers & Sons R	23230 Highway 55	Medium	Commercial/light industrial facility with poor housekeeping
314	S & L Auto Sales R	23040 Highway 55	Medium	Auto repair facility, ASTs, formerly hazardous waste generator
321	QX Inc.	2705 Highway 55	High	Closed LUST facility with poor housekeeping
322	Walter G. Anderson	4385 Willow Dr.	Medium	ASTs, small quantities of chemicals used
324	Vacant Building R, P	4352 Willow Dr.	Medium	Closed LUST site, RCRA and USTs databases
325	Muller Prybil Utilities R	2402 Highway 55	Medium	Closed LUST site, RCRA and USTs databases
327	Midland Garden Center	2425 Highway 55	Medium	May use petroleum products, fertilizers, pesticides, or herbicides
328	Hennepin County Public Works Facility	1600 Prairie Drive	Medium	USTs
329	Loram	3900 Arrowhead Drive	Medium	ASTs
333	Adam's Pest Control	922 Highway 55	Medium	Former auto repair site
334	Westside Equipment R	902 Highway 55	Medium	Closed LUST site, SPILLS, UST and RCRA databases

TABLE 7 continued
KNOWN OR POTENTIALLY CONTAMINATED SITES NEAR TH 55 CORRIDOR

Site ID	Site Name	Site Address	Risk Potential	Reason for Concern (Contaminant)
338	McDonald's [R]	822 Highway 55	High	Closed LUST site with contamination remaining in soil and groundwater, UST database
341	C-Axis Precision Machining	800 Tower Drive	Medium	Industrial facility that uses chemicals and has been a regulated generator of hazardous waste
342	Mobil Station [R]	762 Highway 55	Medium	Closed LUST site and USTs
345	Multi-Tenant	783-795 Tower Dr.	Medium	Light manufacturing facilities and hazardous waste generators
347	Midwest Thermo Equipment	770 Tower Drive	Medium	Formerly occupied by large capacity ASTs
348	Commercial Building	775 Tower Drive	Medium	55-gallon drums stored outside
349	Multi Tenant	695-765 Tower Drive	Medium	AST, RCRA database
350	Kelly's Wrecker Service	760 Tower Drive	Medium	Auto repair and service facility
351	Straight Line Auto Body	740 Tower Drive	Medium	Auto repair facility
353	John Deere Landscapes	610-640 Hamel Road	Medium	Closed LUST site
356	Mac Auto Repair	310 Highway 55	Medium	Auto repair facility with poor housekeeping
357	Multi Tenant	295 Highway 55	Medium	Closed LUST site, UST and RCRA databases
359	Highway 55 Rental [R, P]	225-265 Highway 55	Medium	ASTs, RCRA databases
361	Holiday Station	200 Highway 55	Medium	Active gasoline station with USTs
365	Hedtke Inc.	3522 Sioux Drive	Medium	Closed LUST site, RCRA databases
368	Elm Creek Golf Links of Plymouth [R]	18940-19000 Highway 55	Medium	Active ASTs and poor housekeeping
371	Finely Bros. Inc.	18855 Highway 55	Medium	ASTs
375	SuperAmerica [R]	4325 Peony Lane	Medium	Active gasoline station with USTs, identified on the SPILLS database
378	B & V Golf Range	4155 Highway 101	Medium	Unregistered ASTs
379	Len Busch Roses	4055 Peony Lane	Medium	Greenhouse facility, expected to use agricultural chemicals
380	Dave's Conoco [R]	4130 Highway 101	High	Open LUST site, on the UST database
383	Tri-State Drilling [R, P]	16940 Highway 55	Medium	Active ASTs, RCRA database
384	Dundee Nursery [R]	16800 Highway 55	High	Identified on the VIC database with contaminated soil left in place
389	Retail Multi-Tenant	16605 Highway 55	Medium	A dry cleaner is located in the building
391	Lunds Market	3455 Vicksburg Lane	Medium	Closed LUST facility, SPILLS database
394	Dana Spicer [R]	15905 Highway 55	Medium	Closed LUST facility, UST and RCRA databases
398	Clarity/Circuit Science	15831 Vicksburg Lane	High	VIC database, numerous past violation of hazardous past generator license
399	Plymouth Auto Mall	15600 34th Avenue North	Medium	Auto repair facilities, UST and RCRA databases
400	Linfor	15600 32nd Avenue North	Medium	UST, large quantity hazardous waste generator
404	Dalco Sheet Metal	15525 32nd Avenue North	Medium	Closed LUST site, UST and RCRA databases
405	Plymouth Hills Shopping Center	3355 & 3375 Plymouth Boulevard	Medium	May have a dry cleaner on site

TABLE 7 continued
KNOWN OR POTENTIALLY CONTAMINATED SITES NEAR TH 55 CORRIDOR

Site ID	Site Name	Site Address	Risk Potential	Reason for Concern (Contaminant)
406	Holsum Building	3100-3200 Ranchview Lane	Medium	USTs, RCRA database
409	Toll Gas and Welding Propane	3005 Niagara Lane	Medium	ASTs, RCRA database
410	Multi Tenant [R]	3950-3020 Niagara Lane	Medium	Commercial tenants, paint companies
411	Multi Tenant	14910-149410 28th Avenue North	Medium	UST and RCRA databases
424	Tires Plus [R]	14350 28th Place North	Medium	Auto repair facility with ASTs
431	Power Sports/Renovation Systems	2735 Cheshire Lane	High	NFRAP (waste oil contamination to drainage ditch and area lake), UST, and RCRA databases

(1) Acronyms used: Above Ground Storage Tank (AST); Under Ground Storage Tank (UST); Leaking Underground Storage Tank (LUST); Resource Conservation and Recovery Act (RCRA); Voluntary Investigation and Cleanup (VIC); No Further Remediation Action Planned (NFRAP)

R Affected by Right of Way Impacts

P Proposed ponding location

Shaded areas represent sites with high risk.

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

Response: See Table 8.

TABLE 8
COVER TYPES

	Roadway[1]	
	Before Acres	**After Acres**
Types 1-8 wetlands[2]	29	3
Wooded/forest	7	0
Brush/Grassland	42	0
Cropland	31	0
Lawn/landscaping	146	181
Impervious surfaces	146	215
Other:		
Ponding Locations	1	16
TOTAL:	**415**	**415**

[1]Within construction limits.
[2] This number also includes impacts to ditches.

If **Before** and **After** totals are not equal, explain why:

11. Fish, Wildlife and Ecologically Sensitive Resources

***a.* Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.**

Lake Sarah and many wetlands are located in the project area. Wetlands provide habitat for an abundance of wildlife and opportunity for recreational activities.

The south side of the proposed project corridor closely follows the northwestern shore of Lake Sarah (DNR Protected Water Number 27-0191) for approximately one mile. Lake Sarah is identified by the DNR as a Recreational Development Lake. This identifier correlates to the intensity of development and lake use.

Lake Sarah is identified by the DNR as an infested water (due to the presence of Eurasian watermilfoil), meaning that activities at these waters are subject to Minnesota Rules, parts 6216.0100 to 6216.0600, Minnesota Statutes, section 84D.13, and other applicable laws. Any diversion or removal of water from the lake will be subject to review and permitting processes. No such diversion or removal is anticipated.

Lake Sarah is also listed as an impaired water by the MPCA, with excessive amounts of total phosphorus. As discussed in Section IV.18, a rural stormwater conveyance system will be implemented in the western portion

of the project area. Figure 8B depicts proposed stormwater detention ponds in the vicinity of Lake Sarah. Proposed ponds will provide up to 60 percent total phosphorus removal. In addition, Figure 8B depicts potential sites for stormwater best management practices (BMPs) such as vegetated swales, infiltration basins and grit chambers. See Section IV.18 for additional information on agency coordination and permitting.

Review of the DNR Heritage Database revealed a Big Woods native forest remnant near Mohawk Drive, south of TH 55 in Medina. As discussed in Section IV.11.b below, this area will not be impacted by the proposed project.

The proposed project will not involve filling the lake. Measures to treat roadway runoff have been thoroughly reviewed by the project proposer in coordination with the appropriate water resource agencies. Therefore, the proposed project will have no direct impacts on fisheries habitat. It is expected that any indirect impacts will be limited to minor changes in water clarity during and immediately after construction.

b. **Are any state-listed (endangered, threatened or special concern) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site?**

_X_ Yes __No

If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the DNR Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: Describe measures to minimize or avoid adverse impacts.

State-Listed

The DNR Natural Heritage and Nongame Research Program was contacted to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. The Natural Heritage database identified 12 known occurrences of natural communities and rare species within the area surveyed.

Based on the nature and location of the proposed project, the DNR concluded that three elements might be impacted by the proposed project. The other nine rare feature occurrences are not anticipated to be affected by the proposed project. (See January 13, 2006 DNR letter in Appendix B for more detail). The following paragraphs summarize the DNR's recommendations regarding the resources of concern and a brief explanation of the proposed project's relationship to the resource.

Red Oak-Sugar Maple-Basswood Forest/Big Woods Remnant

The DNR has identified a remnant Red Oak-Sugar Maple-Basswood Forest native plant community that is approximately 200 feet south of TH 55 in T118N R23W Section 3, west of Arrowhead Drive (see Figure 7). This forested area is a remnant of the Big Woods that once covered 1.3 million acres of Minnesota. According to the DNR, Maple-Basswood forests have become rare throughout their former range, particularly within the metropolitan area. Only small isolated patches constituting two percent of the forests' former acreage remains and many of these are likely to be degraded or destroyed by suburban development within the next few years. As such, the DNR recommends that any impacts to this natural resource be avoided.

As noted, the Maple-Basswood forest is located south of the CP Rail line. Since the project area of impact will not cross or extend south of the CP Rail line, no impact on the forest is anticipated.

Blanding's Turtles

A "known concentration" of Blanding's Turtles (a state threatened species) is located near the project area in the vicinity of Rolling Green Country Club. The site is not considered to be an area of statewide importance for the Blanding's Turtle.

During final design, Mn/DOT will consider measures to avoid impacts to and provide greater protection for Blanding's Turtles. Potential measures include silt fencing to keep turtles out of construction areas, providing the appropriate culverts under roads, and leaving the terrain with as much natural contour as possible.

Freshwater Mussels

If any plans include bridge rehabilitation or work within the Crow River, the DNR indicated that a freshwater mussel survey may be required; however, no bridge work over the Crow River will be included in the project and, therefore, such a survey will not be performed.

Federal-Listed

The Mn/DOT Office of Environmental Services (OES) was contacted to review the project area for federally threatened and endangered species, and to coordinate with the US Fish and Wildlife Service (FWS) for review of the project. In a letter dated January 23, 2007, Mn/DOT OES concluded that there are no known occurrences of federally listed threatened and endangered or candidate species within the project area. Therefore, the proposed action has little to no potential to have any measurable impact on federally listed threatened and endangered species, candidate species, or on

the habitat on which they depend. However, because the project will not be built for several years, it was recommended by Mn/DOT OES that it be re-evaluated for impacts to federally listed species, candidate species, and listed critical habitat closer to the construction date. Correspondence with Mn/DOT OES can be referenced in Appendix B.

12. Physical Impacts On Water Resources. Will the project involve the physical or hydrologic alteration — dredging, filling, stream diversion, outfall structure, diking, and impoundment — of any surface waters such as a lake, pond, wetland, stream or drainage ditch?

_X_ Yes __No

If yes, identify water resource affected and give the DNR Protected Waters Inventory number(s) if the water resources affected are on the PWI. Describe alternatives considered and proposed mitigation measures to minimize impacts.

Preliminary data were gathered and reviewed prior to the review of potential wetland habitats in the project area. These data sources included the following:

- The National Wetlands Inventory (NWI)
- The Soil Survey of Hennepin County, Minnesota
- The Hydric Soils List for Hennepin County, Minnesota
- The Minnesota Protected Waters and Wetlands Inventory (DNR) (PWI)
- Recent Aerial Photographs
- U.S. Geological Service Quadrangle Maps

Locations of wetlands along the project corridor were assessed during Fall 2006 using the criteria from the *Corps of Engineers Wetland Delineation Manual (1987)*. Results of the wetland assessment were reported in the Wetland Determination Report completed in January 2007, which is available from Mn/DOT. On-site assessment of the project corridor included walkovers of the potential wetlands to determine whether they met wetland characteristics and to make a general assessment of the topographic setting and functions provided.

Following on-site assessment, wetland boundaries were digitized with ArcGIS software. Formal delineations were not completed for this phase of the project; delineations will be completed in advance of permitting for project construction. Topographic setting (i.e. flow-through, tributary, isolated, etc.) was determined to the extent possible, and must be verified with the formal delineation.

The project area lies within three major watersheds: North Fork Crow River, South Fork Crow River, and Mississippi River - Metro. Seventy-three (73) wetland areas, some of which are constructed stormwater treatment ponds, are

located along the project corridor as shown on Figures 8A-8I (Appendix A) and listed in Table 10. There are nine DNR Protected Waters, Protected Waters Wetlands, and Protected Waters Watercourses in the project area, as listed in Table 9.

TABLE 9
TH 55 PROJECT AREA DNR PROTECTED WATERS

Name/PWI Number	Type	Notes
191P	Open Water	Lake Sarah
365W	Wetland	W1-11
363W	Wetland	W1-16
601W	Wetland	W3-13 and W3-14
607W	Wetland	W3-18
105W	Wetland	W3-21
615W	Wetland	W3-24
Sarah Creek	Watercourse	
Elm Creek	Watercourse	
Unnamed Watercourse	Watercourse	Flows through W3-23
147P, 495W	Open Water/wetland	W2-3, Peter Lake
494W	Wetland	W2-6
485W	Wetland	W2-17

In addition to the wetlands discussed below, 69 constructed roadside ditches exhibiting wetland characteristics were also identified along the project corridor. The locations of these stormwater management resources were identified for planning purposes and are shown on Figures 8A-8I (Appendix A). Stormwater ponds and roadside ditches are discussed further under Regulatory Context below.

Proposed Impacts

Refer also to Sections IV.A.14 and IV.A.17 for additional discussion related to water resources impacts, including impacts to Elm Creek.

Table 10 lists the estimated impacts to the wetlands (labeled W-X) within the project area. The proposed impacts are depicted on Figures 8A-8I (Appendix A). Stormwater treatment ponds and constructed roadside ditches within the project area will also be modified for the proposed project. A discussion about the difference in the regulatory context for wetlands versus stormwater ponds and ditches follows.

As noted, a total of 69 segments of roadside ditches were identified along the project corridor. These ditches are shown on Figures 8A-8I (Appendix A). It is assumed that the stormwater system discussed in Section IV.A.17.a will be implemented, including stormwater runoff being directed through storm sewers in urban areas. This means ditches will no longer be used in some areas; however, if a ditch will not be impacted by construction, it will be left in place.

The ditches have an average width of six feet, which was used in estimating the total impacts for proposed construction. Based upon the current proposed design, a total of 4.5 acres of roadside ditches will be impacted by the project. Refer to the Regulatory Context discussion below.

TABLE 10
WETLAND IMPACTS

Area	Total Size (ac)	Type (Circ 39/ Cowardin) and Topographic Setting	Vegetation	Notes, including primary function(s) provided	Total Estimated Impacts (ac)
W1-1	0.3	3/PEMC Tributary	Cattails, Duckweed, Willow	Wildlife habitat, water quality	<0.1
W1-2	1.0	4/PUB/EMF Isolated	Cattails, Duckweed	Water quality	0.0
W1-3	0.4	3/PEMC Tributary	Reed canary grass (RCG)	Wildlife habitat, water quality	0.0
W1-4(1)	0.1	4/PUBGx Isolated	Open Water	Landscape pond, water quality	0.0
W1-5	0.6	4/PUBGx Tributary	Open water	Water quality	0.4
W1-6	0.4	3/PEMC Tributary	Open water, cattails	Water quality	<0.1
W1-7	0.03	3/PEMC Isolated	Cattails	Water quality	<0.1
W1-8a W1-8b	0.1 0.8	2/PEMB Isolated	RCG	Wildlife habitat, water quality	0.7
W1-9	0.2	2/PEMB Isolated	RCG	Wildlife habitat, water quality	<0.1
W1-10	0.1	3/PSS/EMC Isolated	Cattails, Willow, Swamp Milkweed	Wildlife habitat	0.1
W1-11	>100	4/PEMG Flow-through	RCG	DNR 365W. Water quality, hydrologic maint., wildlife habitat	1.2
W1-12	1.9	3/PEMC Flow-through	RCG, Cattails	Water quality	0.5
W1-13	1.0	3/PEMC Tributary	RCG	Wildlife habitat	0.9
W1-14	1.0	3/PEMC Flow-through	RCG, cattails	Hydrologic maint.	0.8
W1-15	0.4	3/PEMC Flow-through	Cattails	Hydrologic maint.	0.3
W1-16	>30	3/PEMCd Flow-through	Cattails	DNR 363W. Wildlife habitat, hydrologic maint.	2.3
W1-17	0.7	3/PEMFx Tributary	RCG, Willow	Water quality	0.1
W1-18	1.6	3/PEMC Tributary	RCG	Wildlife habitat, hydrologic maint.	0.2
W1-19	3.4	3/PEMC Isolated	RCG, cattails	Hydrologic maint., wildlife habitat	0.0
W1-20	0.5	3/PUBF Tributary	RCG	Wildlife habitat, water quality	0.0
W1-21	0.2	3/PSS1C Tributary	RCG, willow	Wildlife habitat, water quality	<0.1

TABLE 10 continued
WETLAND IMPACTS

Area	Total Size (ac)	Type (Circ 39/ Cowardin) and Topographic Setting	Vegetation	Notes, including primary function(s) provided	Total Estimated Impacts (ac)
W1-22	>22	3/ PEM/FO1Cd Tributary	RCG, cattails, willow	Sarah Creek flows through. Hydrologic maint., wildlife habitat	1.7
W1-23	>55	3/PEMCx Tributary	RCG, cattails	DNR 362W Wildlife habitat, water quality	<0.1
W1-24	>55	3/ PEM/FO1Cd Tributary	RCG, cattails, sedge, dead trees	Wildlife habitat, hydrologic maint.	0.4
W1-25	1.4	3/PEMC Tributary	RCG	Wildlife habitat, water quality	0.5
W1-26	0.1	2/PEMB Isolated		Wildlife habitat	0.1
W2-1	>35	2/PFO1/EMB Tributary	Cattails	Forested portion recently cleared. Hydrologic maint., wildlife habitat	0.3
W2-2	1.8	4/PEMG Tributary	Open water, cattails	Water quality, wildlife habitat	0.0
W2-3	>55	3/PEMC Flow-through	Cattails, RCG	495W. Shoreline protection, water quality associated with Peter Lake (147P)	0.3
W2-4	0.5	3/PEMC Isolated	Cattails	Wildlife habitat	0.2
W2-5	0.03	3/PEMC Isolated		Wildlife habitat	<0.1
W2-6	>140	3/PEMCd Flow-through	Cattails	494W. Hydrologic maint., wildlife habitat	3.1
W2-7a(1) W2-7b(1) W2-7c(1)	0.5 1.9 2.4	4/PUBGx Isolated	Open Water	Water quality	1.5
W2-8	0.7	3/PEMC Tributary	Cattails	Water quality	0.4
W2-9	0.1	3/PEMC Isolated	Cattails	Water quality	0.0
W2-10	2.0	3/PUBFx/EMCd Isolated	Open Water	Water quality	0.0
W2-11	0.4	3/PEMCd Isolated	Cattails	Water quality	0.1
W2-12	9.5	3/PEMCd Flow-through	Cattails	Hydrologic maint., wildlife habitat	1.5
W2-13	>250	2/6/PSS1Cd Flow-through	Box elder, willow, RCG, cattails	Hydrologic maint., wildlife habitat	0.9
W2-14	9.8	3/PEMCd Flow-through	Cattails, RCG	Public Ditch within. Hydrologic maint., wildlife habitat	0.0
W2-15	40.5	3/PEMCd Flow-through	Willow, RCG, Cattails	Public Ditch within. Hydrologic maint., wildlife habitat	0.2

TABLE 10 continued
WETLAND IMPACTS

Area	Total Size (ac)	Type (Circ 39/ Cowardin) and Topographic Setting	Vegetation	Notes, including primary function(s) provided	Total Estimated Impacts (ac)
W2-16(1)	0.04	4/PUBGx Isolated	Cattails	Water quality	<0.1
W2-17	3.2	3/PEMCd Isolated	Cattails, willow	DNR #485W Water quality, wildlife habitat	0.5
W2-18	0.4	3/PEMC Isolated	RCG	Water quality	0.1
W2-19	0.4	3/PEMC Tributary	Cattails	Water quality	0.1
W2-20(1)	0.1	3/PUBFx Isolated	Newly constructed	Water quality	0.0
W2-21(1)	0.1	3/PUBFx Isolated	Newly constructed	Water quality	0.1
W3-1	0.2	3/PEM/FO1C Tributary	Cattails, RCG	Water quality	0.1
W3-2	0.03	3/PEM/FO1C Tributary	Cattails	Water quality	<0.1
W 3-3	0.2	3/PEMCx Tributary	Cattails	Water quality	<0.1
W3-4(1)	0.8	3/PEMCx Tributary	Cattails	Water quality	0.0
W3-5(1)	0.2	3/PEMCx Tributary	Cattails	Water quality	0.1
W3-6	>65	3/PEMCd Flow-through	Cattails	Public Ditch within. Hydrologic maint., wildlife habitat	0.3
W3-7(1)	0.4	3/PEMC Tributary	Cattails	Water quality	0.1
W3-8	1.0	3PEMCx Tributary	Cattails	Water quality	0.0
W3-9(1)	0.2	3/PEMCx Tributary	Cattails	Water quality	0.1
W3-10	10.3	3/PEMCd Flow-through	Cattails	Wildlife habitat, hydrologic maint.	0.4
W3-11(1)	0.1	3/PEMCx Tributary	Cattails	Water quality	0.0
W3-12(1)	0.1	3/PEMC Tributary	Cattails	Water quality	0.0
W3-13	>25	3/PEMC Flow-through	Cattails	601W. Wildlife habitat, hydrologic maint.	0.1
W3-14	>45	3/PEMC Flow-through	Cattails	601W, Wildlife habitat, hydrologic maint.	0.4
W3-15(1)	0.2	3/PEMCx Isolated	Cattails	Water quality	0.0
W3-16(1)	0.3	3/PEMCx Isolated	Cattails	Water quality	0.0

TABLE 10 continued
WETLAND IMPACTS

Area	Total Size (ac)	Type (Circ 39/ Cowardin) and Topographic Setting	Vegetation	Notes, including primary function(s) provided	Total Estimated Impacts (ac)
W3-17[(1)]	0.4	3/PEMCx Tributary	Open water	Water quality	0.0
W3-18	15.8	3/PEMFd Tributary	Cattails	607W. Wildlife habitat, hydrologic maint.	0.8
W3-19	0.2	7/PFO1B Isolated	Cattails, willow	Water quality, wildlife habitat	0.0
W3-20	0.7	3/PEMCx Isolated	Cattails	Water quality	0.0
W3-21	>55	3/PEMF Flow-through	Cattails	105W. Wildlife habitat, hydrologic maint.	0.2
W3-22[(1)]	1.8	3/PEMFx Isolated	Cattails	Water quality	0.2
W3-23	4.6	1/PEMAd Flow-through	Cattails	Public Ditch within. Wildlife habitat, hydrologic maint.	0.9
W3-24	7.6	3/PEMCd Tributary	Cattails	615W. Wildlife habitat, hydrologic maint.	0.9
W3-25[(1)]	0.5	3/PEMC Tributary	Cattails	Water quality	0.0
W3-26[(1)]	0.7	3/PEMC Tributary	Cattails	Water quality	0.0
				Total Wetland Impact (ac)	**25.1**

[(1)]Indicates wetland is a constructed stormwater treatment pond. See Regulatory Context discussion.

Regulatory Context

Outside of Mn/DOT right of way, the cities of Plymouth, Greenfield, Rockford and Medina, and Minnehaha Creek Watershed District (MCWD), Elm Creek Watershed Management Commission (ECWMC), Pioneer-Sarah Creek Watershed Management Commission (PSCWMC), and Bassett Creek Watershed Management Commission (BCWMC) regulate impacts to wetlands as Local Governmental Units (LGUs) under the Minnesota Wetland Conservation Act (WCA) within the project area. Within Mn/DOT right of way, Mn/DOT acts as the LGU. Impacts to waters of the U.S. (non-isolated wetlands within the project area) are regulated by the Corps of Engineers (COE) under Section 404 of the Clean Water Act. Impacts to wetlands within this area of the state must be replaced at a ratio of 2:1, and replacement must include wetland creation or restoration at an amount equal to or greater than the area of the impact. If the replacement is of a different type of wetland as that impacted, or is not completed in advance of the impact, the ratio could be raised to 2.25:1 or 2.5:1. Topographic setting, provided in Table 10, was determined to guide type-for-type mitigation efforts, as well as to aid COE staff in making their Jurisdictional Determination. A total of at least 50.2 acres of mitigation is required for the 25.1 acres of wetland impacts.

As discussed above, natural wetlands, constructed stormwater treatment ponds, and roadside ditches that exhibit wetland characteristics all exist along the project corridor. Stormwater ponds and ditches differ from natural wetlands in that they were constructed in areas that were not previously wetland (i.e., not depicted on the NWI) for the purpose of managing and treating stormwater runoff, not for the purpose of creating wetlands. Therefore, impacts are eligible for the Incidental Wetlands exemption under WCA (MN Rules Chapter 8420.0122, Subp. 5) and do not require replacement. However, the COE, under Section 404 of the Clean Water Act, has jurisdiction over all wetlands abutting waters of the U.S., regardless of history. The COE makes a Jurisdictional Determination on a project-by-project basis, once wetland permitting is submitted.

Mitigation for the project impacts is currently under review, utilizing research completed by Hennepin County Environmental Services staff. Efforts to identify and secure mitigation sites will continue as project design moves forward. Water resource, wetland review, and permitting (if needed) will be coordinated with the cities of Plymouth, Greenfield, Rockford and Medina, the DNR, the Board of Water and Soil Resources (BWSR), MCWD, ECWMC, BCWMC, PSCWMC, and the COE once final design is complete. Acting as LGU, Mn/DOT will provide an approval on all replacement plans under WCA.

Alternative road alignments were evaluated to determine if the wetlands could be avoided and to identify minimization opportunities. Complete avoidance is not feasible because those wetlands proposed for impact are located within the right of way, near or at the toe-of-slope of the existing roadway. Impacts were minimized to the extent practicable by making the side slopes steeper (1:4), thereby minimizing the roadway footprint. Temporary impacts, due to surcharge in wetland areas to stabilize foundation soils, will be restored to preconstruction conditions through removal of surcharge material, regrading to original contours and seeding with appropriate wetland seed mixes. Further minimization is not feasible without compromising the project goals.

13. Water Use. **Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)?**

_X_ Yes __No

If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

Any waterlines that may be affected by future construction would be relocated as part of the project.

Wells adjacent to and within the project area were identified from the Minnesota Geological Survey County Well Index database. These wells are listed in Table 11.

TABLE 11
WELLS

Well Number	Address	City
405446	7060 Highway 55	Greenfield
105233	6605 Sioux Trail	Greenfield
155279	Highway 55	Greenfield
416693	5275 Highway 55	Greenfield
100189	4985 Klaer Drive	Greenfield
404769	23040 Highway 55	Corcoran
427950	23510 Highway 55	Corcoran
175948	2165 Highway 55	Medina
100256	17605 41st Avenue N	Hamel

Well #100256 appears to be near the existing roadway; if the well is on private property, it would not be impacted. It is not expected that the other wells will be affected. If any additional wells are discovered during construction of the proposed project, they will be sealed according to state and local regulatory requirements. If temporary dewatering is needed during project construction, the appropriate DNR groundwater appropriation permits would be obtained.

14. Water-Related Land Use Management District. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? _X_ Yes ___ No

If yes, identify the district and discuss project compatibility with district land use restrictions.

As described in Section II.C, within Plymouth and the eastern portion of Medina, TH 55 would be expanded from a four-lane divided highway with signaled intersections to a four-lane divided highway with collector distributor roadways and interchanges. West of Arrowhead Drive to the western limit of the project, the roadway would be expanded from a two-lane highway to a four-lane divided highway. Numerous floodplain encroachments result because of the addition of interchanges within the Plymouth and the eastern portion of Medina and the roadway expansion west of Arrowhead Drive. The following National Flood Insurance Program Flood Insurance Rate Maps listed in Table 12 were examined for determination of floodplain impacts.

TABLE 12
FLOOD INSURANCE RATE MAPS

Map Name	Map Number	Communities Contained
Hennepin County (All Jurisdictions)	27053C0128E	Rockford, Greenfield, Independence
Hennepin County (All Jurisdictions)	27053C0129E	Rockford, Greenfield, Independence
Hennepin County (All Jurisdictions)	27053C0135E	Greenfield, Independence
Hennepin County (All Jurisdictions)	27053C0134E	Corcoran, Greenfield, Independence, Medina
Hennepin County (All Jurisdictions)	27053C0153E	Corcoran, Medina
Hennepin County (All Jurisdictions)	27053C0165E	Medina, Orono
Hennepin County (All Jurisdictions)	27053C0166E	Medina
Hennepin County (All Jurisdictions)	27053C0167E	Medina, Plymouth
Hennepin County (All Jurisdictions)	27053C0169E	Medina, Plymouth
Hennepin County (All Jurisdictions)	27053C0190E	Plymouth

The affected floodplains are longitudinally and transversely encroached upon by the proposed roadway construction as summarized in Table 13. Transverse and longitudinal encroachments represent crossings of streams, rivers, lakes, etc. at angles greater than or equal to 30 degrees and less than 30 degrees, respectively. Figures 8A-8I show each longitudinal and transverse impact summarized in Table 13.

The longitudinal encroachment of the floodplains listed in Table 13 resulting from the construction of the proposed roadway cannot be practicably avoided. It is necessary to maintain the continuity of the roadway within its existing right of way.

TABLE 13
FLOODPLAIN IMPACT SUMMARIZATION

Location	Encroachment	Length in Feet
1	Transverse	2,300
2	Longitudinal	1,370
3	Transverse	240
4	Longitudinal	900
5	Transverse	1,570
6	Transverse	1,300
7	Transverse	140
8	Transverse	570
9	Longitudinal	2,540
10	Transverse	70
11	Transverse	1,650

Analysis of the floodplain impacts that would potentially occur from the TH 55 improvements was performed in accordance with Presidential Executive Order – 11988, addressing the following four areas:

- **Area 1: No significant potential for interruption of a transportation facility which is needed for emergency vehicles and provides a community's only evacuation route.**

  All proposed roadways constructed within the defined floodplain limits will be designed to provide 100-year flood protection. The proposed TH 55 roadway profile will be elevated above the 100-year flood elevation in all segments that are currently shown to overtop. Verification of floodplain elevations will be obtained through new hydrologic and hydraulic studies or existing results obtained from the Federal Emergency Management Agency.

- **Area 2: No significant impact on natural or beneficial floodplain values.**

  Floodplain impacts, both beneficial and adverse, will occur to the affected water bodies as a result of the proposed project.

  A. No fisheries impacts are anticipated.

  B. According to a review of the Minnesota Natural Heritage Database by the DNR, it was revealed that one rare turtle species may be present within the floodplains of the project area. The turtle species present within the project area is the Blanding's Turtle, which is considered a state-listed threatened species (see Section IV.A.11).

  C. Numerous wetlands are located within the affected floodplains as established by the National Wetlands Inventory and field survey. The proposed roadway and associated fill sections will impact some of these wetlands (see Section IV.A.12).

  D. The proposed interchange located at TH 55 and CSAH 101/Sioux Drive requires that an approximate 730-foot long section of Elm Creek that runs parallel to TH 55 be filled as a result of the construction of the eastbound exit ramp. A six-foot diameter, 900-foot long reinforced concrete pipe (RCP) along with minor stream realignments upstream and downstream of the fill section is a potential option to perpetuate the conveyance of Elm Creek within the existing stream corridor. The proposed six-foot RCP represents the minimum size conduit necessary to convey peak discharges and maintain existing discharge characteristics. Because the impact to Elm Creek represents a longitudinal fill, a bridge structure is not feasible. In communication with the ECWMC, the commission noted that the creek is a natural resource and requested that as much of the creek remain as an open channel as is feasibly possible. Further coordination will be required during final design.

E. Appropriate turf establishment and erosion control measures will be used throughout the construction process and for the full-build conditions in accordance with the National Pollution Discharge Elimination System Permit (NPDES), as well as municipal and watershed management commission standards (ordinances). No permanent impacts to water quality are expected to occur once Best Management Practices (BMPs) and vegetation are fully established for the full-build condition. Several measures can be used to limit floodplain impacts during construction including, but not limited to, allowing only vehicles required for construction activities within the floodplain, restricting work within the floodplain to autumn and winter to avoid damaging plants during the growing season, and seeding disturbed areas as soon as possible with native species to limit the intrusion of exotic species.

- **Area 3: No significant increased risk of flooding will result.**

  There will be no increased risk of flooding as a result of the proposed project. Longitudinal floodplain fills will be mitigated to the greatest extent possible within the affected floodplain area. Water surface elevations upstream of newly-constructed conveyance structures, and hydraulic conveyance structures improved as a result of the proposed project, will be maintained. Seven hydraulic conveyance structures crossing TH 55 and connecting roadways have been analyzed to determine the necessary improvements for proposed conditions. Coordination with the watershed management commissions and districts, as well as member cities, will occur as the project proceeds. During final design at the time of construction, detailed hydraulic analysis will be done to determine if compensatory storage is required to meet regulatory requirements.

- **Area 4: Will the project support and/or result in incompatible floodplain development?**

  No incompatible floodplain development would result from the proposed project, as the project does not provide additional access to the floodplain areas. The cities and watershed agencies have floodplain ordinances that restrict development within the floodplain. Each ordinance conforms to the DNR Floodplain Management guidelines.

15. **Water Surface Use.** Will the project change the number or type of watercraft on any water body?

__Yes _X_No

If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. Erosion and Sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved:

Acres to be graded: 415 acres
Cubic yards of soil to be moved: 1,154,100 (estimated)
Total Excavation: Not available
Total Embankment: Not available

Describe any steep slopes or highly erodible soils and identify them on the site map.

According to the Natural Resource Conservation Service (NRCS), Highly Erodible Land (HEL) and Potentially Highly Erodible Land (PHEL) are areas of land that have a high potential for erosion. These classifications are based on soil type and steep slope characteristics. PHEL map units need to be field verified to confirm whether characteristics meet the HEL designation requirements. When disturbed through activities such as development, these areas have a high potential for soil erosion. Particular attention should be paid to HEL areas as they can present unstable soil conditions that can result in erosion if not properly managed during construction activities.

As proposed, TH 55 impacts many areas of HEL/PHEL (Figures 9A-9C). Areas of HEL/PHEL are spread throughout the project corridor and surrounding area. Avoiding all areas of impact is not possible due to the characteristics of the surrounding land.

Describe any erosion and sedimentation control measures to be used during and after project construction.

The potential for erosion during construction will exist, as soils are disturbed by excavation and grading. The proposed road profiles have been designed to align with the existing roadway. In areas where additional right of way is needed, the profile has been adjusted to minimize disturbances to steep slopes. As the design of the proposed improvement is carried forward, it will be further refined to avoid and minimize impacts to areas of HEL/PHEL.

Erosion and sedimentation of all exposed soils within the project corridor will be minimized by utilizing the appropriate BMPs during construction. Implementation of BMPs during final construction greatly reduces the amount of construction-related sedimentation and helps to control erosion and runoff. Ditches, dikes, siltation fences, bale checks, sedimentation basins, and temporary seeding may be utilized as temporary erosion control measures during construction grading. Since the project goal in the near future is to preserve right of way, and the road itself will not be built for many years, these BMPs may change. As new BMPs are developed, they will be incorporated into the construction phase of the project.

Temporary and permanent erosion control plans will be identified in the final site grading and construction plans for each state as required by the NPDES permitting for construction sites, in accordance with the MPCA; with the cities

of Rockford, Greenfield, Corcoran, Medina, and Plymouth; and with watershed erosion/sediment control standards. A Storm Water Pollution Prevention Plan (SWPPP) that includes erosion control and sediment management practices for the proposed construction will be designed as part of the NPDES permitting process. Erosion control measures, including requiring erosion control plans and designating a site inspector and enforcer, will be in place and maintained throughout the entire construction period. Removal of erosion measures will not occur until all disturbed areas have been stabilized.

It should be noted that the entire project corridor is experiencing increasing development. This shift to more developed land uses carries with it a potential for increased erosion and sedimentation.

17. Water Quality: Surface Water Runoff

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any stormwater pollution prevention plans.

An increase in pollutant loading and the quantity of stormwater runoff volume generated from the proposed project will occur due to the increase of impervious surfaces. Impervious surfaces within the project right of way increase runoff volume due to an effective decrease in areas capable of infiltrating stormwater runoff and an effective increase in areas shedding stormwater runoff. The most common waterborne pollutants associated with highway runoff are heavy metals, nutrients, organic matter, chlorides, and particulates. Additionally, mean pollutant concentrations in runoff from highway concentrations contain nitrogen and phosphorus as byproducts of combustion and from atmospheric deposition, in precipitation or dust. Increased traffic volumes will exacerbate the deposition of pollutants; an increased impervious surface area will allow more atmospheric deposition and subsequent stormwater runoff.

With the existing roadway, stormwater runoff generally flows toward vegetated ditches, allowing for some degree of infiltration, filtering, and vegetative uptake of nutrients and pollutants before entering the downstream receiving waters. Stormwater discharge attenuation occurs to a limited extent where ditches are flat and/or controlled by culverts. Where stormwater runoff does not enter a ditch, it is generally directed toward a tributary wetland of one of the receiving waters. Although the direct discharge of stormwater runoff to wetlands without primary treatment is detrimental to long-term integrity, wetlands generally provide excellent water quality treatment and stormwater discharge attenuation.

The standards and rules established by the cities and watershed agencies will be followed, to the extent practicable, to mitigate the water quality and quantity impacts created by the project. Many of the receiving water bodies are impaired for aquatic consumption and aquatic recreation due to excess mercury and excess nutrients, respectively (see Table 14). As such, total

maximum daily load (TMDL) studies will ultimately establish the allotment of the stressor to the impaired receiving water bodies. Implementation plans will dictate how the allocation occurs on a watershed basis. The watershed management organizations and municipalities have standards and rules for the implementation of stormwater best management practices and maintenance of stormwater discharge rates to existing 2-, 10- and 100-year stormwater discharge rates. Furthermore, the MPCA has jurisdiction over the project via the NPDES permit process. As part of the NPDES permitting process, a SWPPP will be created during final design of the proposed project.

The proposed project will feature both an urban stormwater conveyance system with corresponding storm sewer and a rural stormwater conveyance system with corresponding ditches, each discharging to designated BMPs. An urban stormwater conveyance system will be located east of CR 116 within the eastern portion of the cities of Medina and Plymouth and within the city of Rockford; the rural stormwater conveyance system will be implemented throughout the remainder of the project. Most stormwater generated from the project will be directed to one of several stormwater detention basins that will provide up to 60 percent total phosphorus removal and 90 percent total suspended solids removal (see Section IV.A.17.b). Therefore, the stormwater detention ponds are expected to mitigate the adverse effects of the increased impervious surfaces and pollutant generation. In addition to providing water quality treatment, the stormwater detention ponds will also provide discharge attenuation such that existing discharges are maintained. Where it is not feasible to direct stormwater to stormwater detention basins, other BMPs such as vegetated swales, infiltration basins, and grit chambers will be utilized.

Water resource issues can be seen in Figures 8A-8I, which show surface flows, potential stormwater basins, and potential BMP sites. Locations shown in the layouts assume these locations will be available for stormwater quality treatment and rate and volume control. If these locations are not available, further coordination between Mn/DOT, cities, and watershed agencies will be necessary to identify other options.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

The TH 55 project corridor lies within four major watersheds, discharging the stormwater runoff generated from the project corridor to various receiving water bodies. The four major watersheds are identified by formal governmental organizations that include PSWMC, ECWMC, MCWD, and BCWMC. Table 14 lists the primary receiving water bodies in each watershed and whether the water body has impairments per the 2006 303(d) list of impaired waters maintained by the MPCA.

Stormwater generated from the proposed project will be directed to the greatest extent feasible to appropriate BMPs. Within Plymouth and the eastern portion of Medina, east of CR 116, as well as within the city of Rockford, an urban roadway section in conjunction with storm sewer will be utilized to convey stormwater runoff to stormwater detention basins. Where it is not feasible to direct stormwater to stormwater detention basins, other BMPs such as vegetated swales, infiltration basins, grit chambers, etc. will be utilized. Throughout the remainder of the project, a rural roadway section will be utilized in conjunction with ditches to convey stormwater runoff to an array of BMPs. Where topography, proposed roadway profile and spatial considerations allow, stormwater will be directed to stormwater detention basins. Where stormwater detention basins are not feasible, stormwater treatment swales and infiltration areas will be utilized. With only a few exceptions, stormwater runoff generated from the proposed project will be discharged directly to the identified receiving water bodies.

TABLE 14
RECEIVING WATER BODIES OF PROPOSED TH 55 PROJECT AND CORRESPONDING IMPAIRMENTS

Watershed	Receiving Water Bodies	Affected Use	Stressor
PSWMC	▪ Peter Lake	None	None
	▪ Lake Sarah	– Aquatic Consumption and Aquatic Recreation	– Excess Mercury and Excess Nutrients
	▪ Crow River	– None	– None
ECWMC	▪ Elm Creek	– Aquatic Life	– Low Oxygen
MCWD	▪ Various Wetlands	– None	– None
BCWMC	▪ Plymouth Creek	– None	– None
	▪ Medicine Lake	– Aquatic Consumption and Aquatic Recreation	– Excess Mercury and Excess Nutrients

Stormwater runoff discharged from the proposed project will not have a significant impact on the water quality of the identified receiving water bodies and may improve it over existing conditions. With only minor exceptions, the existing roadway has a rural drainage system that allows direct discharge of stormwater runoff to receiving water bodies with minimal water quality treatment or rate attenuation. The majority of the proposed project will direct stormwater runoff to stormwater detention basins designed according to National Urban Runoff Program (NURP) standards before discharging to the identified receiving water bodies. Stormwater detention basins designed to NURP standards can achieve water quality treatment rates for total phosphorus and total suspended solids of 60 and 90 percent, respectively. Additional treatment will occur where stormwater detention basins discharge to swales, tributary wetlands, etc. of the identified receiving water bodies.

18. Water Quality: Not applicable

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

19. Geologic Hazards and Soil Conditions

a. Approximate depth (in feet) to ground water: minimum: 0 feet
average: 2.9 feet to bedrock: minimum: 100 feet average: 100 - 400 feet
Source: *Geologic Atlas, Hennepin County, Minnesota*, by the Minnesota Geologic Survey, 1989.

Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

The depth to bedrock ranges from 100 to 400 feet. Most of the area is 150 to 250 feet to bedrock. There are no known geologic site hazards.

b. Describe the soils on the site, giving NRCS (SCS) classifications, if known. Discuss soil granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

Numerous soil types are found throughout the corridor. These soil types are summarized in Table 15.

TABLE 15
SOIL TYPES

Soil Name	Soil Symbol	Percent Slope
Crowfork loamy sand	L4B	1 to 6 percent
Minnetonka silty clay loam[1]	L9A	0 to 2 percent
Klossner muck, depressional[3]	L13A	0 to 1 percent
Houghton muck, depressional[3]	L14A	0 to 1 percent
Muskego, Blue Earth, and Houghton soils, ponded	L16A	0 to 1 percent
Lester loam, morainic[3]	L22C2	6 to 12 percent
Lester loam, morainic	L22D2	12 to 18 percent
Lester loam, morainic	L22E	18 to 25 percent
Lester loam, morainic	L22F	25 to 35 percent
Cordova loam[1]	L23A	0 to 2 percent
Glencoe loam, depressional[1]	L24A	0 to 1 percent
Le Sueur loam[2]	L25A	1 to 3 percent
Shorewood silty clay loam[2]	L26A	0 to 3 percent
Shorewood silty clay loam[2]	L26B	3 to 6 percent
Shorewood silty clay loam[3]	L26C2	6 to 12 percent
Suckercreek fine sandy loam[1]	L28A	0 to 2 percent
Lerdal loam[2]	L35A	1 to 3 percent
Hamel, overwash-Hamel complex[1]	L36A	1 to 4 percent
Angus loam, morainic[2]	L37B	2 to 5 percent
Angus-Kilkenny complex[2]	L40B	2 to 6 percent
Lester-Kilkenny complex[1]	L41C2	6 to 12 percent
Lester-Kilkenny complex	L41D2	12 to 18 percent
Lester-Kilkenny complex	L41E	18 to 25 percent
Lester-Kilkenny complex	L41F	25 to 35 percent
Nessel loam[2]	L44A	1 to 3 percent
Dundas-Cordova complex[1]	L45A	0 to 3 percent
Klossner soils, depressional	L49A	0 to 1 percent
Houghton and Muskego soils, depressional	L50A	0 to 1 percent
Angus-Moon complex[2]	L60B	2 to 5 percent
Lester-Metea complex	L61C2	6 to 12 percent
Lester-Metea complex	L61D2	12 to 18 percent
Tadkee-Tadkee, depressional, complex	L64A	0 to 2 percent
Hamel-Glencoe, depressional[1]	L132A	0 to 3 percent
Urban land-Udorthents, wet substratum, complex	U1A	0 to 2 percent
Udorthents, wet substratum	U2A	0 to 2 percent
Udorthents (cut and fill land)	U3B	0 to 6 percent
Urban land-Udorthents (cut and fill land	U6B	0 to 6 percent

[1] Prime Farmland if drained
[2] All prime farmland
[3] Farmland of statewide importance
Source: NRCS Web Soil Survey

According to the 1989 Minnesota Geologic Survey, the potential for groundwater contamination in the corridor can be examined by looking both at the water table system, which contains the uppermost groundwater resource, and the Prairie du Chien-Jordan aquifer.

The sensitivity to pollution for the water table was rated on the basis of depth to the water table and the conductivity of the geologic materials. In the TH 55 corridor, the rating ranges from "low" to "very high." (See Table 16.) Most of the corridor has a rating of low, but there are still large areas with medium or very high ratings. Many of the sensitive areas are located around wetlands, lakes, and streams. These are also areas where the depth to the water table is 0, as indicated above in Section IV.A.19.a.

TABLE 16
GROUNDWATER SENSITIVITY TO POLLUTION

Aquifer Type	Sensitivity Rating
Aquifers	Low
Water Table System	Low – very high

Source: *Minnesota Geological Atlas*, 1989

The aquifer's sensitivity to pollution was rated based on the relative travel time of contaminants to the aquifer, which is affected by the number and effectiveness of confining layers between the aquifer and the surface, the depth to bedrock, and the composition of the soil. Sensitivity to pollution for the Prairie du Chien-Jordan aquifer is low for the entire corridor, with the exception of a small area in Plymouth near I-494, which is rated medium low.

It is important to note that high susceptibility to pollution does not indicate that water quality has been or will become degraded, and low susceptibility does not guarantee that water will remain pristine. Potential for groundwater contamination in the project area is dependent on factors in addition to those mentioned above, including the properties of the contaminant itself and the direction of groundwater movement.

The proposed project involves limited use of contaminants (primarily fuel for construction activities); thus, there is limited potential for soil contamination. If a spill were to occur during construction, appropriate action to remediate would be taken immediately in accordance with MPCA guidelines and regulations.

Soil information is also discussed in Section IV.A.16, Erosion and Sedimentation, and Section IV.A.25, Prime Farmlands.

20. Solid Wastes, Hazardous Wastes, Storage Tanks

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

No municipal solid waste or hazardous waste will be generated by the proposed project. If a spill of hazardous or toxic substances should occur during or after construction of the proposed project, it is the responsibility of the transport company to notify the Minnesota Department of Public Safety, Division of Emergency Services, to arrange for corrective measure to be taken pursuant to 6 MCAR 4.9005E. Any contaminated spills or leaks that occur during construction would be responded to in accordance with MPCA containment and remedial action procedures.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

Toxic or hazardous materials would not be present at the site, except for fuel and oil necessary for the construction equipment during construction.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

Of the 22 impacted properties with medium or high risk potential described in Section IV.A.9, 14 properties are reported to have aboveground and/or underground storage tanks (ASTs/USTs). If any of these properties are impacted by the project, proper care and precautions will be taken, in accordance with MPCA guidelines and regulations. No permanent aboveground or belowground storage tanks would be installed in conjunction with this project. Temporary storage tanks for petroleum products may be located in the project area for the purpose of refueling construction equipment during roadway construction. Appropriate measures would be taken during construction to avoid spills that could contaminate groundwater or surface water in the project area. In the event that a leak or spill occurs during construction, appropriate action to remediate the situation would be taken immediately in accordance with MPCA guidelines and regulations.

21. Traffic

Parking spaces added: N/A
Existing spaces (if project involves expansion): N/A
Estimated total average daily traffic generated: See discussion below
Estimated maximum peak hour traffic generated (if known) and time of occurrence: See discussion below.

Provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

Response:

Section II describes the expected growth in travel demand due to increased population and employment growth in western Hennepin County. Section II also provides data on expected levels of congestion under 2030 No-Build Conditions.

Under Build conditions, TH 55 will carry 9,000 to 14,000 more ADT than No-Build conditions, as shown in Table 17.

TABLE 17
YEAR 2030 FORECAST ADT VOLUMES ON TH 55 BY SEGMENT

Segment	Year 2000 ADT	Year 2030 No-Build	Year 2030 Build
Rockford to CSAH 19	14,800	19,700	30,000
CSAH 19 to CR 116	25,000	37,000	51,000
CR 116 to Vicksburg	34,000	48,000	62,000
Vicksburg to I-494	58,000	67,000	76,000

Source: TH 55 Future Traffic Demand Study – Table 6

A traffic operations analysis was performed for a.m. and p.m. peak hours under 2030 Build conditions (detailed in the Traffic Operations Analysis, Appendix C). The results shown in Table 18 indicate that most intersections operate at LOS D or better under 2030 Build conditions. The only intersections that do not operate at acceptable LOS D or better are the TH 55 intersections with Willow and Arrowhead Drives, and the intersections in the vicinity of the TH 55/I-494 interchange. These locations are discussed below, with detail provided in the Traffic Operations Analysis (Appendix C).

TABLE 18
INTERSECTION CAPACITY
A.M. and P.M. Peak hour Intersection Level of Service[1]

Location	Existing (2004)		No Build (2030)		Build (2030)	
	A.M. LOS	P.M. LOS	A.M LOS	P.M. LOS	A.M. LOS	P.M. LOS
CR 50	C	**F**	**F**	**F**	D	D
CSAH 92	C	**F**	**F**	**F**	C	D
Vernon Street[2]	A/C	**F/F**	A/C	**F/F**	A/D	A/D
Greenfield Road[2]	A/C	A/C	A/C	**E/F**	A/C	A/**E**
Lake Sarah Heights Drive[2]	A/B	A/C	A/C	B/D	A/B	A/A
Town Hall Drive[2]	A/C	A/D	A/C	A/**F**		
Town Line Road[2]	A/B	A/C	**E/F**	B/D		
Town Hall Drive/Town Line Road					B	C
CSAH 19	**E**	C	**F**	**F**	D	D
Willow Drive	C	C	**F**	**F**	**E**	**F**
Arrowhead Drive	B	B	C	**E**	**F**	**F**
CR 116	**F**	C	**F**	**F**		
CR 116 North Ramps					B	B
CR 116 South Ramps					A	B
CSAH 101 (N)	C	C	**F**	**F**		
CSAH 101 (N) North Ramps					B	B
CSAH 101 (N) South Ramps					B	C
CSAH 101 (S)	D	D	**E**	**E**		
CSAH 101 (S) North Ramps					B	C
CSAH 101 (S) South Ramps					C	D
CSAH 21/CSAH 9	D	D	**E**	**F**	C	D
Vicksburg Lane	D	**F**	**E**	**F**	D	D
Plymouth Blvd.	D	D	**E**	**E**		
Plymouth Blvd. North Ramps					B	C
Plymouth Blvd. South Ramps					C	C
Fernbrook Lane	D	**F**	D	**F**	N/A	N/A
I-494 West Ramp	C	B	**F**	D	**F**	**F**
I-494 East Ramp	**F**	**F**	**F**	**F**	**E**	**E**
CSAH 61	D	**F**	D	**F**	**F**	**F**

(1) LOS is a measure of congestion. LOS D was assumed to be the limit of acceptable operations.
(2) Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.

TH 55 at Willow Drive and Arrowhead Drive

Under current 2030 Build forecasts, which assume improvements on TH 55 from I-494 to Annandale and no improvements to I-94 west of Fish Lake, the TH 55 intersections with Willow and Arrowhead Drives will not function at LOS D or better (See Table 19 below).

TABLE 19
YEAR 2030 PEAK HOUR CAPACITY ANALYSIS
LEVEL OF SERVICE RESULTS

Intersection	A.M. Peak			P.M. Peak		
	LOS	Delay (seconds)	95th Percentile Queues (feet)	LOS	Delay (seconds)	95th Percentile Queues (feet)
TH 55 / Willow Drive	**E**	**65**	1,450 EB	**F**	**> 180**	2,710 WB
TH 55 / Arrowhead Drive	**F**	**90**	**2,920 EB**	**F**	**120**	**4,490 WB**

Note: The 95th-percentile queues represent the longest queue in the peak direction of travel.

The improvements to TH 55 are currently unfunded (similar to the improvements to I-94); however, a project to improve I-94 west of Rogers was placed in the Governor's bonding package. Growth and overall system importance (High Priority IRC plus interstate route) would suggest that capacity improvements are likely to occur on I-94 before TH 55. If this were assumed, a reduction of approximately 700 vehicles per hour in TH 55 traffic is expected. Under this assumption, the Willow Drive and Arrowhead Drive intersections operate near or better than the LOS D/E threshold with significantly lower 95th percentile queues (See Table 20 below).

TABLE 20
YEAR 2030 PEAK HOUR CAPACITY ANALYSIS: WITH IMPROVEMENTS TO I-94/I-494 & TH 55
LEVEL OF SERVICE RESULTS

Intersection	A.M. Peak			P.M. Peak		
	LOS	Delay (seconds)	95th Percentile Queues (feet)	LOS	Delay (seconds)	95th Percentile Queues (feet)
TH 55 / Willow Drive	D	35	580 EB	**E**	**65**	1,010 WB
TH 55 / Arrowhead Drive	D/**E**	**55**	**1,770 EB**	D	35	**1,090 WB**

Note: The 95th-percentile queues represent the longest queue in the peak direction of travel.

If improvements to I-94 were not to occur prior to the TH 55 project, acceptable levels of service at Willow Drive and Arrowhead Drive could be achieved with an additional through-lane on TH 55. This additional through-lane could be accommodated within the right of way footprint assumed for the proposed project, and would extend west to a point between Willow Drive and CSAH 19.

The traffic operations at the next downstream intersection (CR 116) assumed the same 700 vehicle per hour reduction in TH 55 traffic. Based on a critical lane volume analysis, the six-lane at-grade facility was at the LOS D/E threshold; however, this is the proper place to transition to a grade-separated facility given

the key north-south role that CR 116 plays in western Hennepin County, and the tight intersection spacing which limits side street queues that can develop as a result of the heavy movements to and from TH 55 at this location.

Weave Area Between Fernbrook Lane and I-494

The proposed TH 55 improvements, in the area of Fernbrook Lane and I-494, replace the existing signal at Fernbrook Lane with a button hook interchange. This button hook interchange serves as an interim improvement with the ultimate configuration to be determined as part of a future I-494/ TH 55 interchange reconstruction project. The proposed interchange configuration will combine the heavy southbound left-turn and northbound right-turn from the existing intersection to a proposed eastbound button hook on-ramp. There is concern that this combined heavy movement, while proposed to enter eastbound TH 55 as an add lane condition, will have limited weaving distance (approximately 1,350 feet) between the I-494 west ramps. This is cause for some operational and safety concerns.

To further examine this concern, the proposed TH 55 interim improvements were analyzed using existing a.m. and p.m. peak hour traffic volumes. This analysis specifically examined the weave section on eastbound TH 55 between the proposed button hook interchange and the I-494 west ramp intersection. Based on the analysis, geometric improvements have been incorporated into the button hook design. It is also recommended that the signal at Fernbrook Lane be coordinated with the signals at the I-494 ramps in order to maintain the progression of mainline traffic.

TH 55/I-494 Interchange Area

The proposed TH 55 "interim" improvements in the vicinity of the TH 494 interchange and CSAH 61 include the following:

- <u>TH 55/I-494 West Ramp</u>
  - Additional southbound right-turn lane
  - Additional eastbound right-turn lane
  - Additional eastbound through-lane
  - Additional westbound through-lane
- <u>TH 55/I-494 East Ramp</u>
  - Additional northbound right-turn lane
  - Additional westbound right-turn lane
  - Additional northbound left-turn lane
  - Additional westbound through-lane

As shown previously in Table 2, these interim improvements in the TH 55/I-494 interchange area will not result in acceptable levels of service under year 2030 build conditions. Additional concepts have been developed for the TH 55/I-494 interchange area, and planning-level analyses have been conducted. Right of way for a range of interchange configurations has been included in this project. However, since the TH 55/I-494 interchange will ultimately be reconstructed as a future project, detailed analysis of these TH 55/I-494 interchange concepts will be performed as part of the future I-494 project.

Future improvements to TH 55/I-494 interchange will include the CSAH 61/ TH 55 intersection area. To address needed improvements at this location, an evaluation of various scenarios was conducted, detailed in the October 16, 2007 TH 55 – Fernbrook to CSAH 61 in Plymouth Operations Memorandum (Appendix E). Based on that evaluation, assumed and recommended improvements east of I-494 that will allow the TH 55/ CSAH 61 intersection to operate at an acceptable level of service include the following:

- Widening of TH 55 to three basic through-lanes in each direction extending east to TH 169 (while this is identified as a need in the current Transportation System Plan, it is not funded).
- In the westbound direction from CSAH 61, widening TH 55 to four through lanes plus a left-turn lane and a right-turn lane.
- The right-turn lane would exit onto northbound I-494 at the east ramp, resulting in one additional westbound through-over what currently exists at this intersection.
- Another lane would exist onto southbound I-494.
- Revision of the southbound right turn lane on CSAH 61 from its current free right to a dual right with signal control.

<u>Impact on Area Roadways</u>

Improvements to TH 55 are expected to have additional beneficial impacts within the Twin Cities Metropolitan System. Due to TH 55's northwest to southeast diagonal orientation and its geographic location within the larger Twin Cities metropolitan area, it provides a more efficient alternative than other east-west arterial routes for many commuters in the western metro area. The TH 55 Future Traffic Demand Study reinforces other analyses, which suggested that there would be only limited shifts in traffic from area roads *to* TH 55 if improvements are made. However, it is expected that TH 55 would feed a substantial amount of traffic into the local systems if improvements are not made. Tables 21 and 22 illustrate the impact of the No-Build and Build scenarios on ADT volumes for Plymouth and regional roadways. Refer to Figures 10A and 10B to see the locations of these roadway segments.

TABLE 21
YEAR 2030 FORECAST ADT VOLUMES ON SELECTED AREA ROADWAYS (PLYMOUTH)

Map	Roadway Segment	Forecast ADT Volumes			
		Existing (2004)	No-Build (2030)	Build 2030	Build – No-Build
A	CSAH 101 (north of TH 55)	4,200	13,400	13,900	500
B	CSAH 101 (CSAH 9 to CSAH 6)	8,100	22,000	21,000	(1,000)
C	CSAH 6 (West of I-494)	18,300	18,100	18,000	(100)
D	CSAH 9 (West of I-494)	24,000	34,000	34,000	0
E	CSAH 9 (North of TH 55)	9,500	14,200	14,200	0
F	CSAH 9/24 (South of TH 55)	11,100	19,500	19,600	100
G	Fernbrook Lane (North of TH 55)	18,000	19,100	18,900	(200)
H	Fernbrook Lane (South of TH 55)	14,100	15,200	13,900	(1,300)
I	Old Rockford Rd. (CSAH 101 to Vicksburg)	4,800	7,100	6,400	(700)
J	Plymouth Road (North of TH 55)	12,800	17,000	15,600	(1,400)
K	Plymouth Road (South of TH 55)	9,000	11,000	11,800	800
L	Schmidt Lake Rd. (West of I-494)	5,200	12,100	12,200	100
M	Schmidt Lake Rd. (West of Vicksburg)	870	9,400	9,500	100
N	TH 55 (West of I-494)	54,000	64,000	76,000	12,000
O	Vicksburg Lane (North of TH 55)	17,200	24,000	25,000	1,000
P	Vicksburg Lane (South of TH 55)	13,900	19,000	19,200	200

TABLE 22
YEAR 2030 FORECAST ADT VOLUMES ON SELECTED AREA ROADWAYS (REGIONAL)

Map	Roadway Segment	Forecast ADT Volumes			
		Existing (2004)	No-Build (2030)	Build 2030	Build – No-Build
A	CR 47 (at I-494)	5,400	14,800	14,700	(100)
C	CSAH 30 (CR 116 to CR 101)	11,200	11,200	36,000	24,800
F	I-494 (CR 6 to Carlson Parkway)	101,000	153,000	156,000	3,000
G	I-94 (CSAH 30 to CR 109)	91,000	183,000	179,000	(4,000)
H	TH 12 (Wayzata to I-494)	72,000	98,000	97,000	(1,000)
I	I-94 (TH 241 to TH 101)	60,000	111,000	105,000	(6,000)

Note: Map Locations B, D, and E are found in Wright County (outside of project limits) and therefore are not considered in this document.

Additionally, improvements to TH 55 may impact traffic volumes and congestion on I-494 and at the TH 55/I-494 interchange. To a large extent, the capacity of TH 55 will be controlled by the ability of traffic to flow onto I-494. As noted, concepts for the ultimate TH 55/I-494 interchange have been developed and planning level analysis conducted; however, the design will be determined as a future project.

It is expected that improvements will be made to I-494 prior to any on TH 55. Therefore, I-494 is projected to have sufficient capacity for any additional volume that would result from expansion of TH 55 by the time TH 55 is reconstructed.

Access Changes

This project will result in numerous access changes for both roads and driveways. Direct access to TH 55 will be limited for safety reasons. Some access points will be eliminated when improvements are constructed, while others will be allowed to remain until a future land use change occurs. Table 23 summarizes the access changes proposed as part of project.

TABLE 23
ACCESS CHANGES, DRIVEWAYS

Location	City	Existing	Proposed
Western edge of project limits, south side of TH 55	Rockford	1 direct access point	Will be eliminated when improvements are constructed.
North side of TH 55	Rockford	4 direct access points	Existing access may remain until land use change occurs.
Western city limits to CSAH 92, south side	Greenfield	4 direct access points	Three points will be eliminated when improvements are constructed and will access TH 55 via road to the west. Eastern access point will be closed when city street is constructed and will access TH 55 via road to west and east.
North side of TH 55 between CSAH 92 and Vernon Street	Greenfield	1 direct access point	Existing access may remain until land use change occurs.
North side of TH 55 between Vernon Street and Greenfield Road	Greenfield	7 direct access points	Five existing accesses may remain until land use change occurs. One will be relocated; one potential closure.
South side of TH 55 between Vernon Street and Greenfield Road	Greenfield	2 direct access points for same parcel	Eliminate one driveway. Remaining access point may remain until land use change occurs.
South side of TH 55 at Vernon Street	Greenfield	1 direct access point	Existing access may remain until land use change occurs.
South side of TH 55 between Vernon Street and Greenfield Road	Greenfield	2 direct access points	One will be eliminated when improvements are constructed and will have access to TH 55 via road to the east; other may remain until land use change occurs.
North side of TH 55, east of Greenfield Road	Greenfield	1 direct access point	Access point will be eliminated; cul-de-sac access road is proposed.

TABLE 23 continued
ACCESS CHANGES, DRIVEWAYS

Location	City	Existing	Proposed
South side of TH 55, east of Greenfield Road	Greenfield	1 direct access point	Will be relocated when improvements are constructed. Realign road with access point to the west.
North side of TH 55 between Greenfield Road and Town Hall Drive	Greenfield	2 direct access points	Existing access may remain until land use change occurs.
South side of TH 55 between Greenfield Road and Town Hall Drive	Greenfield	5 direct access points	Access points on the south side will be eliminated when improvements are constructed; potential access road is proposed. Access point to the east will be allowed to remain until land use change occurs.
TH 55 between Town Hall Drive and Townline Road	Greenfield	4 direct access points	Access closest to intersection with Townline Road will be eliminated when improvements are constructed. Remaining access points will be allowed to remain until land use change occurs.
North side of TH 55 east of Townline Road	Corcoran	2 direct access points	One will be eliminated when improvements are constructed. Another will be allowed to remain until land use change occurs.
North side of TH 55 east of Townline Road	Corcoran	2 direct access points for same parcel	One access will be eliminated when improvements are constructed; other will be allowed to remain until land use change occurs.
South side of TH 55 east of Townline Road	Medina	2 direct access points for same parcel	One access will be eliminated when improvements are constructed; other will be allowed to remain until land use change occurs.
North side of TH 55 between Townline Road and CSAH 19	Corcoran	2 direct access points	One existing access will be allowed to remain until land use change occurs; access closest to CSAH 19 will be eliminated and will access TH 55 via CSAH 19.
South side of TH 55 near intersection of CSAH 19	Medina	4 direct access points	Will be eliminated when improvements are constructed; access to TH 55 via CSAH 19.
North side of TH 55 between CSAH 19 and Pioneer Trail	Corcoran	2 direct access points	Combine two access points into one; one will be allowed to remain until land use change occurs.
North side of TH 55 between Pioneer Trail and Rolling Hills Road	Corcoran/ Median	3 direct access points	Existing access will be closed when proposed city street is constructed.
South side of TH 55 between CSAH 19 and Pioneer Trail	Corcoran/ Medina	1 direct access points	Existing access will be closed when proposed city street is constructed.
South side of TH 55 between Pioneer Trail and Rolling Hills Road	Medina	1 direct access point	Existing access will be allowed to remain until land use change occurs.
TH 55 and Rolling Hills Road	Medina	1 direct access point	Existing access will be allowed to remain until land use change occurs.
North side of TH 55 between Rolling Hills Road and Willow Drive	Medina	2 direct access points	Existing access will be allowed to remain until land use change occurs.
South side of TH 55 between Rolling Hills Road and Willow Drive	Medina	1 direct access point	Will be eliminated when improvements are constructed; access to TH 55 via Bigelow Drive.

TABLE 23 continued
ACCESS CHANGES, DRIVEWAYS

Location	City	Existing	Proposed
North side of TH 55 between Willow Drive and Mohawk Drive	Medina	4 direct access points	Existing access will be allowed to remain until land use change occurs.
South side of TH 55 between Willow Drive and Mohawk Drive	Medina	2 direct access points	Existing access will be allowed to remain until land use change occurs.
TH 55 between Arrowhead Drive and Tamarack Drive	Medina	2 direct access points	Will be eliminated when improvements are constructed.
TH 55 between Tamarack Drive and Pinto Drive (CR 116)	Medina	4 direct access points	Will be eliminated when improvements are constructed; access to TH 55 via Pinto Drive.
North side of TH 55 between Pinto Drive (CR 116) and CSAH 101	Medina	13 direct access points	Will be eliminated when improvements are constructed; existing city street will provide access via Pinto Drive.
South side of TH 55 between Pinto Drive (CR 116) and CSAH 101	Medina	2 direct access points	Will be eliminated when improvements are constructed; access to TH 55 via proposed access road.
TH 55 east of CSAH 101	Medina	2 direct access points	Will be eliminated when improvements are constructed; parcel on north side of TH 55 will receive access via proposed city street.
North side of TH 55 between city limits and Peony Lane N	Plymouth	4 direct access points	Will be eliminated when improvements are constructed.
South side of TH 55 between city limits and Peony Lane N	Plymouth	2 direct access points	Will be eliminated when improvements are constructed; a proposed city street will provide access via CSAH 101.
North side of TH 55 between Peony Lane N and Rockford Road	Plymouth	4 direct access points	Will be eliminated when improvements are constructed.

The relief in congestion and improved management of access will create safer driving conditions. Improved safety for pedestrians and bicyclists is discussed under Section II.B. The proposed improvements will also allow TH 55 to better fulfill its function as a Principal Arterial and High Priority Regional Corridor.

22. Vehicle-Related Air Emissions. ***Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.***

Motorized vehicles affect air quality by emitting airborne pollutants. Changes in traffic volumes, travel patterns, and roadway locations affect air quality by changing the number of vehicles in an area and the congestion levels. The air quality impacts from a project are analyzed by addressing criteria pollutants, a group of common air pollutants regulated by EPA on the basis of criteria (information on health and/or environmental effects of pollution). The criteria pollutants identified by the EPA are ozone, particulate matter, carbon monoxide,

nitrogen dioxide, lead, and sulfur dioxide. Potential impacts resulting from these pollutants are assessed by comparing projected concentrations to National Ambient Air Quality Standard (NAAQS). In addition to the criteria air pollutants, the EPA also regulates air toxics.

Ozone

Ground-level ozone is a primary constituent of smog and is a pollution problem throughout many areas of the United States. Exposures to ozone can make people more susceptible to respiratory infection, resulting in lung inflammation, and aggravate preexisting respiratory diseases such as asthma. Ozone is not emitted directly from vehicles but is formed as volatile organic compounds (VOCs) and nitrogen oxides (NOx) react in the presence of sunlight. However, due to the phenomenon of atmospheric formation of ozone from chemical precursors, concentrations are not expected to be elevated near a particular roadway.

As a result of this, the MPCA, in cooperation with various other agencies, industries and groups, has encouraged voluntary measures to control ozone and has begun developing a regional ozone modeling effort. Recent conversations with MPCA staff indicate that the ozone models currently use federal default traffic data and a relatively coarse modeling grid. As such, ozone modeling in Minnesota is in its developmental state, and therefore, there is no available method of determining the contribution of a single roadway to regional ozone concentrations. Ozone levels in the Twin Cities Metropolitan Area currently meet state and federal standards and the state of Minnesota is currently classified by the Environmental Protection Agency (EPA) as an ozone attainment area. Because of these factors, a quantitative ozone analysis was not conducted for this project.

Particulate Matter

Particulate matter (PM) is categorized by the size of particles being measured. For example, the $PM_{2.5}$ value is the measurement of particles smaller than 2.5 microns (a micron is a millionth of a meter) in a particular volume of air. Fine particles with very small diameters can move like gases and be transported hundreds of miles from their source. Larger particles do not remain suspended and tend to settle out of the air relatively near their source.

Motor vehicles can influence particulate matter concentrations on a local scale by directly emitting fine particles and from wind turbulence that causes particles to be mixed into the air. On a regional scale, vehicular traffic can influence particle concentrations through emission of precursor compounds (nitrogen oxides, sulfur oxides and VOCs) as well as direct emissions. Vehicle-related particulate matter tends to be smaller than 2.5 microns.

The concentration of fine particulates in the atmosphere is a complex function of direct local emissions, meteorological conditions, and concentrations of various precursor compounds. Modeling of particulate concentrations is an

emerging science and is being done on a regional and nationwide scale. Widespread $PM_{2.5}$ monitoring began in Minnesota in 1999. An article published in the MPCA's *Minnesota's Environment* magazine, Volume 3, Number 3, Summer 2003, indicates that particulate concentrations rise to concentrations considered unhealthy for sensitive people only a few times per year. Based on recent $PM_{2.5}$ monitoring, it appears that the state of Minnesota will be in attainment of recently enacted $PM_{2.5}$ standards.

Based on the relatively low ambient concentrations observed in Minnesota and the lack of analysis methodology, no project level modeling for particulate matter was conducted for this project.

Nitrogen Dioxide (Nitrogen Oxides)

Nitrogen oxides, or NOx, is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary sources of NOx are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. The Minnesota Pollution Control Agency *Air and Water Emissions Report*, March 2000, indicates that on-road mobile sources account for 31 percent of NOx emissions in Minnesota. In addition to being a precursor of ozone, NOx can cause respiratory irritation in sensitive individuals and contribute to acid rain.

Nitrogen dioxide (NO2) levels in the Twin Cities Metropolitan Area currently meet state and federal standards. Based on the relatively low ambient concentrations of NOx in Minnesota and the long term trend of reduction in NOx emissions, it is unlikely that NOx standards will be approached or exceeded in the project area. Because of these factors, a specific analysis of nitrogen dioxide was not conducted for this project.

Sulfer Dioxide

Sulfur dioxide ($S0_2$) and other sulfur oxide gases (SOx) are formed when fuel containing sulfur, such as coal, oil, and diesel fuel, is burned. Sulfur dioxide is a heavy, pungent, colorless gas. Elevated levels can impair breathing, lead to other respiratory symptoms, and, at very high levels, aggravate heart disease. People with asthma are most at risk. Once emitted into the atmosphere, SO_2 can be further oxidized to sulfuric acid, a component of acid rain.

Over 65 percent of SO_2 released into the air comes from electric utilities, especially those that burn coal. The MPCA's *Air and Water Emissions Report*, March 2000, indicate that on-road mobile sources account for just 4.8 percent of SOx emissions in Minnesota. MPCA monitoring shows that ambient SO_2 concentrations are consistently below standards. The MPCA has concluded that long-term trends in both ambient air concentrations and total SO_2 emissions in Minnesota indicate steady improvement.

Emissions of sulfur oxides from transportation sources are a small component of overall emissions and continue to decline due to the desulphurization of

fuels. The state of Minnesota is classified by the EPA as an attainment area for sulfur dioxide. Sulfur dioxide levels in the Twin Cities metropolitan area currently meet NAAQS. Because of these factors, a quantitative analysis for sulfur dioxide was not conducted for this project.

Lead

Due to the phase-out of leaded gasoline, lead is no longer a pollutant associated with vehicular emissions.

Carbon Monoxide

Carbon monoxide (CO) is a traffic-related pollutant that has been a concern in the Twin Cities metropolitan area. It is also the pollutant most likely to be of concern on a project level scale. The MPCA has established state standards (or maximum permissible concentrations) for CO of 30 parts per million (ppm) for a 1-hour period (average concentration), and 9 ppm for an 8-hour period (average concentration). The MPCA 1-hour standard is more stringent than the federal standard of 35 ppm.

The study area is currently in an attainment area for CO. The attainment status in the Twin Cities metropolitan area is contingent upon the implementation of measures to assure that CO concentrations remain below standards. The contingency stipulates that future CO concentrations be modeled for proposed transportation projects. This study is exempt from CO dispersion analysis according to 40 CFR 93.126 item O-1 since it is a planning study that does not lead directly to construction.

Concentrations of CO are generally highest at at-grade intersections with poor levels of service and, consequently, with more idling vehicles. The proposed design is expected to reduce congestion along TH 55, particularly between I-494 and CSAH 116, where existing at-grade intersections will become grade-separated. Therefore, it is unlikely that CO levels approaching state standards will occur at at-grade intersections along existing TH 55 under the proposed design.

Improvements in vehicle technology and in motor fuel regulations continue to cause reductions in vehicle emission rates. The EPA Mobile 6.2 emissions model estimates that emission rates will fall by at least 15 to 25 percent from 2006 to 2030. Consequently, 2030 vehicle-related CO concentrations in the study area are likely to be lower than existing concentrations, even considering the increase in project-related and background traffic.

Mobile Source Air Toxics

The purpose of the current TH 55 project is to define a corridor for right of way protection. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air

quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs.

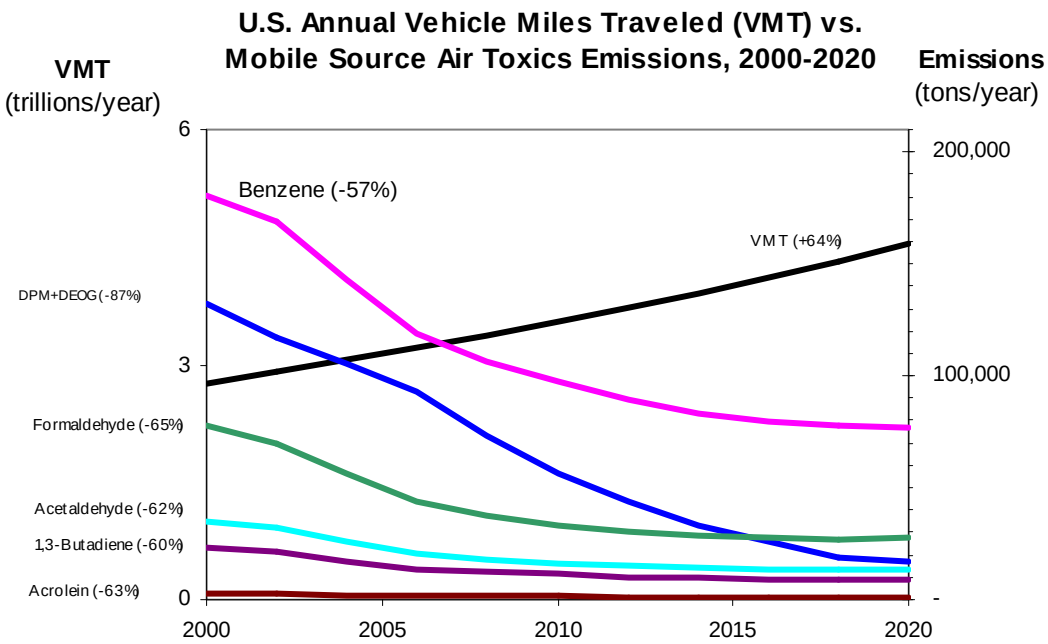
Moreover, EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in VMT, FHWA predicts MSATs will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal Agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent, as shown in the graph on the following page:

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.



Notes: For on-road mobile sources. Emissions factors were generated using MOBILE6.2. MTBE proportion of market for oxygenates is held constant, at 50%. Gasoline RVP and oxygenate content are held constant. VMT: *Highway Statistics 2000*, Table VM-2 for 2000, analysis assumes annual growth rate of 2.5%. "DPM+DEOG" is based on MOBILE6.2-generated factors for elemental carbon, organic carbon and SO4 from diesel-powered vehicles, with the particle size cutoff set at 10.0 microns.

Unavailable Information for Project Specific MSAT Impact Analysis

This EA includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this EA. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete. Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. Emissions: The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict

emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model--emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

2. Dispersion. The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The NCHRP is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

3. Exposure Levels and Health Effects. Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations

at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs. Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at **http://www.epa.gov/iris**. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.

- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes -- particularly respiratory problems[4]. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT

[4] South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 Studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.

concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, FHWA has provided a quantitative analysis of MSAT emissions relative to the various alternatives, (or a qualitative assessment, as applicable) and has acknowledged that (some, all, or identify by alternative) the project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

23. Stationary Source Air Emissions.

Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing) and any greenhouse gases (such as carbon dioxide, methane, nitrous oxide) and ozone-depleting chemicals (chloro-fluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

Not applicable.

24. Odor, Noise and Dust.

Will the project generate odors, noise or dust during construction or during operation? _X_ Yes _No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Odors, Noise, and Dust During Construction

The proposed project is not anticipated to generate any unusual odors during construction.

The construction activities associated with implementation of the proposed project will result in increased noise levels relative to existing conditions. These impacts will primarily be associated with construction equipment and activities. Pile driving may be necessary for bridge and retaining wall construction.

Elevated noise levels are, to a degree, unavoidable for this type of project. Construction equipment will be required to be properly muffled and maintained and the contractor(s) will comply with applicable state and local noise restrictions. While no definitive staging plans have been developed, some night construction may be necessary to minimize traffic flow impacts. Local municipalities and residents will be kept informed on what type of impacts are expected, including length of impact. The need for night construction depends on final design and project staging; however, construction will be limited to daytime hours as much as possible.

Dust generated during construction will be minimized through standard dust control measures such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions. After construction is complete, dust levels are anticipated to be minimal because all soil surfaces exposed during construction would be in permanent cover (i.e., paved or revegetated areas).

Background Information on Acoustics and Traffic Noise

Noise is defined as any unwanted sound. Sound travels in a wave motion and produces a sound pressure level. This sound pressure level is commonly measured in decibels. Decibels (dB) represent the logarithm of the ratio of a sound energy relative to a reference sound energy. For highway traffic noise, an adjustment, or weighting, of the high- and low- pitched sound is made to approximate the way that an average person hears sound. The adjusted sound levels are stated in units of "A-weighted decibels" (dBA). A sound increase of 3 dBA is barely perceptible by the human ear, a 5 dBA increase is clearly noticeable, and a 10 dBA increase is heard as twice as loud. For example, if the sound energy is doubled (i.e., the amount of traffic doubles), there is a 3 dBA increase in noise, which is just barely noticeable to most people. On the other hand, if traffic increases to where there is 10 times the sound energy level over a reference level, then there is a 10 dBA increase and it is heard as twice as loud.

In Minnesota, traffic noise impacts are evaluated by measuring and/or modeling the traffic noise levels that are exceeded 10 percent and 50 percent of the time during the hours of the day and/or night that have the heaviest traffic. These numbers are identified as the L_{10} and L_{50} levels, respectively. The L_{10} value is compared to the FHWA noise abatement criteria (see Table 26 below).

Table 24 provides a rough comparison of the noise levels of some common noise sources.

TABLE 24
COMMON NOISE SOURCES

Sound Pressure Level (dBA)	Noise Source
140	Jet Engine (at 75 feet)
130	Jet Aircraft (at 300 feet)
120	Rock and Roll Concert
110	Pneumatic Chipper
100	Jointer/Planer
90	Chainsaw
80	Heavy Truck Traffic
70	Business Office
60	Conversational Speech
50	Library
40	Bedroom
30	Secluded Woods
20	Whisper

Source: "A Guide to Noise Control in Minnesota," Minnesota Pollution Control Agency, http://www.pca.state.mn.us/programs/pubs/noise.pdf and "Highway Traffic Noise," FHWA, http://www fhwa.dot.gov/environment/htnoise htm.

Along with the volume of traffic and other factors (e.g., topography of the area and vehicle speed) that contribute to the loudness of traffic noise, the distance of a receptor from a sound's source is also an important factor. Sound level decreases as distance from a source increases. The following rule of thumb regarding sound decreases due to distance is commonly used. Beyond approximately 50 feet, each time the distance between a line source (such as a road) and a receptor is doubled, sound levels decrease by 3 dBA over hard ground, such as pavement or water, and by 4.5 dBA over vegetated areas.

Minnesota state noise standards have been established for daytime and nighttime periods. For residential land uses (identified as Noise Area Classification 1 or NAC-1), the Minnesota state standards for L_{10} are 65 dBA for daytime and 55 dBA for nighttime; the standards for L_{50} are 60 dBA for daytime and 50 dBA for nighttime. The MPCA defines daytime as 7:00 a.m. to 10:00 p.m. and nighttime from 10:00 p.m. to 7:00 a.m. State noise standards are depicted in Table 25.

For residential and parkland uses (Federal Land Use Category B), the federal L_{10} standard is 70 dBA for both daytime and nighttime. Locations where noise levels are "approaching" (defined as being within one decibel of the criterion threshold, i.e., 69 dBA) or exceeding the criterion level must be evaluated for noise abatement reasonableness. Federal Noise Abatement Criteria (NAC) are shown in Table 26.

TABLE 25
MINNESOTA STATE NOISE STANDARDS

MPCA State Noise Standards					
Land Use	**Code**	**Daytime (7 a m. – 10 p.m.) dBA**		**Nighttime (10 p m. – 7 a m.) dBA**	
Residential	**NAC-1**	L_{10} of 65	L_{50} of 60	L_{10} of 55	L_{50} of 50
Commercial	**NAC-2**	L_{10} of 70	L_{50} of 65	L_{10} of 70	L_{50} of 65
Industrial	**NAC-3**	L_{10} of 80	L_{50} of 75	L_{10} of 80	L_{50} of 75

TABLE 26
FEDERAL NOISE ABATEMENT CRITERIA

FHWA Noise Abatement Criteria		
Category	**L_{10} dBA**	**Land Use**
A	**60**	Special areas requiring serenity
B	**70**	Residential and recreational areas
C	**75**	Commercial and industrial areas
D	**NA**	Undeveloped areas
E	**55[(1)]**	Residential, hospitals, libraries, etc.

[(1)]Applies to interior noise levels. All other land uses are exterior levels.

In addition to the identified noise criteria, the FHWA also defines a noise impact as a "substantial increase" in the future noise levels over the existing noise levels. Mn/DOT considers an increase of 5 dBA or greater a substantial noise level increase.

The state noise standards apply to TH 55. Intersecting county and city roads without full control of access are exempt from the state noise standards. When federal funds are used on a portion of the TH 55 corridor, the federal noise abatement criteria will apply to the corridor and intersecting roads.

Methodology

Affected Environment

The purpose of this noise analysis is to determine the effect of the proposed project on traffic-generated noise levels. It is also important to note that the project setting includes other noise sources in the area that may have some affect on ambient noise levels.

The TH 55 project corridor is located in an urban/suburban area near I-494 in Plymouth and transitions from a suburban environment to a rural environment as motorists travel west from Plymouth. Traffic noise is generated by vehicles traveling on TH 55 as well as intersecting county and local roadways. Other sources include noise generated by freight trains traveling on the CP Rail line, which crosses TH 55 near CSAH 101 North and follows the TH 55 corridor through Hamel, Medina, Independence, Greenfield, and Rockford. The CP Rail line carries approximately 20 trains per day.[5]

[5] Mn/DOT Metro Railroads Train Volumes and Speeds Map. 2006.

Noise Modeling

The purpose of this noise analysis is to identify representative traffic noise levels associated with existing and projected traffic volumes on TH 55 in the project area. As previously described, the purpose of this EA is only to identify a TH 55 corridor design for right of way protection, which includes identifying the number of travel lanes needed to accommodate anticipated future traffic volumes and access locations. However, this does not include identifying the specific horizontal roadway alignment within the corridor, and also does not include identifying any specific changes in the vertical alignment of the future roadway. Because the horizontal and vertical alignments of the future roadway are unknown, a detailed traffic noise analysis is not feasible at this stage of the project development. As such, traffic noise will be modeled for this project to identify representative levels given existing and projected traffic volumes on TH 55. A more detailed traffic noise analysis will be completed when horizontal and vertical alignments have been defined.

Multiple assumptions were used to generate the noise model input files for this project. These assumptions include the following:

- For the purposes of this noise analysis, it was assumed that TH 55 would be reconstructed along its existing alignment throughout the project corridor (i.e., the roadway centerline would not change from existing and No-Build conditions to future Build conditions);
- Existing TH 55 is a four-lane roadway from I-494 in Plymouth to 1,500 feet west of Arrowhead in Medina. The Build condition noise model runs assumed that the proposed improvements (i.e., expansion to six-lane section) could be constructed within the existing right of way[6];
- The distance from eastbound centerline to the westbound centerline in the urban/suburban and suburban fringe areas was assumed to be 60 feet. It was assumed that this 60-foot distance between centerline to centerline was uniform throughout the urban/suburban and suburban fringe portions of the project corridor;
- The distance between the eastbound centerline and the westbound centerline would be the same from existing and No-Build conditions to future Build conditions. This assumption applied only to the urban/suburban and urban models where existing TH 55 is a four-lane section and would be reconstructed as a six-lane section under Build conditions (Note that refinements were made to the design since the noise analysis was completed; however, the refinements resulted in conditions very similar to the model.);

[6] The 2030 forecast traffic volumes presented in the 2005 TH 55 Future Traffic Demand Study for Scenario 6 (six-lane at-grade facility from CR 116 to I-494, and four-lane at-grade facility from CR 116 to Rockford) were used as a basis for the 2030 Build forecasts of the preferred alternative because a four-lane grade-separated facility is very similar to a six-lane at-grade expressway from a regional model forecast.

- Existing TH 55 is a two-lane roadway from 1,500 feet west of Arrowhead Drive to Rockford. The Build condition noise model input files assumed that the proposed improvements (i.e., expansion to four-lane section) could not be constructed within existing right of way and new right of way would be necessary to accommodate the roadway improvements;

- The distance from the eastbound centerline to the westbound centerline in the rural area was assumed to be 90 feet. It was assumed that this 90-foot distance between centerline to centerline was uniform throughout the rural area of the project corridor (Note that refinements were made to the design since the noise analysis was completed; however, the refinements resulted in conditions very similar to the model.);

- Existing and future (No-Build and Build) condition noise model input files assumed no changes in the vertical alignment of the existing or proposed roadway, and assumed no changes in elevation between the roadway and modeled noise receivers;

- All noise receivers were modeled at five feet above the existing roadway surface;

- The noise analysis assumed no change in topography between existing and proposed roadways and modeled receiver locations, and modeled receiver locations were assumed to have the same elevation as the roadway (e.g., "flat earth" analysis). This condition more than likely reflects a worst-case scenario with respect to traffic noise levels; and

- Existing and future (No-Build and Build) condition noise model input files assumed an acoustically soft ground cover (e.g., vegetation) between the roadway and modeled receiver locations.

Noise levels were modeled using TH 55 traffic volumes at three locations along the project corridor. These three locations were identified to represent a range of traffic volumes and land uses along the project corridor, and are described below:

- Urban/suburban: TH 55 between I-494 and Plymouth Boulevard. Existing TH 55 is a four-lane roadway at this location. Land use north of TH 55 at Plymouth Boulevard is residential. Land use south of TH 55 is commercial/industrial. This portion of the TH 55 corridor is characterized by several closely-spaced, at-grade intersections (relative to TH 55 to the west);

- Suburban Fringe: TH 55 between Rockford Road (CSAH 9) and CSAH 101 South. Existing TH 55 is a four-lane roadway at this location. Land use south of TH 55 is a mix of commercial and residential uses. Land use north of TH 55 is residential, with commercial uses at the TH 55/CSAH 9/CSAH 24 intersection; and

- Rural: TH 55 west of CR 116. TH 55 transitions from a four-lane roadway to a two-lane roadway west of Arrowhead Drive. Traffic volumes on TH 55 decrease further to the west of this segment by approximately 200 to 400 vehicles during the peak periods under existing conditions. Traffic volumes from TH 55 west of Arrowhead Drive on the existing two-lane roadway were modeled because these higher volumes, relative to volumes further to the west on the existing two-lane roadway, represent a worst-case scenario.

  Noise modeling was done using the noise prediction program "MINNOISE", a version of the FHWA "STAMINA" model adapted by Mn/DOT. This model uses traffic volumes, speed, class of vehicle, and the typical characteristics (e.g., roadway alignment) of the roadway being analyzed. An acoustically "soft" surface (alpha=0.5) was assumed in all noise model input files. The vehicle class percentages used for all roads for daytime and nighttime model input files were as follows: automobiles and light trucks, 94 percent; medium trucks, one percent; and heavy trucks, five percent. The heavy truck percentage used in the noise model input files was determined from Mn/DOT 2004 heavy commercial average annual daily traffic (HCAADT) counts.[7] Free-flow posted speed limits (55 miles per hour) were used in all noise model runs for existing, future No-Build, and future Build conditions.

  Daytime and nighttime peak hour modeled traffic volumes were assigned to each segment for existing (year 2005), future No-Build (year 2030), and future Build (year 2030) conditions. The Build Alternative noise models utilized traffic volumes from Scenario 6 as described in the 2005 Traffic Study as a worst-case scenario because traffic volumes were anticipated to be greatest under this scenario. Scenario 6 includes a four-lane roadway section (i.e., two lanes in both the east- and westbound directions) from the Hennepin County boundary in Rockford east to CR 116, and a six-lane roadway section (i.e., three lanes in both the east- and westbound directions) from CR 116 to I-494. All county and local road intersections with TH 55 under Scenario 6 were at-grade intersections.

  A MINNOISE input file was developed for each of the three locations described above. Each input file was designed based on the existing or proposed roadway section. Noise levels were modeled at 100 foot intervals from the roadway centerline out to 400 feet. Past 400 feet from the roadway centerline, noise levels were modeled at 200 feet intervals, until modeled noise levels were at or below state daytime or nighttime noise standards. As such, the first receiver at 100 feet from the roadway centerline is near the roadway right of way limits.

[7] Mn/DOT 2004 Trunk Highway Traffic Volumes. St. Paul-Minneapolis and Suburban Area.

Receivers were modeled south of the TH 55 corridor for nighttime noise models because traffic volumes are greater along eastbound TH 55 during the morning peak hour period. As a result, receivers south of TH 55 would be expected to experience higher traffic noise levels during the nighttime period as compared to the daytime period because of this directional nature of travel patterns. Conversely, receivers north of TH 55 would be expected to experience higher traffic noise levels during the afternoon period when traffic volumes are greatest along westbound TH 55. As such, receivers were modeled north of TH 55 for the daytime period models.

Peak noise levels also do not always correspond to peak traffic hours. This is the case when increased congestion during the morning and afternoon peak hours causes reduced speeds. To account for this phenomenon, default traffic volumes were used in the noise models when traffic models indicated that operational LOS on a particular roadway was LOS D or worse. An operational LOS C is considered free-flow conditions for purposes of traffic noise models.

Intersection operations analyses were used as a proxy to determine the operational level of service on a roadway segment in the urban/suburban area in Plymouth where intersections are more closely spaced together. Under these conditions where adjacent intersections operate at LOS D or worse, traffic queues may prevent vehicles from reaching free-flow speeds between the intersections. In this case, a default volume of 650 vehicles per lane per hour was used in the urban area in Plymouth. In the suburban fringe and rural areas, where intersection spacing is greater, vehicles may reach free-flow speeds even though consecutive intersections are operating at LOS D or worse. As a result, a higher default LOS C traffic volume can be used when appropriate. In this case, a default volume of 900 vehicles per lane per hour was used.

Noise Model Results

Representative daytime noise modeling results along TH 55 are shown in Tables 27A (urban), 27B (suburban fringe), and 27C (rural) for existing, future No-Build (year 2030) and future Build (year 2030) conditions. Representative nighttime noise modeling results along TH 55 are shown in Tables 28A (urban), 28B (suburban fringe), and 28C (rural) for existing, future No-Build (year 2030) and future Build (year 2030) conditions. State standards and federal NAC for residential land uses are also shown in each table.

TABLE 27A
TRUNK HIGHWAY 55 NOISE MODEL RESULTS – REPRESENTATIVE DAYTIME LEVELS (URBAN/SUBURBAN)

Distance from roadway centerline	Existing (2005)		No Build (2030)		Difference Between No Build (2030) – Existing (2005)		Build (2030)		Difference Between Build (2030) – Existing (2005)	
	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
100 feet	**75.3**	**68.1**	**75.3**	**68.1**	0	0	**76.0**	**68.8**	0.7	0.7
200 feet	**69.2**	**64.1**	**69.2**	**64.1**	0	0	**69.4**	**63.9**	0.2	-0.2
300 feet	**65.9**	**61.5**	**65.9**	**61.5**	0	0	**65.9**	**61.3**	0	-0.2
400 feet	63.6	59.6	63.6	59.6	0	0	63.6	59.5	0	-0.1
600 feet	-	-	-	-	-	-	-	-		
800 feet	-	-	-	-	-	-	-	-		
1,000 feet	-	-	-	-	-	-	-	-		
State Standards	65	60	65	60	-	-	65	60	-	-
Federal NAC	70	-	70	-	-	-	70	-	-	-

Bold numbers exceed State noise standards for residential land uses.
NOTE: Noise levels presented in this table are representative levels based on traffic volumes on this segment of TH 55 and the assumptions listed above, and do not represent actual noise levels based on a final design.

TABLE 27B
TRUNK HIGHWAY 55 NOISE MODEL RESULTS – REPRESENTATIVE DAYTIME LEVELS (SUBURBAN FRINGE)

Distance from roadway centerline	Existing (2005)		No Build (2030)		Difference Between No Build (2030) – Existing (2005)		Build (2030)		Difference Between Build (2030) – Existing (2005)	
	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
100 feet	**76.1**	**69.2**	**76.6**	**70.0**	0.5	0.8	**78.2**	**72.3**	2.1	3.1
200 feet	**69.7**	**64.6**	**70.4**	**65.8**	0.7	1.2	**71.8**	**67.8**	2.1	3.2
300 feet	**66.3**	**61.9**	**67.0**	**63.1**	0.7	1.2	**68.4**	**65.1**	2.1	3.2
400 feet	63.8	59.8	64.7	**61.1**	0.9	1.3	**66.0**	**63.0**	2.2	3.2
600 feet	60.3	56.7	61.2	58.0	0.9	1.3	62.6	59.8	2.3	3.1
800 feet	-	-	-	-	-	-				
1,000 feet	-	-	-	-	-	-				
State Standards	65	60	65	60	-	-	65	60	-	-
Federal NAC	70	-	70	-	-	-	70	-	-	-

Bold numbers exceed State noise standards for residential land uses.

NOTE: Noise levels presented in this table are representative levels based on traffic volumes on this segment of TH 55 and the assumptions listed above, and do not represent actual noise levels based on a final design.

TABLE 27C
TRUNK HIGHWAY 55 NOISE MODEL RESULTS – REPRESENTATIVE DAYTIME LEVELS (RURAL)

Distance from roadway centerline	Existing (2005)		No Build (2030)		Difference Between No Build (2030) – Existing (2005)		Build (2030)		Difference Between Build (2030) – Existing (2005)	
	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
100 feet	**72.4**	**66**	**72.4**	**66**	0	0	**76**	**69.9**	3.6	3.9
200 feet	**67.5**	**62.2**	**67.5**	**62.2**	0	0	**70.2**	**65.8**	2.7	3.6
300 feet	64.4	59.7	64.4	59.7	0	0	**67**	**63.2**	2.6	3.5
400 feet	62.2	57.8	62.2	57.8	0	0	64.7	**61.2**	2.5	3.4
600 feet	58.8	54.8	58.8	54.8	0	0	61.2	58.1	2.4	3.3
800 feet	-	-	-	-	-	-	-	-	-	-
1,000 feet	-	-	-	-	-	-	-	-	-	-
State Standards	65	60	65	60	-	-	65	60	-	-
Federal NAC	70	-	70	-	-	-	70	-	-	-

Bold numbers exceed State noise standards for residential land uses.

NOTE: Noise levels presented in this table are representative levels based on traffic volumes on this segment of TH 55 and the assumptions listed above, and do not represent actual noise levels based on a final design.

TABLE 28A
TRUNK HIGHWAY 55 NOISE MODEL RESULTS – REPRESENTATIVE NIGHTTIME LEVELS (URBAN/SUBURBAN)

Distance from roadway centerline	Existing (2005)		No Build (2030)		Difference Between No Build (2030) – Existing (2005)		Build (2030)		Difference Between Build (2030) – Existing (2005)	
	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
100 feet	**72.8**	**64.7**	**73.0**	**65.0**	0.2	0.3	**74.8**	**67.5**	2.0	2.8
200 feet	**67.0**	**60.8**	**67.2**	**61.2**	0.2	0.4	**68.8**	**63.5**	1.8	2.7
300 feet	**63.7**	**58.3**	**64.0**	**58.7**	0.3	0.4	**65.5**	**61.0**	1.8	2.7
400 feet	**61.4**	**56.4**	**61.7**	**56.8**	0.3	0.4	**63.2**	**59.0**	1.8	2.6
600 feet	**58.0**	**53.4**	**58.2**	**53.8**	0.2	0.4	**59.8**	**56.0**	1.8	2.6
800 feet	**55.4**	**51.0**	**55.7**	**51.4**	0.3	0.4	**57.2**	**53.6**	1.8	2.6
1,000 feet	53.3	49.0	53.6	49.4	0.3	0.4	**55.1**	**51.5**	1.8	2.5
State Standards	55	50	55	50	-	-	55	50	-	-
Federal NAC	70	-	70	-	-	-	70	-	-	-

Bold numbers exceed State noise standards for residential land uses.
NOTE: Noise levels presented in this table are representative levels based on traffic volumes on this segment of TH 55 and the assumptions listed above, and do not represent actual noise levels based on a final design.

TABLE 28B
TRUNK HIGHWAY 55 NOISE MODEL RESULTS – REPRESENTATIVE NIGHTTIME LEVELS (SUBURBAN FRINGE)

Distance from roadway centerline	Existing (2005)		No Build (2030)		Difference Between No Build (2030) – Existing (2005)		Build (2030)		Difference Between Build (2030) – Existing (2005)	
	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
100 feet	**73.8**	**65.9**	**74.3**	**66.7**	0.5	0.8	**75.9**	**69.0**	2.1	3.1
200 feet	**67.6**	**61.6**	**68.3**	**62.6**	0.7	1.0	**69.7**	**64.6**	2.1	3.0
300 feet	**64.3**	**59.0**	**65.0**	**60.1**	0.7	1.1	**66.3**	**62.0**	2.0	3.0
400 feet	**61.9**	**57.0**	**62.6**	**58.2**	0.7	1.2	**63.9**	**60.0**	2.0	3.0
600 feet	**58.4**	**53.9**	**59.1**	**55.1**	0.7	1.2	**60.4**	**56.9**	2.0	3.0
800 feet	**55.8**	**51.5**	**56.6**	**52.7**	0.8	1.2	**57.8**	**54.4**	2.0	2.9
1,000 feet	53.6	49.4	54.5	**50.7**	0.9	1.3	**55.7**	**52.4**	2.1	3.0
State Standards	55	50	55	50	-	-	55	50	-	-
Federal NAC	70	-	70	-	-	-	70	-	-	-

Bold numbers exceed State noise standards for residential land uses.
NOTE: Noise levels presented in this table are representative levels based on traffic volumes on this segment of TH 55 and the assumptions listed above, and do not represent actual noise levels based on a final design.

TABLE 28C
TRUNK HIGHWAY 55 NOISE MODEL RESULTS – REPRESENTATIVE NIGHTTIME LEVELS (RURAL)

Distance from roadway centerline	Existing (2005)		No Build (2030)		Difference Between No Build (2030) – Existing (2005)		Build (2030)		Difference Between Build (2030) – Existing (2005)	
	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}	L_{10}	L_{50}
100 feet	**69.8**	**62.3**	**70**	**62.7**	0.2	0.4	**73.6**	**66.4**	3.8	4.1
200 feet	**65.1**	**58.7**	**65.3**	**59**	0.2	0.3	**68.0**	**62.5**	2.9	3.8
300 feet	**62.1**	**56.3**	**62.3**	**56.6**	0.2	0.3	**64.8**	**60.0**	2.7	3.7
400 feet	**59.9**	**54.4**	**60.1**	**54.8**	0.2	0.4	**62.5**	**58.1**	2.6	3.7
600 feet	**56.6**	**51.5**	**56.8**	**51.8**	0.2	0.3	**59.1**	**55.0**	2.5	3.5
800 feet	54.0	49.1	54.3	49.4	0.3	0.3	**56.5**	**52.6**	2.5	3.5
1,000 feet	52.0	47.1	52.2	47.4	0.2	0.3	54.4	**50.6**	2.4	3.5
State Standards	55	50	55	50	-	-	55	50	-	-
Federal NAC	70	-	70	-	-	-	70	-	-	-

Bold numbers exceed State noise standards for residential land uses.

NOTE: Noise levels presented in this table are representative levels based on traffic volumes on this segment of TH 55 and the assumptions listed above, and do not represent actual noise levels based on a final design.

The daytime and nighttime traffic noise levels within each segment along the TH 55 corridor are discussed below. While both the L_{10} and L_{50} descriptors are shown in the tables, the discussion of modeling results presented below only references the L_{10} values, because the L_{10} descriptor is used to define both the state and federal noise level regulatory thresholds. In addition, while there are different state and federal regulatory thresholds for the various types of existing and future land uses along the TH 55 corridor, the following discussion compares the noise model results to the more restrictive residential land use regulatory threshold only.

It is important to note that the results shown above and described below illustrate representative traffic noise levels, given the model assumptions and traffic volumes that were used to generate the model input files and the model output. The noise analysis results describe distances from the TH 55 corridor where state and federal regulatory noise thresholds are anticipated to be exceeded for residential land uses based on the assumptions used to generate the model input files and the traffic volumes used with each model run. These distances should only be used as a reference guide in community planning to help minimize future noise impacts (see Conclusions section below), and do not necessarily represent distances from the TH 55 corridor where state and federal regulatory noise thresholds would be exceeded based on final roadway design.

Urban/Suburban

Within the urban/suburban section of the corridor in Plymouth, state daytime noise standards are exceeded up to 300 feet from the roadway under all modeled conditions. A less than 1 dBA (L_{10}) increase is estimated from existing to future Build conditions at 100 feet from the roadway.

State nighttime noise standards are exceeded under existing (2005) conditions up to 800 feet from the roadway. Future Build conditions are anticipated to be near state nighttime noise standards 1,000 feet from the roadway. Traffic noise levels are estimated to increase by approximately 2 dBA (L_{10}) at all modeled locations from existing to future Build conditions.

Federal noise abatement criteria for residential land uses would be exceeded at 100 feet from the roadway under future Build conditions, and would be approached (69 dBA, L_{10}) at 200 feet from the roadway. A federally defined noise impact (i.e., $\geq$ 5 dBA increase from existing to future Build conditions) is not anticipated at any of the modeled receptor locations.

Suburban Fringe

At the existing suburban fringe of the project corridor between Plymouth and Medina, state daytime noise standards are exceeded up to 300 feet from the roadway under existing (2005) and future No-Build conditions. State daytime noise standards are anticipated to be exceeded up to 400 feet from the corridor under future Build conditions. Estimated traffic noise levels 600 feet from the

corridor under Build conditions are 62.6 dBA (L_{10}), below state daytime noise standards. An estimated 2 dBA (L_{10}) increase is anticipated from existing to future Build conditions along the project corridor.

State nighttime noise standards are exceeded under existing conditions up to 600 feet from the roadway, are near state nighttime noise standards at 800 feet from the roadway, and meet state nighttime noise standards at 1,000 feet from the roadway. Future No-Build conditions are also anticipated to meet state nighttime noise standards 1,000 feet from the roadway. Estimated traffic noise levels 1,000 feet from the project corridor are 55.7 dBA (L_{10}) under future Build conditions, above state nighttime noise standards. Distances greater than 1,000 feet from the roadway would be necessary to meet state nighttime noise standards within the suburban fringe area, assuming no intervening structures or barriers.

Federal noise abatement criteria for residential land uses would be exceeded at 200 feet from the roadway under future Build conditions, and would likely be approached (69 dBA, L_{10}) between 200 feet and 300 feet from the roadway. Anticipated noise levels at 300 feet from the roadway (68.4 dBA) are below the 69 dBA level considered approaching the federal noise abatement criteria. A federally defined noise impact (i.e., $\geq$ 5 dBA increase from existing to future Build conditions) is not anticipated at any of the modeled receptor locations.

Rural

At the rural portion of the project corridor, state daytime noise standards are exceeded up to 200 feet from the roadway under existing (2005) conditions, and are below state daytime noise standards at 300 feet from the roadway. A similar pattern was observed for future No-Build conditions. State daytime noise standards are anticipated to be met at 300 feet from the roadway under future No-Build conditions.

Traffic noise levels are estimated to increase by 2.4 to 3.6 dBA (L_{10}) from existing to future Build conditions. Estimated traffic noise levels 300 feet from the roadway are 67.0 dBA (L_{10}), above state daytime noise standards. Estimated traffic noise levels 400 feet from the roadway under Build conditions are anticipated to be below state daytime noise standards (64.7 dBA; L_{10}).

State nighttime noise standards are exceeded under existing and future No-Build conditions up to 600 feet from the roadway, and are estimated to be below state nighttime noise standards at 800 feet from the roadway. Estimated traffic noise levels 1,000 feet from the project corridor are 54.4 dBA (L_{10}) under future Build conditions, which is below state nighttime noise standards.

Federal noise abatement criteria for residential land uses would be exceeded at 200 feet from the roadway under future Build conditions, and would be approached (69 dBA, L_{10}) between 200 feet and 300 feet from the roadway. A federally defined noise impact (i.e., $\geq$ 5 dBA increase from existing to future Build conditions) is not anticipated at any of the modeled receptor locations.

Noise Abatement Policies

FHWA Noise Abatement Policy

The project proposes to protect right of way for the future reconstruction of a high volume, arterial roadway to provide additional capacity through an area that consists of both residential and commercial land uses, as well as currently undeveloped lands. As described above, locations adjacent to the project corridor will be exposed to noise levels that exceed both state standards (daytime and nighttime) and federal noise abatement criteria (i.e., noise impact).

The future reconstruction of TH 55 may be considered a Type I project for purposes of additional noise analysis. A Type I project is the construction of a new highway on a new alignment or the physical alteration of an existing highway (e.g., change in horizontal or vertical alignment; increase in number of through lanes). 23 CFR 772.13(c) describes noise abatement measures that are to be considered when a noise impact has been identified with a Type I highway project. These noise abatement measures include:

- Traffic management measures (e.g., traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive land designations);
- Alteration of horizontal and vertical alignments;
- Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers;
- Construction of noise barriers (including landscaping for aesthetic purposes) whether within or outside the highway right of way;
- Acquisition of real property or interests therein (predominately unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise; and
- Noise insulation of public use or nonprofit institutional structures.

Mn/DOT Noise Barrier Analysis Policy

Mn/DOT's policy regarding noise barrier analysis is described below. Any future TH 55 reconstruction project would need to meet the following criteria:[8]

- The receptors adjacent to the project corridor shall have predicted future noise levels which exceed the State noise standards shown in Table 25, or where predicted future noise levels exceed existing noise levels by 5 dBA or more;

[8] Mn/DOT Policy for Type I and Type II Federal-aid Projects as per 23 CFR 772. November 30, 2006. http://www.dot.state.mn.us/environment/noise_analysis/policy.html.

- The cost effectiveness of the barrier shall not exceed $3,250/dBA/residence for residential receptors. A receptor's inclusion in the cost effectiveness calculation shall be contingent on the receptor receiving a minimum 5 dBA reduction due to the construction of the barrier[9]; and

- The barrier project shall have been found feasible (e.g., engineering or physical constraints) and reasonable (e.g., cost effective).

Specific noise mitigation measures described above have not been considered as part of the project development at this time. The evaluation of noise mitigation measures requires a detailed knowledge of the horizontal and vertical alignment of the proposed roadway. Because of the uncertainties described in the noise modeling methodology section (e.g., horizontal and vertical alignments unknown), the evaluation of noise mitigation measures cannot be completed with the level of accuracy necessary to justify noise mitigation decisions (i.e., feasibility and reasonableness).

The noise abatement measures listed above in 23 CFR 772 will be evaluated as part of future environmental documentation and project design. Where applicable, this will include the evaluation of noise barriers (i.e., noise walls), consistent with FHWA and Mn/DOT policy, where predicted noise levels exceed state noise standards, or where predicted noise levels result in a substantial increase compared to existing conditions (increase of 5 dBA or greater).

Conclusions

Construction of the analyzed TH 55 improvements would generally result in increases in noise due to increases in traffic, although these increases are in the range of 0 to 3.8 dBA (L_{10}). A sound increase of 3 dBA is barely perceptible to the human ear, whereas a 5 dBA increase is noticeable. In general, state daytime noise standards for residential land uses are anticipated to be exceeded up to 300 feet from TH 55 under future conditions. Modeled daytime noise levels 400 feet from TH 55 are estimated to be below state daytime noise standards.

Because the state nighttime noise standard is more restrictive for residential land uses relative to the daytime standard, the nighttime standard is anticipated to be exceeded at greater distances from the roadway. In general, modeled nighttime noise levels 800 feet from TH 55 are estimated to be below state nighttime noise

[9] Mn/DOT Noise Policy for Type I and Type II Federal Aid Projects as per 23 CFR 772. For Mn/DOT to consider constructing noise barriers (Type I) on new Federal-aid highway projects or projects where major reconstruction is planned, the following criteria shall be met: A) The receptors shall have predicted future noise levels which exceed the levels in Table 23 (except for Industrial areas where FHWA category C criteria in Table 24 apply) or exceed existing noise levels by 5 dBA or more. B) The cost effectiveness of the barrier shall not exceed $3250/dBA/residence in 1997 dollars for residential receptors. A receptor's inclusion in the cost effectiveness calculation shall be contingent on the receptor receiving a minimum 5 dBA reduction due to the construction of the barrier. Mn/DOT may annually adjust this cost effectiveness figure up or down based on changes in the construction price index after 1997.

standards. Within the developed areas of Plymouth closer to I-494, nighttime noise levels are anticipated to be below state nighttime noise standards at distances greater than 1,000 feet from the TH 55 corridor, assuming no intervening structures between the roadway and receiver location.

It is important to note that the results summarized above are representative traffic noise levels, given the assumptions and traffic volumes that were used to generate the noise model input files and the model output, and do not represent absolute traffic noise levels.

The results of this analysis can be used as a guide for local governments responsible for planning and land use controls within their community to help prevent future traffic noise impacts on currently undeveloped lands. Based on the traffic noise modeling completed for this EA, future residential developments located at least 400 feet from the TH 55 corridor would meet state daytime noise standards, if no site plan elements such as berms or barriers are incorporated into the development. Future residential developments located at least 800 feet from the TH 55 corridor would meet state nighttime noise standards if no site plan elements are incorporated into the development. While these distances are not reflective of future conditions based on a final roadway design, they can be used as a tool when contemplating land use decisions along the project corridor.

Examples of site plan elements that could reduce noise on residential developments include berms, fencing, and increased setbacks. Vegetation is only effective if it is at least 100 feet deep, tall enough to block views of the roadway, and dense enough so that the roadway can not been seen through the vegetation (e.g., branches down to ground level with trees/shrubs planted very close together so there are no gaps in the vegetation). As such, the depth, height, and density of vegetation needed make vegetative screening is not practical as an element to reduce noise levels. Vegetative screening is more effective in providing aesthetic benefits and acting as a visual barrier. Commercial buildings directly adjoining the roadway would also block some traffic noise for residential receptors, as well as increasing the distance between the roadway and residences, resulting in noise levels potentially meeting state standards at residential areas closer to the roadway.

A more detailed noise analysis will be completed with the next phase of the environmental documentation for the project. This analysis will include noise modeling at specific receiver locations along the project corridor, along with an analysis of noise abatement measures. This analysis of noise abatement measures will include the consideration of noise barriers where warranted.

25. Nearby Resources.

Are any of the following resources on or in proximity to the site?
Archaeological, historical or architectural resources? _X_ Yes __ No
Prime or unique farmlands or land within an agricultural preserve? _X_ Yes __No

Designated parks, recreation areas or trails? X Yes ___No
Scenic views and vistas? __Yes _X No
Other unique resources? __Yes _X_ No

If yes, describe the resource and identify any project-related impacts on the resource.

Archaeological, Historical or Architectural Resources

The proposed project has been reviewed pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended), in accordance with 36 CFR 800. Mn/DOT Cultural Resource Unit (CRU), acting on behalf of FHWA, established the Area of Potential Effect (APE) for both archaeology and architectural history. The APE encompasses properties within, and adjacent to, the TH 55 right of way.

Phase I and II Cultural Resource Studies were conducted within an APE that extended along the TH 55 corridor from Plymouth to Annandale. The TH 55 Plymouth to Rockford project area is within this larger APE. For the purposes of this EA/EAW, only findings for sites within the Plymouth to Rockford project area are reported.

A Phase I Archeological Survey was completed in 2006. The APE and Phase I survey area for archaeology falls within the Central Deciduous Lakes archaeological subregion and consists of a corridor that extended 250 feet on either side of the proposed TH 55 centerline in rural areas and varied in urban areas. In Plymouth, the APE and Phase I survey area included only the right of way. An archaeological survey was not conducted for areas south and west of the CP Rail (formerly the Soo Line Railroad) right of way because the proposed project will not cross the CP Rail right of way.

There are no previously identified NRHP-eligible archeological sites in the portion of the APE within the project area. Five pre-contact archeological sites were identified in the portion of the APE within the project area during Phase I evaluations. A Phase II study, including these five sites, was completed in 2006. None were recommended to be eligible for listing in the National Register of Historic Places (NRHP) after Phase II studies were completed.

Phase I and II Architecture/History Surveys were also completed in 2006. The APE for architecture/history extends 500 feet on either side of TH 55 in rural areas, and 250 feet on either side of TH 55 in urban areas. In Plymouth, the APE widens to encompass residential properties that may be affected by new traffic patterns at the intersection of Niagara Lane/Plymouth Drive and TH 55. Where the CP Rail parallels TH 55, the APE ended at the CP Rail right of way.

Many sites within this APE were identified to be 40 years or older, and were therefore examined in the Phase I Architecture/History study. Only one site in the portion of the APE within the project area, the Krayjewski Farmstead in Greenfield Township, was identified as potentially NRHP-eligible. Based on the Phase II study, the Krayjewski Farmstead was determined to not be eligible for the NRHP.

The former Soo Line Railroad main line running between Minneapolis and Boynton, North Dakota (now the CP Rail) was previously recommended eligible for the NRHP as a railroad corridor historic district and therefore was not investigated in the current study; however, its listing remains current. The portion of the railroad corridor within the project APE is still in operation and retains its historically significant features; therefore, it is a contributing portion of the historic district. Bridge 5847 carrying the rail line over TH 55 will be replaced to accommodate the improvements to TH 55. Bridge 5847 was built in the 1940s and post-dates the railroad corridor historic district's period of significance (1886-1906) and is not a contributing element of the railroad corridor historic district. The bridge is not eligible for the NRHP as an individual property.

No right of way will be acquired from the railroad. The rail line will retain its existing alignment, and the rail line within the historic district will remain active.

Determination of Effect

A shoo-fly (temporary track) will be built to carry the rail line during roadway construction. The project will impact a very limited segment of the railroad corridor historic district by removing a non-contributing bridge and small portions of the adjoining grade to accommodate a new, longer bridge.

The Mn/DOT Cultural Resources Unit (CRU) and the Minnesota Historical Society, State Historic Preservation Office (SHPO) reviewed the project (SHPO Number 2006-1447) to determine if any properties eligible or listed on the NRHP would be impacted within the project areas. The CRU stated that the project does not appear to have adverse effects on the Soo Line Railroad NRHP-eligible site. The CRU also stated that its Section 106 determination of effects would be more appropriate for individual right of way projects as they are proposed, and as the assessment of eligible properties is reviewed and updated, as appropriate, via the NEPA documentation process.

Refer to Appendix B for the CRU and SHPO correspondence. The complete Phase I and Phase II Cultural Resources studies can be reviewed at Mn/DOT, 395 John Ireland Boulevard, St. Paul, MN.

Future Determinations

As previously noted, the expansion of TH 55 is not currently programmed in the Mn/DOT 20-year plan and there is currently no funding for construction of the Preferred Alternative. The EA/EAW process is intended to support the future use of federal funding for right of way protection and to allow for smaller improvement projects, consistent with the design concept, to be implemented as funding becomes available. At the time that construction projects are proposed, the assessment of eligible properties and determination of effect under Section 106 will be reviewed and updated as appropriate.

Prime or Unique Farmlands or Land Within an Agricultural Preserve

Many of the soil types identified in Section IV.A.19.b are prime farmland, prime farmland if drained, or farmland of statewide importance. The Farmland Protection Policy Act (PL 97-98, dated December 22, 1981) assigns responsibility to the NRCS for monitoring the effects of federal programs or money on the conversion of farmland to non-agricultural uses. A Farmland Conversion Impact Rating form for Corridor Type Projects (NRCS-CPA-106) was completed and sent to the Regional Service Center of the NRCS for agency review. The completed NRCS-CPA-106 form assigned the alignment a total impact rating of 140.2 points. Under 7 CFR658.4 (c)(2), sites receiving a total score of less than 160 need not be given further consideration for protection, and no additional sites need be evaluated. The conversion calculations are based on the acres of land that would change under this proposed project (i.e., new alignment) and do not include the existing road alignment that is incorporated into the project. The completed form and responses from the NRCS are attached (Appendix B).

Since this expansion of TH 55 will not occur for 20 years or more, it is difficult to quantify the impacts to farmland. Given that most communities in the corridor have identified TH 55 as a growth area, primarily for commercial properties (see Section IV.A.9), it is unlikely that much of this property will remain in farmland by the time this project is constructed.

The Bleck property, north of TH 55 and east of CSAH 92, is in Metropolitan Agricultural Preserve Program. Approximately one acre of this property will be impacted by the proposed project. As noted, due to the project timeframe, it is not known whether the affected property will be in the program at the time of project construction.

Designated Parks, Recreation Areas or Trails

Parks

Lake Rebecca Park Reserve and Lake Sarah Regional Park are both located within one mile of the TH 55 corridor in Greenfield. They are located south of TH 55 between Rockford and Lake Sarah. There will be no direct impacts to the

parks because they are located south of the CP Rail, and therefore well outside of the construction limits. Traffic operations at the CSAH 92 intersection will be improved under Build conditions, thereby improving access to the parks.

Trails

The proposed project does not include any provision for a trail within the right of way, due to the high speed and heavy traffic volumes forecast to use the facility. This was confirmed based on discussions with corridor cities, which are planning east-west trail connections in the general corridor, but not directly along TH 55.

Existing and planned trails in the project corridor are shown in Figure 11. As shown, several trails exist within the project corridor, including Three Rivers Park District trails. Most of the existing trails are north-south trails that cross TH 55. In the eastern portion of TH 55, these crossings will have improved safety due to grade-separated interchanges. West of CR 116, planned crossings in Medina, Corcoran, and Rockford will be longer due to expansion of the corridor. There are four planned trail crossings; if warranted, signal timing at these intersections will be designed to allow for adequate bicyclist and pedestrian crossing.

Communities throughout the corridor have indicated areas of planned trails along and crossing TH 55. With future right of way for the roadway established, communities will be able to incorporate plans for the proposed improvements into their planning for future trails.

The Northwest Trails Association, a non-profit group, also maintains snowmobile trails within the project area, including one that parallels TH 55 from near I-494 in Plymouth to Mohawk Drive in Medina and one that crosses TH 55 between Pioneer Trail and CSAH 19. The trail that parallels TH 55 is not likely to be impacted due to its alignment south of the CP Rail corridor, outside of construction limits. However, snowmobile crossings at points along the corridor may be impacted by access closure or expansion of the TH 55 corridor.

Private horse trails are also located throughout Medina, and are an important part of its rural culture; however, these are not located in the immediate corridor.

Mn/DOT will continue to work with corridor communities to allow for safe, attractive trail connections and crossings.

26. Visual Impacts.

Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks?
__Yes _X_No

If yes, explain.

27. Compatibility with Plans and Land Use Regulations.

Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency?

__Yes __X__No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

See Section IV.A.9 (Land Use) for information about compatibility with city comprehensive plans and land use regulations.

Current land use conditions along the TH 55 corridor from Rockford to Plymouth include commercial, industrial, agricultural, open space, and residential. As the proposed project is not programmed (i.e., not in Mn/DOT's 20-year plan), land use change is expected to occur prior to construction. The purpose of preparing a concept design for right of way protection is to help ensure compatibility of the proposed project with future land use.

Current land use plans for each of the five corridor communities (Plymouth, Medina, Corcoran, Greenfield, and Rockford) were evaluated to assess compatibility with the proposed project. Several plans highlight specific efforts to develop industrial and commercial land uses along TH 55. As such, TH 55 is expected to be compatible, and in some places beneficial, for currently planned land uses. As noted above, these planned land uses which occur on city plans for future land use may change before any construction occurs. The official mapping of the project will provide the county and existing and future landowners with better guidance in future land use decision-making.

28. Impact On Infrastructure and Public Services.

Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project?

__ Yes _X_ No

All changes in local roadways required because of proposed improvements to TH 55 are included in the project definition and assessed for impacts.

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

29. Cumulative Impacts.

Minnesota Rule part 4410.1700, subpart 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts *(or discuss each cumulative impact under appropriate item(s) elsewhere on this form).*

Cumulative impacts analysis takes into account an array of potential actions and their impacts that are unrelated to the proposed action (Build Alternative), except to the extent that their impacts may, in combination with the impacts from the proposed action, result in adverse impacts.

Direct and indirect impacts of the Build Alternative have been discussed in other sections of this EA/EAW. Cumulative impacts are causally linked to the Build Alternative, but are the total effect of federal and non-federal actions (past, present, and future) with similar impacts in a broader geographic area. The purpose of cumulative impacts analysis is to look for impacts that may be minimal and therefore neither significant nor adverse when examined in the context of the proposed action, but that may accumulate and become significant and adverse over a larger number of actions.

Scope

Cumulative impacts analysis is limited to those resources, ecosystems, and human communities affected by the proposed Build Alternative – contaminated properties, wetlands, storm water quality and quantity, and uses sensitive to traffic noise. The direct and indirect effects of the proposed project on these resources are discussed elsewhere in this document.

The geographic scope of this analysis varies by the resource under examination, but in general is limited to an area proximate to the project limits.

The temporal scope of the analysis attempts to consider previous impacts to resources in the past, as well as anticipating events extending to 2030, which is the Build analysis year for traffic.

Actions

Past actions in the project area include decades of residential and commercial/industrial development, as well as highway and other infrastructure construction, which has created the existing built environment. The city of Plymouth has experienced a substantial amount of retail development at major

intersections with TH 55 in recent years. Further west in the corridor, development has recently occurred along TH 55 at its intersection with CSAH 92 and CSAH 101. The Hennepin County Public Works facility located south of TH 55 at Arrowhead Drive was constructed in 1998; commercial/industrial use in the southeast quadrant of the TH 55/Arrowhead Drive intersection occurred twenty years earlier. Development near TH 55 at Willow Drive occurred from the late 1970s through the 1980s.

Development along TH 55 is planned between CSAH 92 and Vernon Drive, between Pioneer Trail and Rolling Hills Drive, and in the areas around the CR 116 and CSAH 101 intersections. Redevelopment in Plymouth, particularly near the I-494 interchange, is likely in the future.

As discussed previously, each of the corridor cities is updating its comprehensive plan with future land use and transportation improvements. Over the planning timeframe for the proposed project, development of agricultural land and open space can be expected to continue and redevelopment of currently developed land can be expected to occur.

Local roadway system improvements are planned or identified as potential connections as noted on Figures 4A-4I, and include:

- Connection between Koala Street and TH 55
- Connection between 69th Avenue N and CSAH 92 (south side of TH 55)
- Connection between CSAH 92 and Vernon Street (north and south of TH 55)
- Connection between Vernon Street and Hidden Lane (north of TH 55)
- Realignment of Sioux Trail to form an improved connection with TH 55
- Realignment and extension of Sioux Trail to Greenfield Road (north of TH 55)
- Connection of Greenfield Road to Yvette Street (north of TH 55)
- Addition of a frontage road from Sioux Trail east to serve properties south of TH 55
- Realignment of Town Hall Drive to connect to TH 55 at Town Line Road (north of TH 55)
- Connection between Town Line Road and Pioneer Trail (north and south of TH 55)
- Connection between Pioneer Trail and Rolling Hills Drive (north of TH 55)
- Connection between Willow Drive and Arrowhead Drive (south of TH 55)
- Connection between Rolling Hills Drive and Willow Drive (north of TH 55)
- Connection between Mohawk Drive and Arrowhead Drive (north of TH 55)

- Connection between Arrowhead Drive and CR 116 (north side of TH 55)
- Extension of Tamarack Drive north of TH 55 to connect with the connection between Arrowhead Drive and CR 116
- Connection between CR 116 and CSAH 101 (north side of TH 55)
- Connection between CSAH 101 and Old Rockford Road via Clydesdale Trail (north of TH 55)
- Connection between CSAH 101 (N) and CSAH 101 (S) on south side of existing TH 55

Improvements to the CR 116 intersection are currently being planned by the City of Medina. As noted, planning for improvements to the I-494 mainline between I-394 and the Fish Lake interchange is currently underway. It is expected that the TH 55/ I-494 interchange will be reconstructed under a future project. A project to expand capacity on TH 55 between Annandale and Rockford is in its initial stages.

Evaluation of Potential Cumulative Impacts

Contaminated Properties

Twenty-two (22) properties with right of way impacts are identified as having high or medium risk potential for contamination. Three of these are identified as having high risk potential; the proposed project would require partial acquisitions from these three properties.

As noted, it is possible that the portions of the corridor, including impacted properties with medium or high risk potential for contamination, will be redeveloped during the planning timeframe for the proposed project. At the time of redevelopment of any of these properties, Mn/DOT and the local communities will work to reserve or acquire right of way as needed. Any contamination that is encountered as part of development of the remainder of the properties will be addressed consistent with MPCA requirements. Therefore, there is little potential for cumulative impacts due to disturbance of contaminated sites.

Storm Water Quality and Quantity/Soil Erosion

The project will increase the amount of impervious surface in the corridor, thereby increasing stormwater runoff carrying common roadway pollutants. Stormwater management will utilize BMPs, including conveyance of runoff to water quality ponds.

The project corridor also has several areas of erodible land, posing potential water quality concerns during construction. Use of BMPs will control erosion and sedimentation during project construction.

The western portion of the corridor is expected to transition from rural to suburban during the planning timeframe for the proposed project. Land development and extension of local roadway systems will continue to convert farmland and open space to impervious surface (structures and pavement), also increasing potential for stormwater runoff impacts, as well as erosion/sedimentation impacts during construction.

However, because all development will be subject to the regulatory requirements for land use development, including stormwater management, there is little potential for cumulative impacts on water quality. As noted, implementation of measures to meet current water treatment regulatory requirements may actually improve water quality over existing conditions.

Wetlands

Approximately 25 acres of wetland impacts and five acres of ditch impacts are expected with the proposed project. These will be mitigated in accordance with permitting requirements. It is expected that three acres of wetlands will be constructed in the project area.

As noted above, the corridor will continue to develop. Previous actions may have resulted in filling of wetlands through the area in the more distant past, but current local, state, and federal regulations have strictly controlled wetland filling activities in the more recent past. Wetlands in Minnesota are protected by federal law (the Clean Water Act – Section 404) and state law (Minnesota Wetland Conservation Act and Executive Orders) that mandate the "no net loss" concept of wetland functions and values. These laws require the avoidance of wetland impacts when possible, and when avoidance is not possible, impacts must be minimized and mitigated. Both the DNR and the Wetland Conservation Act require mitigation of wetland impacts on at least a 2:1 ratio. Given the extensive regulations protecting wetlands and the 2:1 replacement requirement for lost wetlands, there is low potential for cumulative impacts on wetlands.

Traffic Noise

The proposed project will increase traffic noise in the corridor; however, because the noise analysis was based on projected 2030 Build traffic levels, the impacts from other development in the project corridor (i.e., cumulative impact) have already been accounted for in the results.

Right of Way

Approximately 129 acres of right of way will be obtained for the project, removing land from other uses including agricultural, open space, residential, and commercial/industrial. Other planned roadways will, in total, result in a substantial conversion of land to right of way as this corridor develops. However, this will be consistent with adopted city and county plans for the purpose of ensuring an adequate transportation network. All right of way impacts are subject to state and federal law.

30. Other Potential Environmental Impacts. If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

No potential environmental impacts are anticipated other than those discussed above.

31. Summary of Issues. ***Do not complete this section if the EAW is being done for EIS scoping; instead, address relevant issues in the draft Scoping Decision document, which must accompany the EAW.*** **List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.**

The following discussion outlines the impacts and issues that will require further action. Where applicable, mitigation measures have been identified.

Contaminated Property

Twenty-two properties with right of way impacts are identified as having high or medium potential for contamination, including three that are proposed stormwater pond locations. Prior to construction, these properties will be drilled and sampled if necessary to determine the extent and magnitude of contaminated soil or groundwater. If necessary, a plan will be developed for properly handling and treating contaminated soil and/or groundwater during construction. Once actual ponding locations are identified and further investigation of sites is completed, it will be determined whether any ponds should be lined to avoid flushing any existing contaminants into the groundwater.

Blanding's Turtle

A "known concentration" area of Blanding's Turtles (a state threatened species) is located in the vicinity of the project area near Rolling Green Country Club. Due to previous development in the area, it is unlikely that the proposed project will have significant additional impacts. Measures to avoid impacts to, and provide greater protection of this area will be implemented. During final design, measures to further minimize potential impacts to aforementioned resources, such as those discussed in Section IV.a.11.b, will be considered.

Wetland Impacts

Approximately 25 acres of wetland impacts are expected with this project. Mitigation for these impacts is currently under review, utilizing research completed by Hennepin County Environmental Services staff. Efforts to identify and secure mitigation sites will continue as project design moves forward.

Application for permits for wetland impacts will be submitted to the U.S. Army Corps of Engineers, the DNR, and the project area watershed districts. Approval

of these permits is anticipated, as regulatory agencies have been involved with the review of this project. Mitigation for wetland impacts is anticipated to be provided through the Board of Soil and Water Resources (BWSR) wetland replacement program for public transportation projects.

Soil Erosion

There is a potential for erosion during construction, due to the presence of several areas of Highly Erodible or Potentially Highly Erodible Land. Impacts to wetland water quality will be minimized by the use of water quality improvement features (BMPs). Erosion prevention and sediment control during construction will include silt fences and traps, temporary seeding and mulching, and use of erosion control blankets on slopes. Sedimentation ponds will be constructed as early in the project as practicable in order to trap sediment during construction. Excess fill material will not be deposited into wetlands or other environmentally-sensitive areas.

Floodplains

Numerous floodplain encroachments will occur; however, no permanent impacts to water quality are expected, and no significant increased risk of flooding will result.

Stormwater

This project will result in an additional 47 percent of impervious surfaces in the corridor. Stormwater generated from the proposed project will be directed to the greatest extent feasible to appropriate BMPs. The proposed project will feature a stormwater conveyance system that will provide up to 60 percent total phosphorus removal and 90 percent total suspended solids removal, thereby mitigating the adverse effects of the increased impervious surfaces and pollutant generation. Stormwater runoff from the project will not likely have a significant impact on the water quality of identified receiving water bodies, and may actually improve it over existing conditions.

Access Changes

This project will result in numerous access changes for local properties. Direct access to TH 55 will be limited for safety reasons, with many access points being eliminated when improvements are constructed. Many of these points will be provided access via proposed alternative routes. Where this is not feasible, some access points will be allowed to remain until a future land use change occurs.

Noise

Construction of the analyzed TH 55 improvements would generally result in slight increases in noise due to increases in traffic. Based on traffic noise modeling, state daytime noise standards for residential land uses are anticipated

to be exceeded up to 300 feet from TH 55; state nighttime noise standards may be exceeded 800-1,000 feet from the corridor. Given that these are modeled results, they do not represent absolute traffic noise levels, but can be used as a guide for local governments in planning local land use.

Right of Way

Approximately 129 acres of right of way will be obtained for the proposed project. In total, 198 parcels will be affected; 16 of these will be total acquisitions. The acquisition and relocation of property will be conducted in accordance with federal regulations. Because this project will not be built for many years, official mapping will allow communities to plan changes in land use and for efficient right of way protection when funding is available.

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

I hereby certify that:

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

Copies of this EAW are being sent to the entire EQB distribution list.

Signature _____ **Date** _____

Title _____

By affixing signature to the title/signature page at the front of this document, the Minnesota Department of Transportation, through its Chief Environmental Officer, affirms that all of the stipulations described above have been met.

Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at Minnesota Planning. For additional information, worksheets or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN 55155, 651-296-8253, or www.mnplan.state.mn.us

B. Additional Federal Issues

Discussed below are the federal issues not discussed in the EAW.

1. Social Impacts

The EAW portion of this document addresses impacts due to noise and visual quality. Environmental justice impacts are addressed in Section B.2. Right of way impacts are addressed in Section B.4. The proposed project is not expected to cause any adverse impact to any community or neighborhood. No categories of people uniquely sensitive to transportation (e.g., children, elderly, minorities, persons with mobility impairments) will be unduly impacted.

Businesses and residents within the study area will experience some changes in access with the proposed project. These impacts are discussed in detail in Section IV.A.21. Although these access changes result in more circuitous travel routes for some property occupants, the increased travel distances are offset by improved safety and decreased delays at intersections within the study area (compared to the No-Build Alternative).

Community facilities directly adjacent to the project corridor include:

- Park Nicollet Clinic (3007 Harbor Lane N., Plymouth). This property will be impacted as a total acquisition for right of way for the buttonhook interchange at Fernbrook Lane.
- Riverwood Covenant Church (7953 Highway 55, Rockford – Note that the church services are held at the Rockford High School. The future site of the church will be located at the northeast corner of Vernon and Highway 55.) At its current address, a proposed city street will provide access. The direct access to TH 55 will be closed.
- West Health Building – Clinics and Health Care (2855 Campus Drive – Northwest corner of CR 61 and TH 55). The footprint assumed for a future reconstruction of the TH 55/I-494 interchange will impact a portion of this property.

Other community facilities include:

Schools

- Alternative Program – Minnesota Department of Education (4955 Peony Lane, Plymouth)
- St. Peter and Paul Academy (150 Railway Street East, Loretto)
- Rockford High School (7600 CR 50, Rockford)
- Rockford Elementary School (7650 CR 50, Rockford)

Churches

- St. Barnabas Lutheran Church (15600 Old Rockford Road, Plymouth)
- Plymouth Covenant Church (4300 Vicksburg Lane N, Plymouth)
- St. Anne Catholic Church (and cemetery) (2000 Hamel Road, Medina)
- Church of Jesus Christ of Latter Day Saints (Trail Lane/Hackamore Road, Hamel)
- St. Peter and Paul Catholic Church (150 Railway Street E, Loretto)
- Proposed Cemetery (West of Rolling Hills, South of TH 55, near Peter Lake)

Community/City Properties

- Plymouth City Offices (Police, Fire, Medical) (3400 Plymouth Boulevard, Plymouth). Roadway changes will occur at Niagara Lane which will improve community access due to reduced congestion.
- Loretto Fire Department (259 North Medina Street, Loretto)
- Greenfield (old) City Hall (6390 Town Hall Drive, Greenfield)
- Greenfield City Village Hall (Fire) (7738 Commerce Circle, Greenfield)

Hospitals/Health Care

- Superior Home Health Care Service (342 Cherry Hill Court, Hamel)
- Fortin Health and Wellness Clinic (149 Hamel Road, Hamel)

Other

- Hennepin County Public Works Facility (1600 Prairie Drive, Medina)
- Minnesota Department of Public Safety (2455 Fernbrook Lane N, Plymouth)
- Hennepin County Public Library (15700 36th Avenue N, Plymouth)

In general, access to community facilities may be somewhat more circuitious for a few properties that currently have direct access to TH 55, but this will be more than offset by the benefit from reduced congestion and improved safety.

2. Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 1, 1994, requires that environmental justice be addressed (to the greatest extent practicable and permitted by law) in all federal planning and programming activities. The purpose of Executive Order 12898 is to identify, address, and avoid disproportionately high and adverse human health or environmental

effects of programs, policies and activities on minority populations and low-income populations. The proposed project has federal permit requirements and will receive federal funding. As such, it is considered a federal project for the purpose of compliance with this Executive Order.

Executive Order 12898 requires that the proposed actions be reviewed to determine if there are 'disproportionately' high or adverse impacts on these populations. 'Disproportionate' is defined in two ways: the impact is 'predominantly borne' by the minority or low-income population group, or the impact is 'more severe' than that experienced by non-minority or non-low income populations. The steps for defining environmental justice impacts includes the following:

1. Identification of the location of low-income population and/or minority population in the project area;
2. Identification of the impacts of the project area upon the identified low-income population and/or minority population; and
3. Determination of whether the impacts are disproportionately high or adverse.

a. Project Area Demographics

The first step in the environmental justice determination process is to determine whether any minority and/or low-income persons are present within the project area. For the purposes of environmental justice, a low-income population or minority population is defined as a population of people or households located in close geographic proximity meeting the racial or income criteria set forth in Executive Order 12898.

Information on population characteristics of the project area was obtained from Census 2000 data and discussions with local planning staff. For purposes of this analysis, data were examined at the Census block group level. See Figure 12.

Data concerning total population and racial composition within the project area is shown in Table 29A.

As indicated in Table 29A, the 2000 population of the study area is predominantly white. The percentage of non-whites within each of the 11 Census block groups of the study area (two percent to 12 percent) is notably smaller than Hennepin County as a whole (19 percent). The most numerous minority group present are Asians; however, they represent only 5.3 percent of the total in the study area population.

Comparisons can also be drawn to individual cities along the corridor. The block group in Greenfield (Tract 270.01, Block Group 1) is adjacent to TH 55 and encompasses all of the city. In Corcoran, Tract 271.02, Block Group 4, has slightly fewer minorities than the entire city (two percent

versus three percent). Tract 271.01, Block Group 1, is in the city of Medina. Its minority population, at four percent, is only slightly higher than that of the city as a whole (three percent). Finally, seven of the block groups along the corridor are in Plymouth. Minorities in these block groups range from seven percent to 12 percent. The percentage of minorities in the entire community lies in the middle of that range, at nine percent.

Data used for the determination of low-income communities include two variables: (1) persons living below the poverty level; and (2) median household income. These data were collected at the Census block level and are summarized in Table 29B.

As shown, the percentage of individuals below the poverty level in the project area is less than Hennepin County as a whole. All cities along the corridor have a population below the poverty level that is no greater in the project area than in the respective communities.

Median household and family incomes in all of the Census block groups encompassing the project area exceed the median household income of Hennepin County, except in Tract 265.14, Block Group 4. In Greenfield, Corcoran, and Medina, median household and family incomes in general are only slightly lower than that of these cities as a whole. In Plymouth, the block groups in the project area show diversity in incomes, with some block groups having lower than the median and some having higher than the median.

Communications with city staff and property managers indicate that a population with above average percentage of low-income individuals is located at the Tower Terrace Mobile Home Park (Greenfield Homes), north of TH 55 in Rockford. The park, which includes approximately 65 mobile homes, is located within Census Tract 270.01, Block Group 1. This block group does not have a greater percentage of individuals under the poverty level than other block groups in the project area. This block group does not have a larger percentage of people below the poverty level than other block groups in the corridor, nor does it have a lower median income. Tower Terrace Mobile Home Park staff contacted for this study indicated that approximately 20 percent of the residents might be considered low-income individuals. According to staff, there are no individuals that would be categorized as minorities within the Park.

The property manager was informed of all public meetings and asked to distribute newsletters to residents at the Tower Terrace Mobile Home Park.

b. Environmental Justice Impacts

There are no direct right of way impacts on the mobile home park. Direct access to the mobile home park from TH 55 will be converted to right-in/right-out. In addition, alternate access may be provided as part of future city road system development.

TABLE 29A
POPULATION, HOUSEHOLDS AND RACE – 2000 CENSUS

Demographic Group	Tract 265.14, Block Group 1		Tract 265.14, Block Group 2		Tract 265.14, Block Group 4		Tract 266.03, Block Group 2		Tract 266.03, Block Group 3		Tract 266.05, Block Group 1	
	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population
Households	542	NA	280	NA	496	NA	690	NA	1,640	NA	922	NA
Population	1,214	100	817	100	872	100	1,906	100	4,670	100	3,209	100
• White	1,068	89	741	91	806	92	1,687	86	4,249	91	2,982	93
• Minorities	146	12	76	9	66	8	219	11	421	9	227	7
-Black	34	3	26	3	16	2	39	2	85	2	16	<1
-American Indian, Eskimo, Aleut	0	0	2	<1	1	<1	5	<1	6	<1	8	<1
-Asian or Pacific Islander	84	7	24	3	39	4	135	7	274	6	165	5
-Other Race	5	<1	4	<1	4	<1	8	<1	9	<1	15	<1
-Two or More Races	23	2	14	2	14	2	31	2	99	2	55	2
• Hispanic Origin (1)	23	2	20	2	6	1	32	2	47	1	23	1

Source: Year 2000 U.S. Census Data for Hennepin County.
(1) Hispanic Origin is also counted under the white or other categories, therefore population totals and percentages will add up to more than 100 percent.

Demographic Group	Tract 266.11, Block Group 1		Tract 270.01, Block Group 1		Tract 270.02, Block Group 1		Tract 271.01, Block Group 1		Tract 271.02, Block Group 4		Hennepin County Total	
	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population
Households	383	NA	874	NA	526	NA	317	NA	351	NA	456,129	NA
Population	1,260	100	2,688	100	1,553	100	1,039	100	1,023	100	1,116.200	100
• White	1,158	92	2,624	98	1,518	98	996	96	1,004	98	898,921	81
• Minorities	102	8	64	2	40	3	43	4	19	1.8	216,748	19
-Black	18	1	10	<1	2	<1	5	<1	0	0	99,943	9
-American Indian, Eskimo, Aleut	1	<1	7	<1	4	<1	0	<1	19	2	11,163	1
-Asian or Pacific Islander	66	5	16	1	16	1	30	3	0	0	53,555	5
-Other Race	0	0	7	<1	3	<1	0	<1	0	0	23,046	2
-Two or More Races	12	1	24	1	18	1	2	<1	0	0	45,439	3
• Hispanic Origin (1)	17	1	24	1	10	1	8	1	0	0	29,041	4

TABLE 29A continued
POPULATION, HOUSEHOLDS AND RACE – 2000 CENSUS

	Rockford		Greenfield		Corcoran		Medina		Plymouth	
	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population	Number	% of Population
Households	1,296	NA	817	NA	1,784	NA	1,309	NA	24,820	NA
Population	3,484	100	2,544	100	5,630	100	4,005	100	65,894	100
• White	3,399	98	2,486	98	5,444	97	3,898	97	60,200	91
• Minorities	85	2	58	2	186	3	107	3	5,694	9
-Black	14	<	10	<	11	<1	19	<1	1,783	3
-Indian/Eskimo	18	<	6	<1	11	<1	9	<1	217	<1
-Asian	19	<	16	<	99	2	49	1	2,504	4
-Other	5	<	5	<	21	<1	7	<1	328	<1
-Two or More Races	35	1	20	1	49	1	33	1	1,079	2
• Hispanic Origin	29	1	21	1	44	<1	23	<1	862	1

TABLE 29B
U.S. CENSUS DATA, HENNEPIN COUNTY
INCOME AND POVERTY – 2000 CENSUS

Demographic Group	Tract 265.14			Tract 266.03		Tract 266.05
	Block Group 1	Block Group 2	Block Group 4	Block Group 2	Block Group 3	Block Group 1
Population	1,308	768	838	1,872	4,692	3,209
Number of Households	542	280	496	690	4,640	922
Number of Families	284	223	215	512	1,268	858
Median household income in 1999 (dollars)	$55,441	$79,008	$48,628	$94,620	$94,363	$110,834
Median family income in 1999 (dollars)	$57,353	$80,000	$49,643	$101,538	$107,538	$111,024
Per capita income in 1999 (dollars)	$25,454	$28,262	$33,950	$41,080	$40,155	$36,530
Percent of population for whom poverty status is determined – all ages (income in 1999 below poverty level) (2)	3	2	1	1	2	1
Percent of families for whom poverty status is determined (income in 1999 below poverty level)	3	<1	<1	2	<1	<1

Source: Year 2000 U.S. Census Data for Hennepin County
(2) Numbers are less/more than population numbers, as poverty status determined for smaller areas such as block groups use weighted samples.

Demographic Group	Tract 266.11	Tract 270.01	Tract 270.02	Tract 271.01	Tract 271.02	Hennepin County
	Block Group 1	Block Group 1	Block Group 1	Block Group 1	Block Group 4	
Population	1,275	2,667	1,502	1,779	1,023	1,116,200
Number of Households	383	874	526	317	351	456,129
Number of Families	357	717	450	275	298	267,303
Median household income in 1999 (dollars)	$108,201	$78,494	$79,246	$78,271	$71,458	$51,711
Median family income in 1999 (dollars)	$107,913	$85,043	$83,900	$87,287	$80,178	$65,985
Per capita income in 1999 (dollars)	$41,215	$29,226	$39,549	$37,533	$27,557	$28,789
Percent of population for whom poverty status is determined – all ages (income in 1999 below poverty level) (2)	<1	2	<1	2	2	8
Percent of families for whom poverty status is determined (income in 1999 below poverty level)	<1	1	<1	1	2	5

Source: Year 2000 U.S. Census Data for Hennepin County
(2) Numbers are less/more than population numbers, as poverty status determined for smaller areas such as block groups use weighted samples.

Demographic Group	Rockford	Greenfield	Corcoran	Medina	Plymouth
Population	3,484	2,544	5,630	4,005	65,894
Number of Households	1,296	817	1,784	1,309	24,820
Number of Families	929	674	1,512	1,118	17,654
Median household income in 1999 (dollars)	$51,349	$80,933	$78,984	$88,887	$77,008
Median family income in 1999 (dollars)	$56,607	$86,032	$81,322	$96,909	$90,134
Per capita income in 1999 (dollars)	$20,675	$29,270	$29,467	$49,127	$36,309
Percent of population for whom poverty status is determined – all ages (income in 1999 below poverty level) (2)	7	2	1	1	3
Percent of families for whom poverty status is determined (income in 1999 below poverty level)	6	1	1	1	2

c. Environmental Justice Findings and Determinations

It is reasonable to assume that the project area contains minority and low-income individuals based on the Census block group data presented above. However, populations adjacent to the roadway corridor are not predominantly low-income or minority communities, nor are any reasonably identifiable minority populations present along the roadway corridor**.** One potentially low-income population was found in the project area. While this area is impacted by change in access, reasonable access accommodation is provided. The impact to access is beneficially offset by improved safety. The planning timeframe also provides opportunity for local planning for access provision over the long term. In addition, other corridor users will also experience changes in access that result in more circuitous travel (also with safer conditions and better operations). Therefore, there will be no disproportionate impact on the population.

3. Economics

The proposed reconstruction is not anticipated to result in any broad changes to existing land use patterns or diversion of significant traffic volumes from commercial routes. However, the Build Alternative would result in the conversion of some commercial and residential property to public right of way and some access changes to business areas. These impacts are discussed below.

a. Fiscal Impacts

The 2007 taxes payable for the parcels that would be total acquisitions equal approximately $365,000. According to the 2007 *Assessment Report*, the 2007 net taxes for Hennepin County are over $2 billion. Tax losses due to property acquisition for the proposed project represents a minor amount of the total taxes payable in the county and the corridor cities.

b. Impacts to Commercial Businesses

The proposed project would require total acquisition of 10 parcels that are currently occupied by businesses. Nine of these are in the city of Plymouth. Businesses impacted include a clinic, office, service, restaurant, and an industrial equipment supplier. Changeover is expected in businesses at these locations over time; some of the affected commercial parcels may undergo total redevelopment during the planning timeframe for this project. Where redevelopment does occur, it will provide the opportunity for Mn/DOT to work with local communities to reserve or acquire right of way with minimal impact to existing business owners and employees. Negative business impacts will be offset by improvements to access and safety within the corridor, which will benefit employees, customers, and goods movement.

4. Right of Way and Relocation

The purpose of the current TH 55 project is to define a corridor for right of way protection. The primary tool for right of way protection and the anticipated outcome of the EA/EAW process is official mapping. The process also allows the local government to encourage compatible land uses and development adjacent to the proposed corridor. For the TH 55 project, official mapping will allow right of way protection to occur efficiently when funding is available.

The proposed project (Figures 4A-4I) would require approximately 129 acres of right of way, affecting 198 parcels. Of the affected parcels, 16 would be total acquisitions. The land uses on these affected parcels and the resulting relocation needs may change by the time right of way is acquired for this project. Relocation considerations based on current land uses are discussed below.

Residential: Total residential acquisitions include three single family homes, one each in Greenfield, Corcoran, and Medina. As of January 2008, the estimated market value of the affected homes ranges from $225,000 to $400,000. Also as of January 2008, there are approximately 80 active residential properties available in the area with sales prices within this range of estimated market values, which could provide sufficient opportunity for relocation of affected households if it were to occur in the near future. Future land uses planned for these properties are, respectively, rural residential, business park, and mixed use, indicating that some change is expected to occur over time that could affect relocation needs.

Commercial/Industrial: Total commercial/industrial acquisitions include 13 businesses, all of which are in the city of Plymouth. The businesses include restaurant, service, medical and industrial uses and together employ approximately 350 people. Future land use planned for these properties is commercial. Redeveloping areas with the city are expected to provide opportunities for relocation of affected commercial businesses. Among the key commercial areas identified as potential redevelopment areas in the city of Plymouth's draft Land Use Plan (January 2008) are locations along TH 55 at CSAH 101, Rockford Road, Vicksburg Lane and I-494. In addition, the extensive commercial development planned by cities west of Plymouth (see Section IV.A.9) is expected to provide additional opportunities for affected businesses to be relocated within the TH 55 corridor.

The acquisition and relocation of property due to the proposed project will be conducted in accordance with the Uniform Relocation and Real Property Acquisition Act of 1970, as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987 and 49 Code of Federal Regulations, Part 24, and effective April 1989 (revised January 2005).

5. Indirect Impacts

As the expansion of TH 55 is assumed in the long-range land use planning of the corridor communities, any inducing of land use development due to improved accessibility is accounted for in the land use discussion in Section IVA, 9.

V. PUBLIC AND AGENCY INVOLVEMENT (AND PERMITS/APPROVALS)

A. Public Information Process Summary

A Project Management Team (PMT) was created early in the project development phase to facilitate communication between Hennepin County, Mn/DOT, and FHWA. A Stakeholder Involvement Plan was also developed and implemented early in the project development process to ensure communication among the county, cities, and public agencies throughout the development of the project. Elements of the public involvement plan include coordination and contact meetings, public information meetings, newsletters, and a project web site. An informational open house, public hearing, and public comment period for the EA/EAW are planned for 2008.

Public Involvement Meetings

Highway 55 Corridor Coalitions Meetings – ongoing

Representatives of Mn/DOT and Hennepin County attended the Highway 55 Corridor Coalition meetings approximately every other month to update the Coalition on project progress.

Early Coordination with City Staff – October 2006 to January 2007

Representatives of Mn/DOT and Hennepin County met with the staff of the cities of Rockford, Greenfield, Corcoran, and Medina to discuss major issues and areas of concern for each community. Topics discussed included compatibility with community plans and access management.

City Council Workshops – October 2006 to January 2007

City Council Workshops were held in the project area communities (Medina, Corcoran, Greenfield, Rockford, and Plymouth).

Representatives from Mn/DOT and Hennepin County met with the city councils and city staff to discuss design concept, access management, right of way acquisition, cost, compatibility with future transit plans, community planning, community approval of the plan, and schedule for implementation.

Public Open House – January 30, 2007

A Public Information Open House was held on Tuesday, January 30, 2007, from 5:30 p.m. to 7:30 p.m. in the Training Room of the Hennepin County Public Works Facility, Medina, Minnesota.

The Open House was publicized with press releases and newsletters that were mailed to landowners along the Highway 55 corridor using a mailing list provided by Hennepin County.

Representatives from Hennepin County and Mn/DOT were at the meeting to explain the project and answer questions. Approximately 70 persons attended the meeting. The

meeting was an informal open house and no formal presentation was given. Attendees viewed informational exhibits, engaged in one-on-one discussions with the project staff, and were encouraged to provide staff with their comments on the project. Twelve (12) written comments relating chiefly to access and right of way questions and concerns were provided. Project staff responded to comments that requested specific action.

City Staff Presentation of Preferred Alternative – May 2007

Representatives from Mn/DOT and Hennepin County presented the preliminary recommended Preferred Alternative to the staff from the five corridor cities and discussed local issues, in particular access management issues.

City Council Workshops – July 2007

City Council Workshops were held in the project area communities. Representatives from Mn/DOT and Hennepin County met with the city councils to present the preliminary Preferred Alternative and take comments and questions.

City Council Meetings – October to December 2007

In late 2007, project staff presented the preferred alternative to the city councils of the five affected communities at regularly scheduled city council meetings. The cities of Rockford, Medina, Corcoran, and Plymouth passed resolutions endorsing the concept design, with conditions related to specific issues or concerns.

Public Hearing

A public hearing will be held following the publication of this EA/EAW, in conjunction with the 30-day public comment period.

Newsletters

Project newsletters were distributed to area landowners in January 2007 to announce the Public Information Open House held on January 30, 2007. Those who owned property within a quarter mile of the TH 55 corridor were included in the mailing. Addresses for other interested community members were solicited at the Open House.

An additional newsletter was distributed in the summer of 2007 to update stakeholders about work being done to complete the project.

The third newsletter will be distributed to announce the Public Hearing for the EA/EAW document.

Press Releases

Mn/DOT Public Affairs personnel distributed press releases to announce the January 30, 2007 Open House. The public information meeting was publicized by local newspapers. A press release announcing the public hearing will be issued in conjunction with the release of the EA/EAW.

Web Site

A web site was developed on Mn/DOT's home page to provide the public with information about the project. Information on this site continues to be updated. The web site provides links to the maps, the concept design, newsletters, and updates on the project's progress. Additionally, the web site is linked to the Highway 55 Corridor Coalition web site.

Project Management Team

A Project Management Team (PMT) with staff members from FHWA, Mn/DOT, and Hennepin County was formed to review and provide input on the proposed project consistent with the policies of the agencies which they represent. The PMT met monthly to review the environmental process approach, traffic analyses, preliminary design, public involvement opportunities, and alternative decision-making.

Agency Coordination/Meetings

Early Coordination

Early coordination input was solicited from several agencies, including the DNR, Mn/DOT, the Three Rivers Park District, and the project area watershed districts (Elm Creek, Pioneer-Sarah Creek, Bassett Creek, and Minnehaha Creek). A summary of the comments and input of each agency follows.

Mn/DOT CRU consulted with SHPO per the Section 106 process as described in Section IV.A, 25.A.

A Minnesota Natural Heritage Database search revealed several known occurrences of state-protected rare species or natural communities in the area. Consultation with the DNR has been ongoing throughout the study. See Section IV.A.11 for discussion of impacts to the identified resources.

Numerous Mn/DOT functional groups were consulted for input on traffic, design, and environmental issues.

Water Resources Agency Early Coordination Meeting – January 30, 2007

Representatives from Mn/DOT, the Minnesota Pollution Control Agency (MPCA), the Army Corps of Engineers, local municipalities, and the affected watershed districts met to discuss initial project issues.

B. Permits and Approval Requirements

Table 30 lists the permits and approvals needed for the construction of the proposed project.

TABLE 30
PERMITS AND APPROVALS

Permit	Agency	Action Required
Federal		
Environmental Assessment	FHWA	Approval
Section 4(f) determination	FHWA	Approval
EIS Need Decision/FONSI	FHWA	Approval
Section 404 Authorization – General Permit/Letter of Permission (GP/LOP)	COE	Permit
Section 401	COE MPCA	Certification
State		
Environmental Assessment	Mn/DOT	Approval
EIS Need Decision	Mn/DOT	Approval
Construction Plans	Mn/DOT	Approval
Protected Waters	DNR (May be delegated to Watershed District)	Permit
Temporary Water Appropriation Permit (if needed)	DNR	Permit
Bridge and/or Culvert Plan	DNR	Approval
Section 401	MPCA/COE	Certification
National Pollutant Discharge Elimination System	MPCA	Permit
Section 106 (Historic / Archeological)	SHPO	Concurrence
Section 106	Mn/DOT Cultural Resources Unit (CRU)	Determination of Effect
Local		
EIS Need Decision	Hennepin County	Negative Declaration Expected
Plan Approval	Cities of Rockford, Greenfield, Corcoran, Medina, and Plymouth	Approval
Wetland Conservation Act (Mitigation Plan)	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination
Floodplain Permit	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination

TABLE 30 continued
PERMITS AND APPROVALS

Permit	Agency	Action Required
Local continued		
Shoreland Alteration Plan	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination
Wetland Alteration Plan	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination
Final Site Drainage Plan	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination
Public and Private Drainage Plan	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination
Bridge and/or Culvert Plan	Watershed Management Organizations: Elm Creek, Pioneer-Sarah Creek, Minnehaha Creek, Bassett Creek	Coordination

C. Public Comment Period and Public Hearing

A public hearing will run concurrent with the public comment period for the EA/EAW.

D. Report Distribution

Copies of this document have been sent to agencies, local government units, libraries, and others per Minnesota Rule 4410.1500 (Publication and Distribution of an EAW).

E. Process Beyond the Hearing

Following the comment period, Mn/DOT and the FHWA will make a determination as to the adequacy of the environmental documentation. If further documentation is necessary it could be accomplished by preparing an Environmental Impact Statement (EIS), by revising the EA/EAW, or providing clarification in the Findings of Fact and Conclusion, whichever is appropriate.

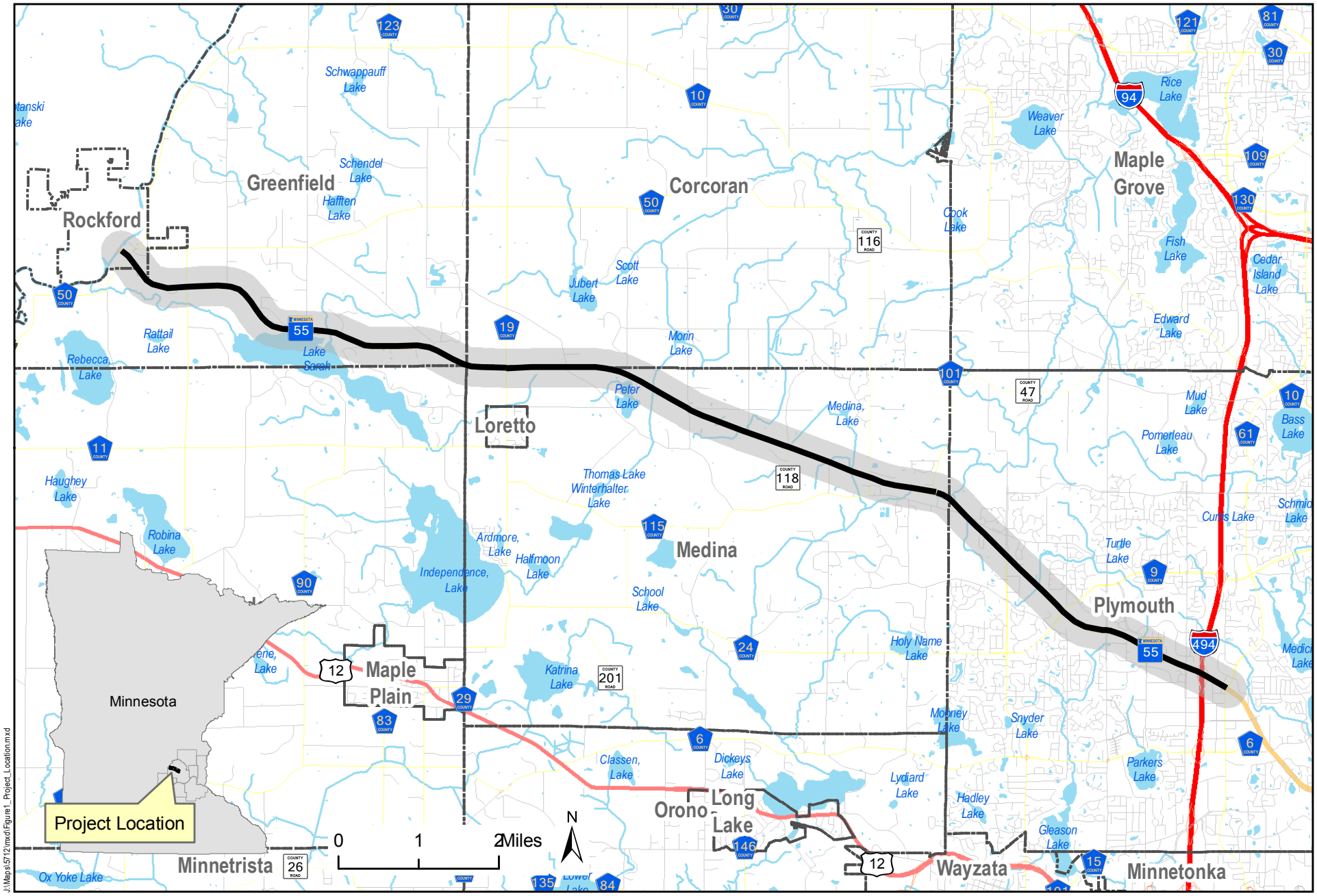
If an EIS is not necessary, Mn/DOT will prepare a “Negative Declaration” for the state environmental requirements. Mn/DOT will also prepare a request for a “Finding of No Significant Impact” (FONSI) that will be submitted to the FHWA. If the FHWA agrees that this finding is appropriate, it will issue a FONSI.

Notices of the federal and state decisions and availability of the above documents will be placed in the Minnesota Environmental Quality Board (MEQB) Monitor. Mn/DOT will also distribute the Negative Declaration and FONSI to the Environmental Assessment Worksheet (EAW) distribution list and publish notices in local newspapers announcing the environmental and project alternative decisions that were made.

APPENDICES

APPENDIX A

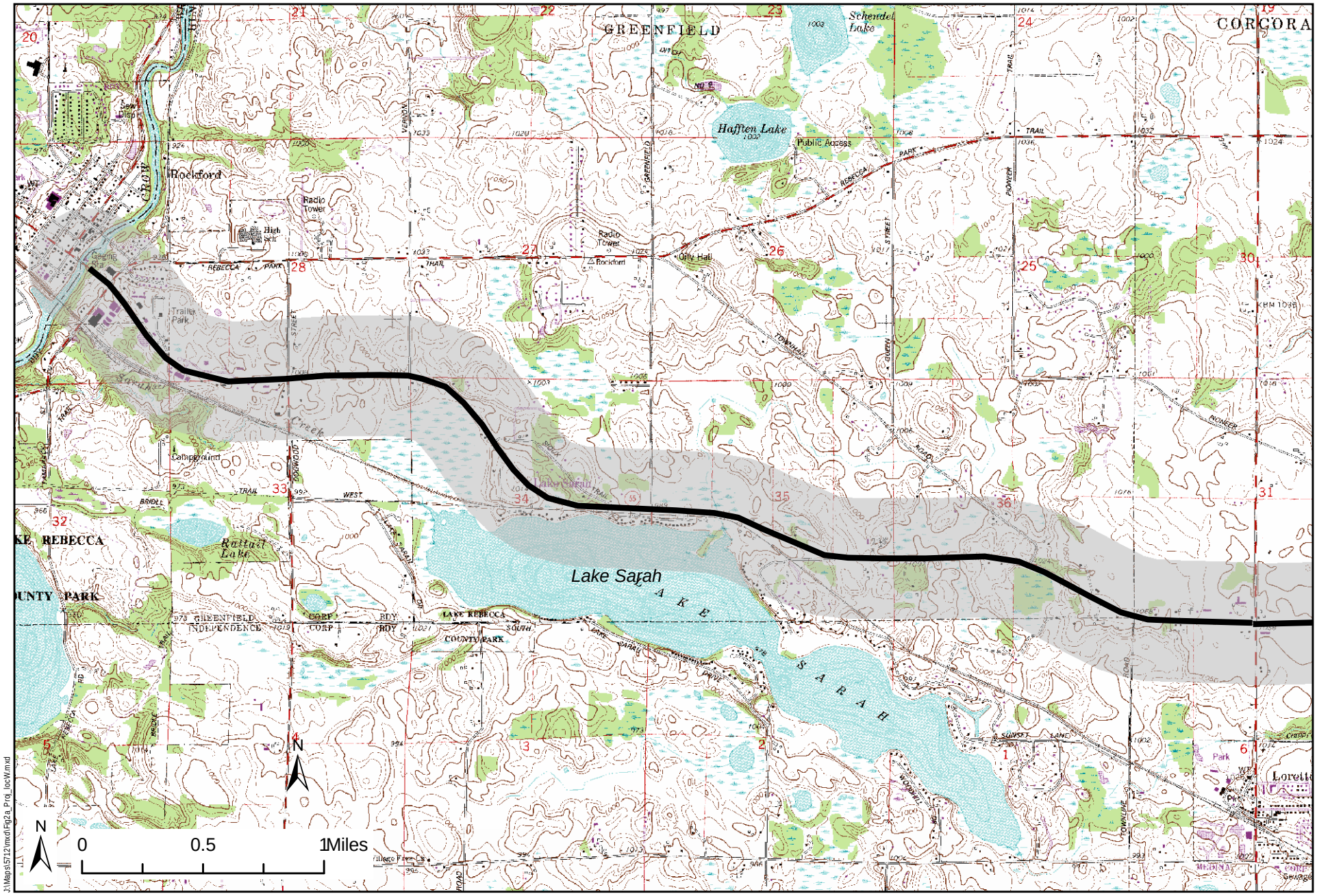
FIGURES



PROJECT LOCATION

Figure 1

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



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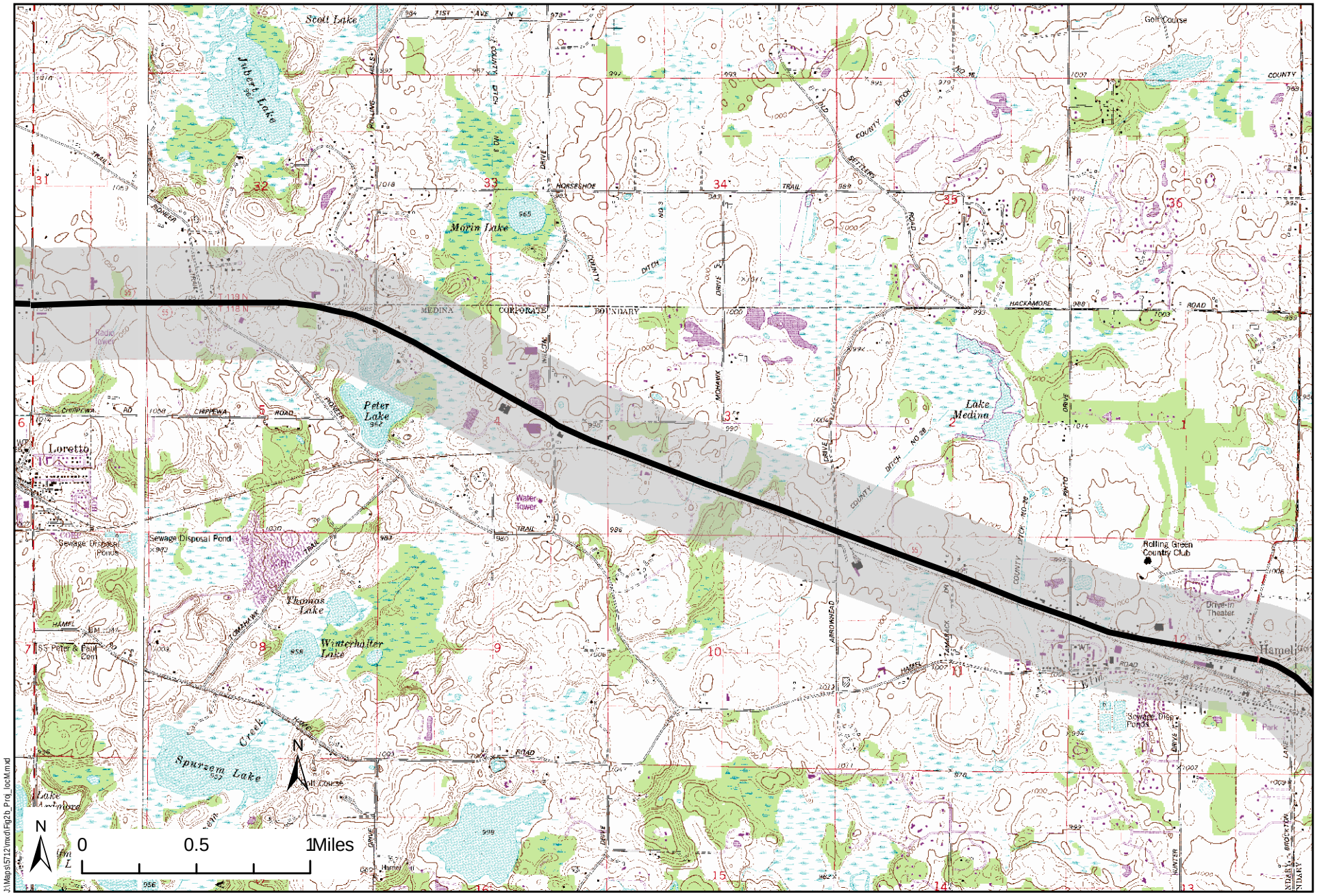
24K USGS: PROJECT LOCATION - WEST SEGMENT

Figure 2A

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

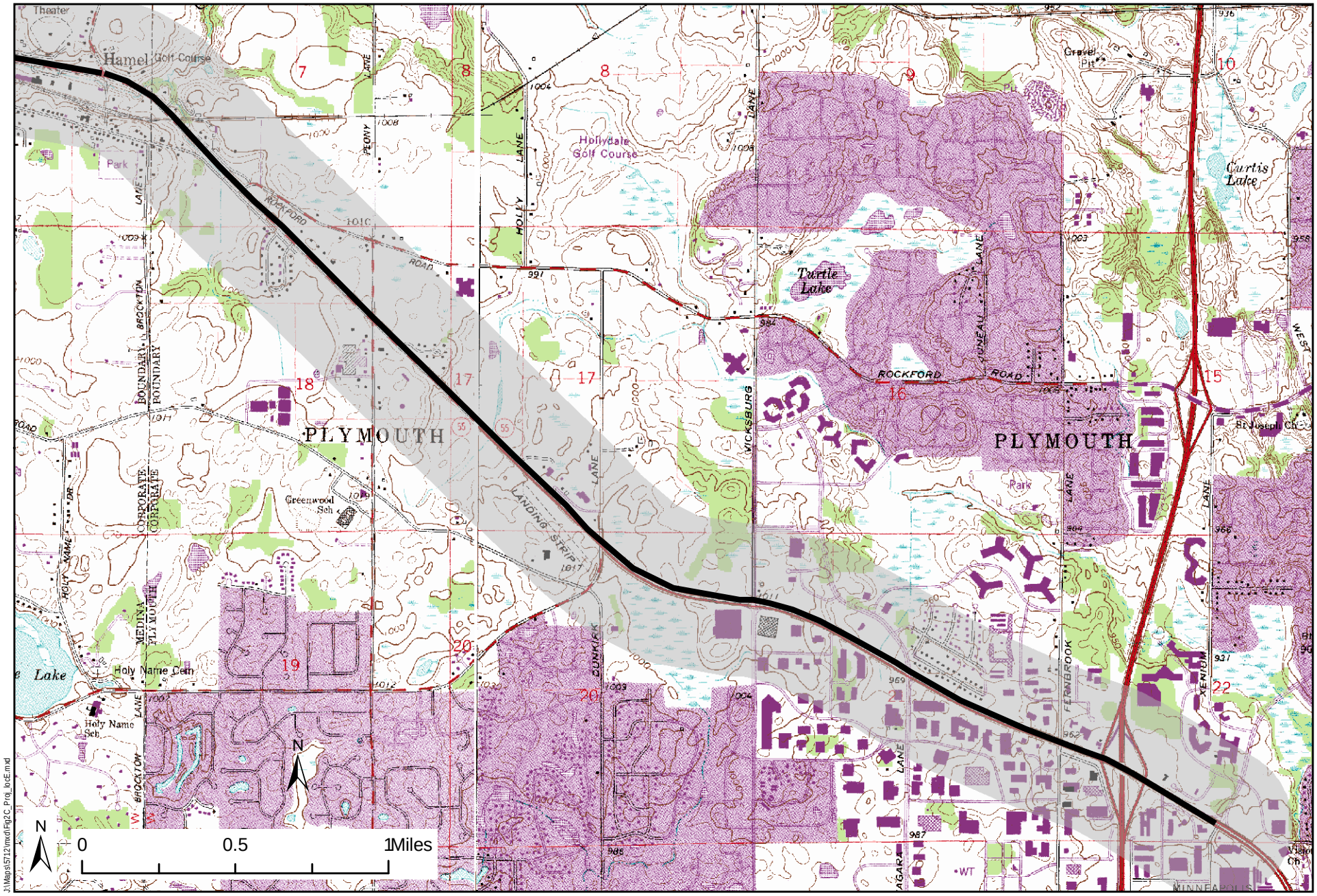


24K USGS: PROJECT LOCATION - MIDDLE SEGMENT

Figure 2B

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

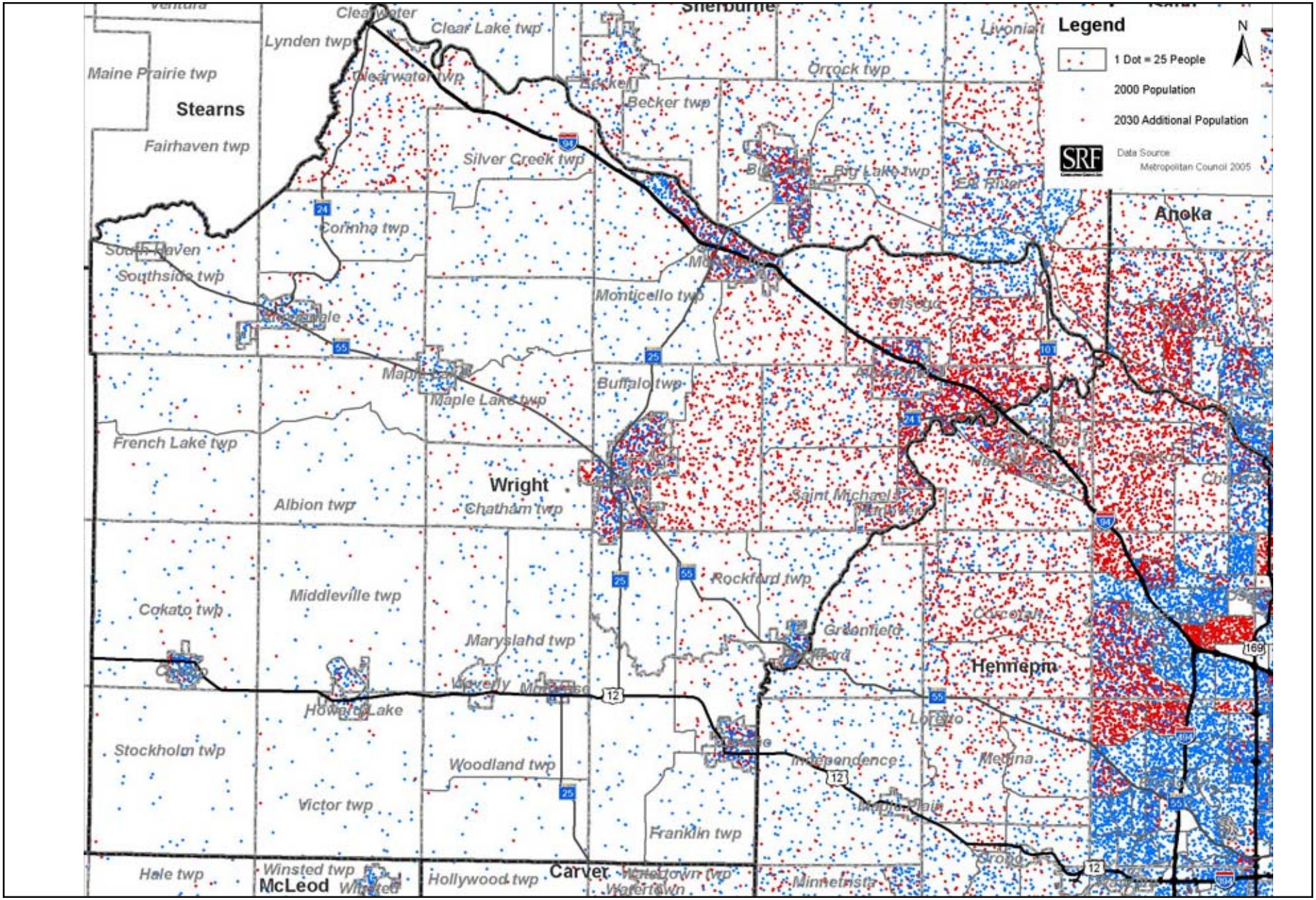


24K USGS: PROJECT LOCATION - EAST SEGMENT

Figure 2C

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



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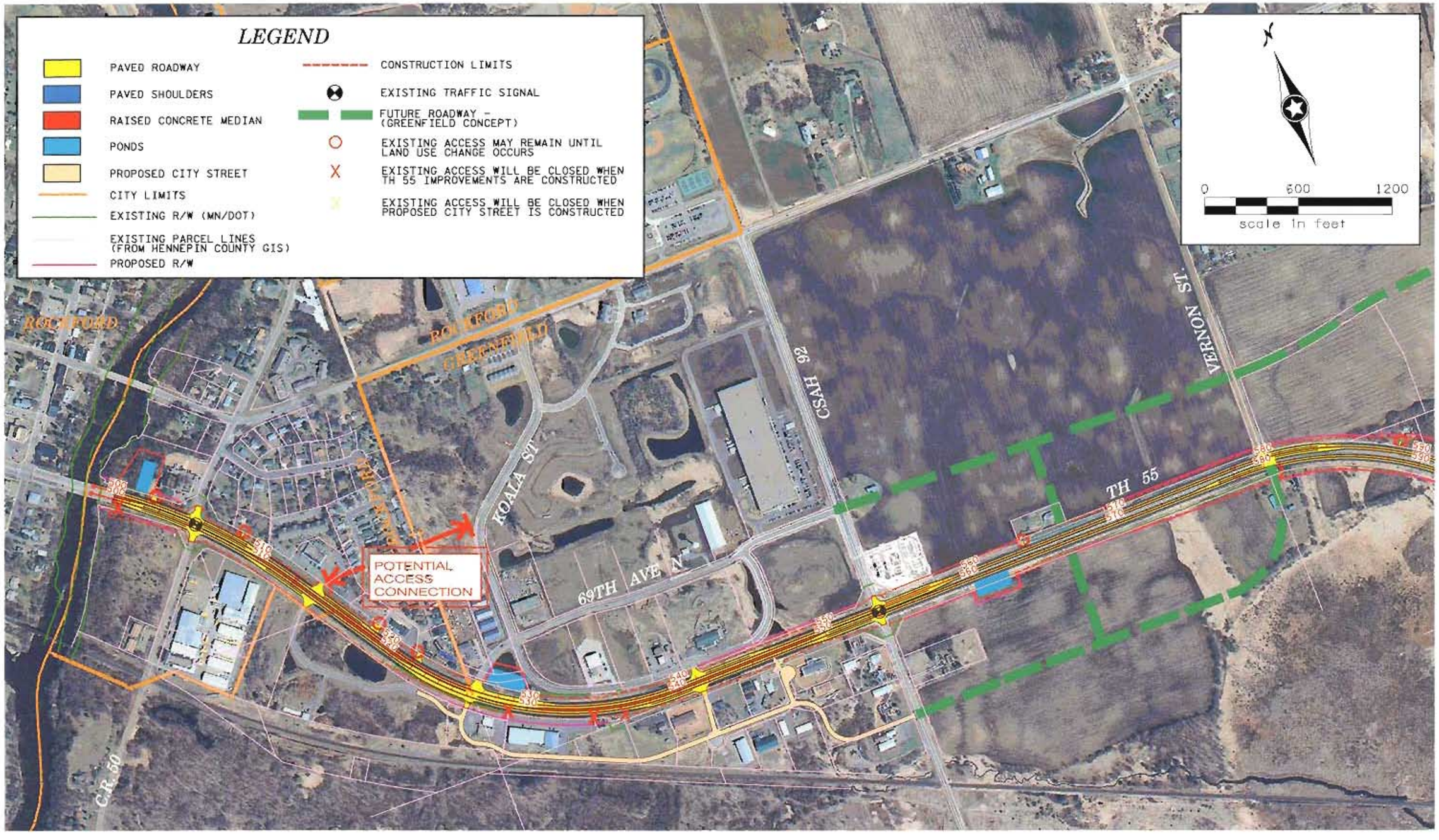
POPULATION GROWTH

Figure 3

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT



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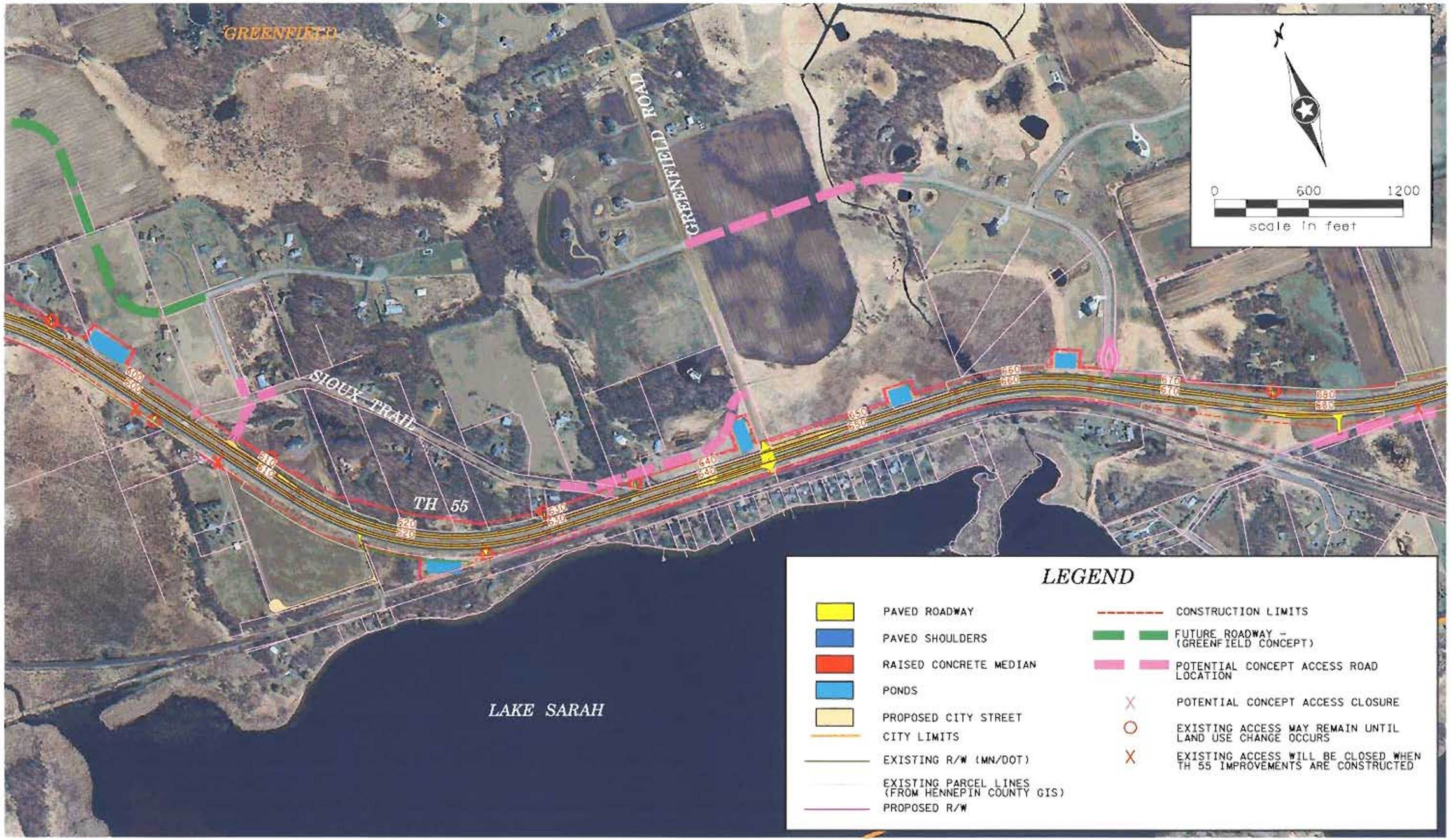
PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

Figure 4A

5712
11/5/2007



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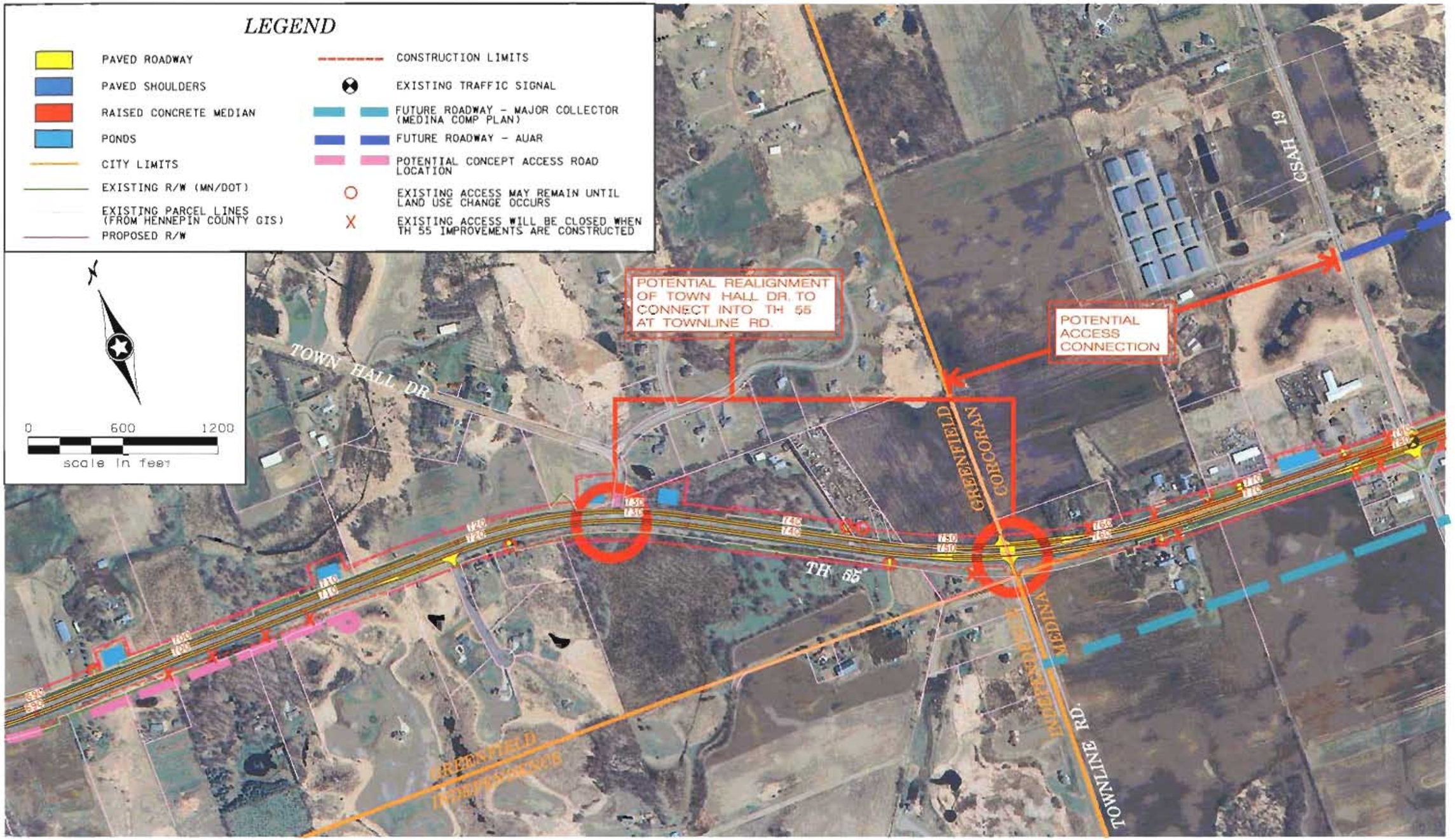
PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, MnDOT

Figure 4B

5712
11/8/2007

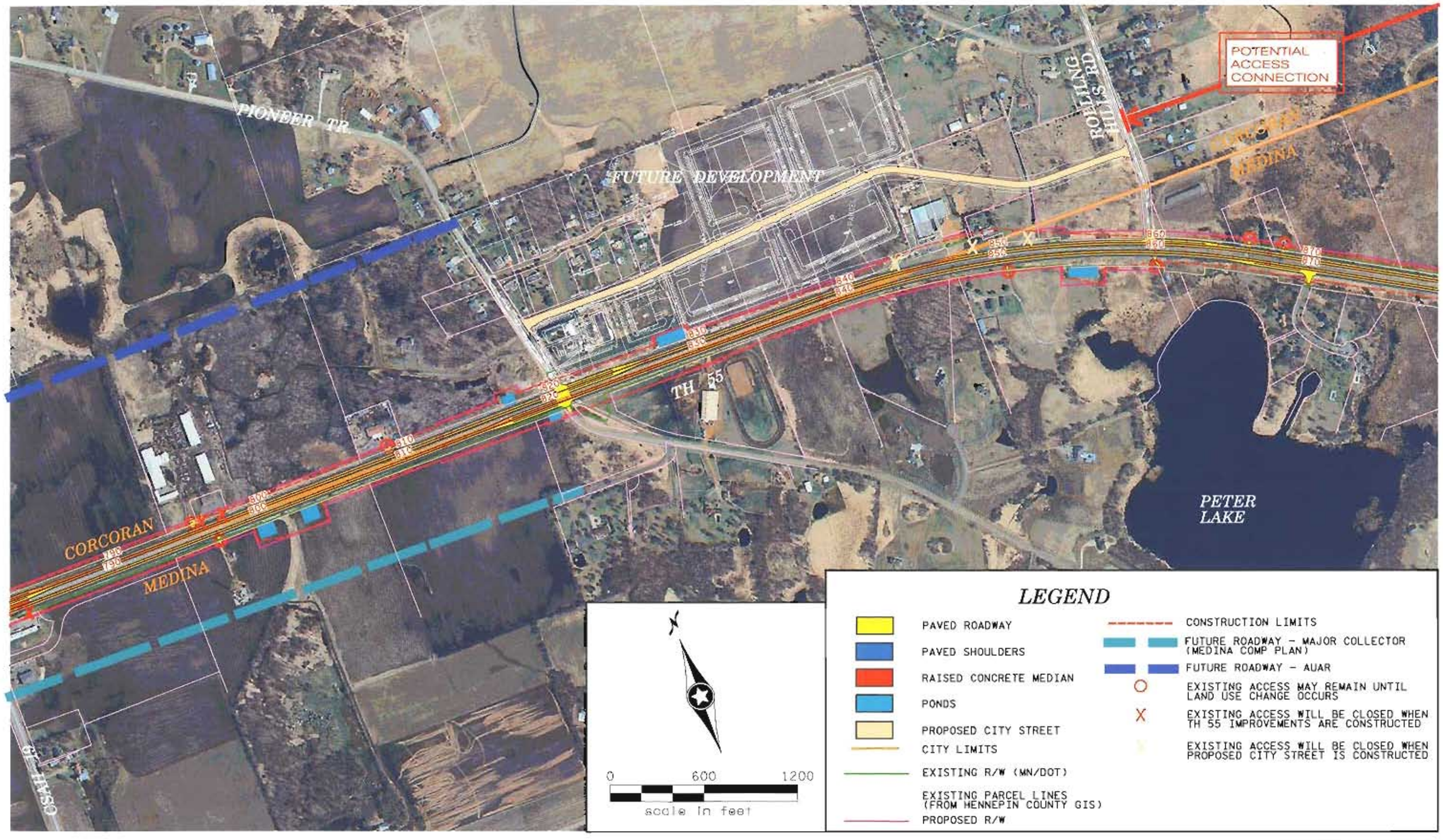


PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 4C

5712
1/15/2007



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PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, MnDOT

Figure 4D

5712
11/5/2007

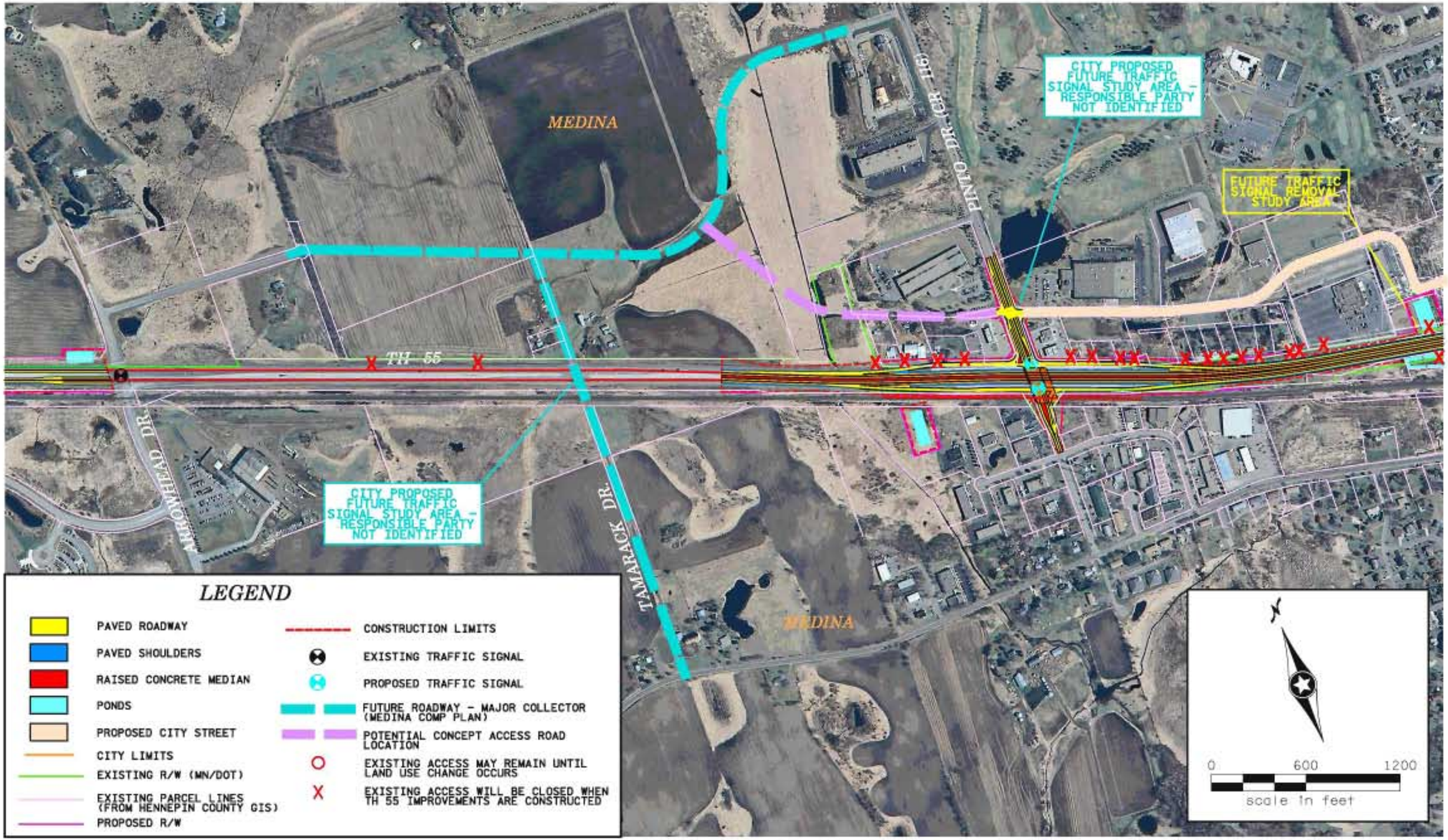
n:\projects\5712\H-MU\Graphics\EA Figures\5712-FIGURE 4E.dgn

PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

Figure 4E

5712
11/5/2007



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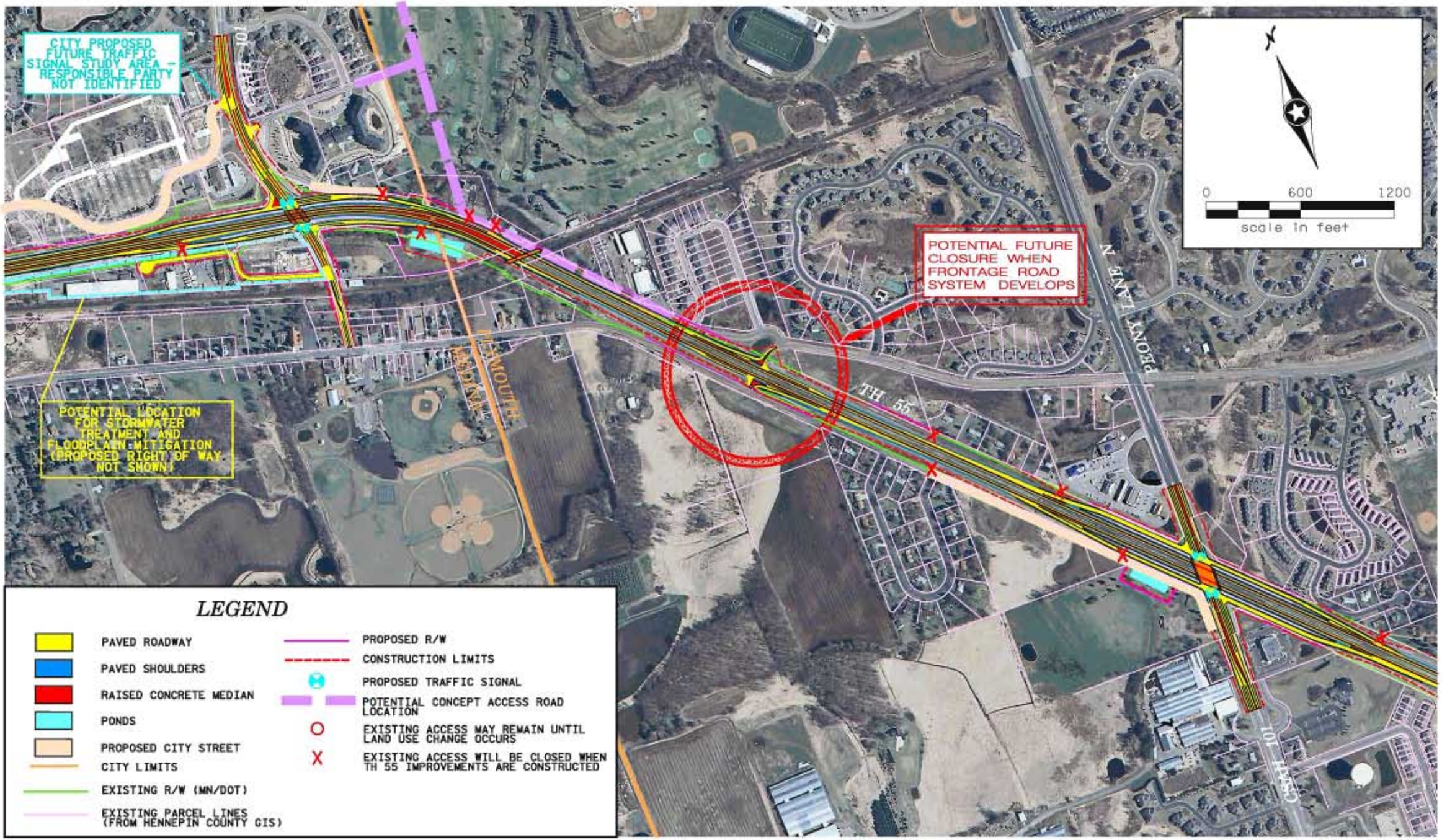
PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

Figure 4F

5712
5/19/2006



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PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 4G

5712
5/19/2006

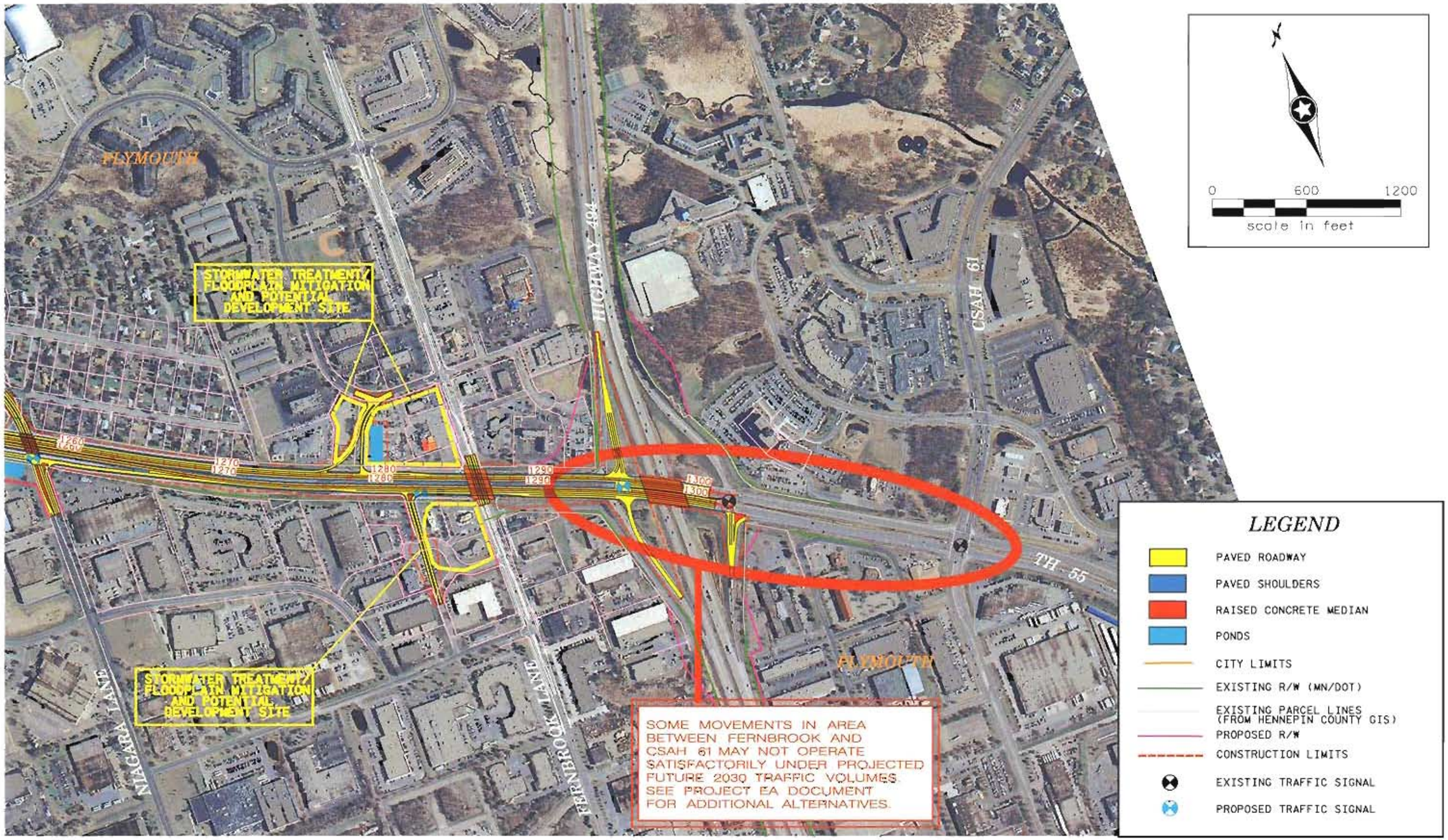
h:\projects\5712\HI-MU\Graphics\EA Figures\5712-FIGURE 4H.dgn

PROPOSED IMPROVEMENTS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 4H

5712
11/5/2007



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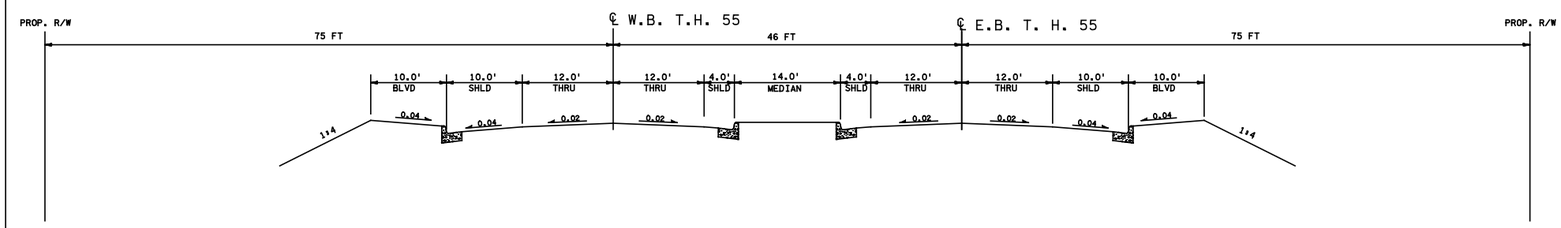
PROPOSED IMPROVEMENTS

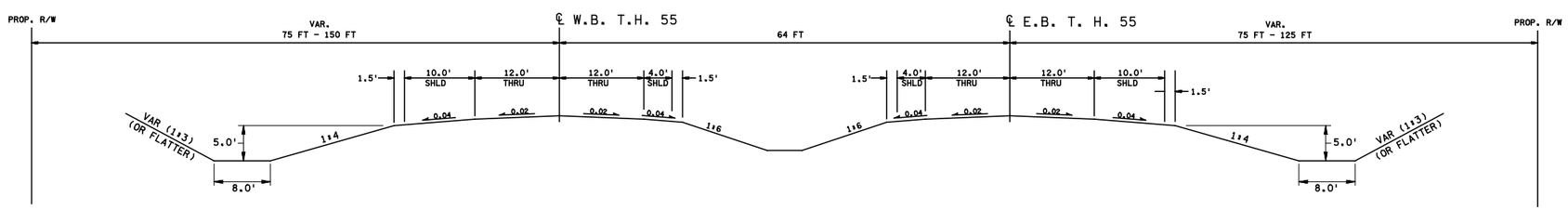
TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, MnDOT

Figure 4I

5712
11/3/2007



T.H. 55 CONCEPT TYPICAL SECTION - URBAN
DESIGN SPEED = 45-55 MPH
ROAD DESIGN MANUAL FIG. 2-7.01G OR 2-7.01H, 4-4.01A AND 4-4.01B



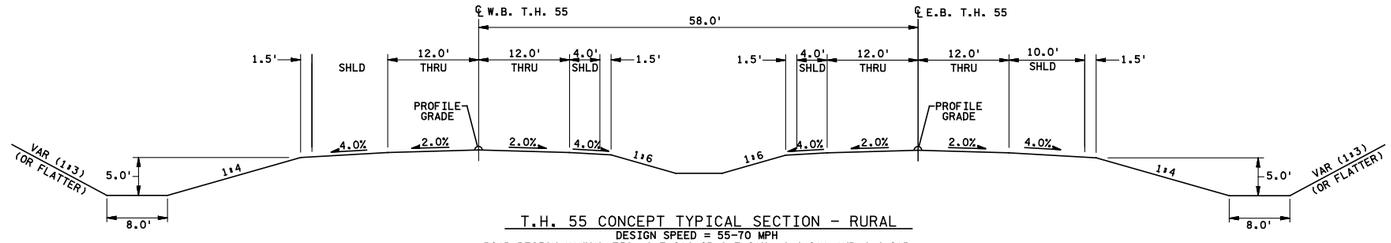
T.H. 55 CONCEPT TYPICAL SECTION - RURAL
DESIGN SPEED = 55-70 MPH
ROAD DESIGN MANUAL FIG. 2-7.01G OR 2-7.01H, 4-4.01A AND 4-4.01B

H:\Projects\5712\HI-MU\Base\CP272268_tsa.dgn

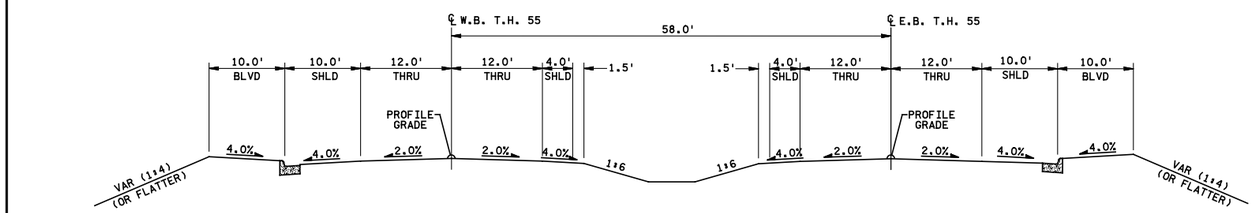
TYPICAL SECTIONS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

Figure 5A



T.H. 55 CONCEPT TYPICAL SECTION - RURAL
DESIGN SPEED = 55-70 MPH
ROAD DESIGN MANUAL FIG. 2-7.01G OR 2-7.01H, 4-4.01A AND 4-4.01B



T.H. 55 CONCEPT TYPICAL SECTION - SUBURBAN
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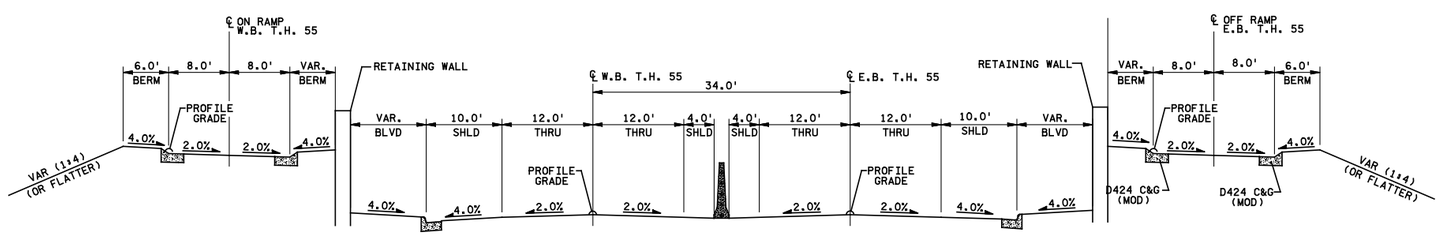


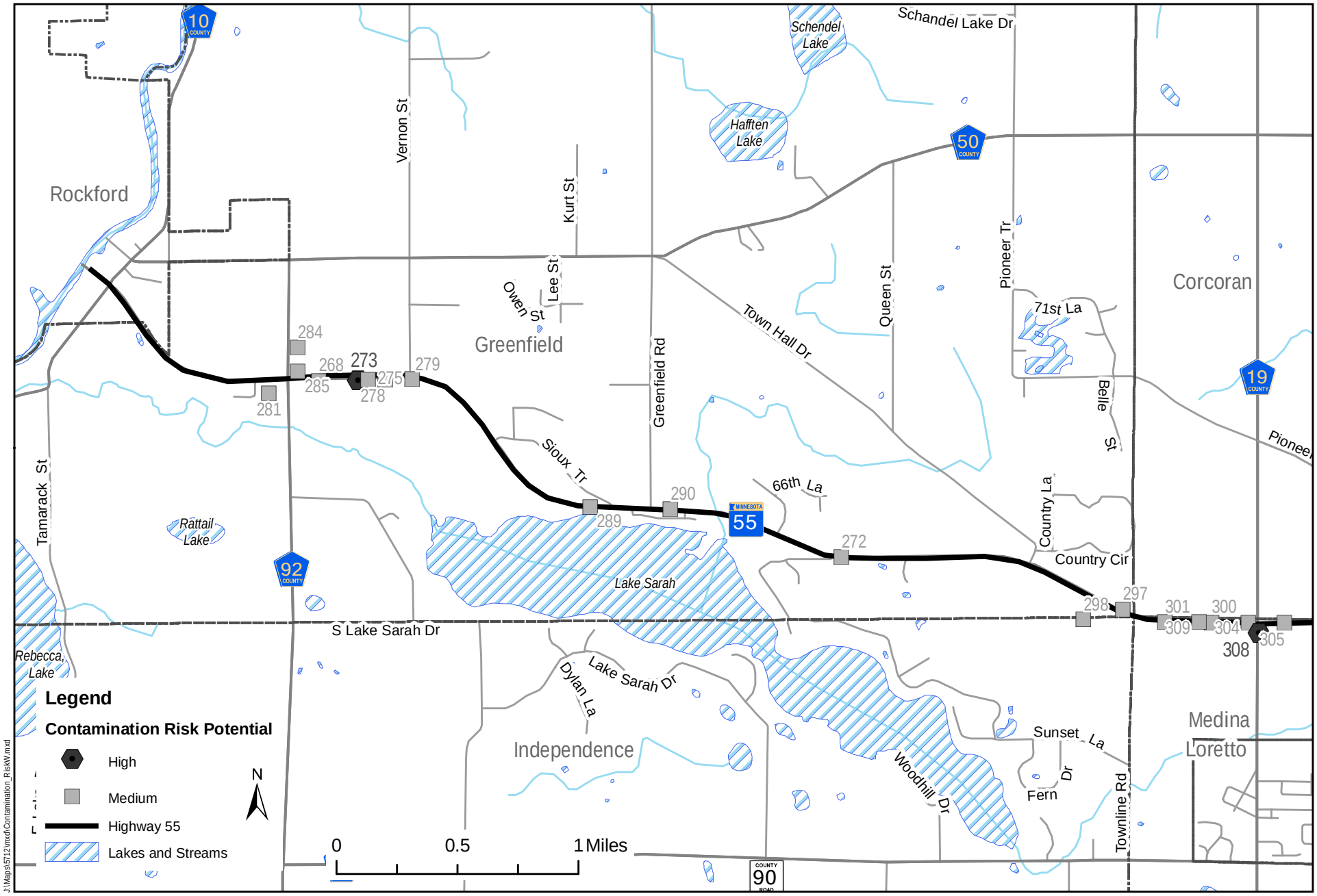
T.H. 55 CONCEPT TYPICAL SECTION - URBAN
DESIGN SPEED = 55-70 MPH
ROAD DESIGN MANUAL FIG. 2-7.01G OR 2-7.01H, 4-4.01A AND 4-4.01B

H:\Projects\5712\HI-MU\Base\CP272268_tsa.dgn

TYPICAL SECTIONS

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

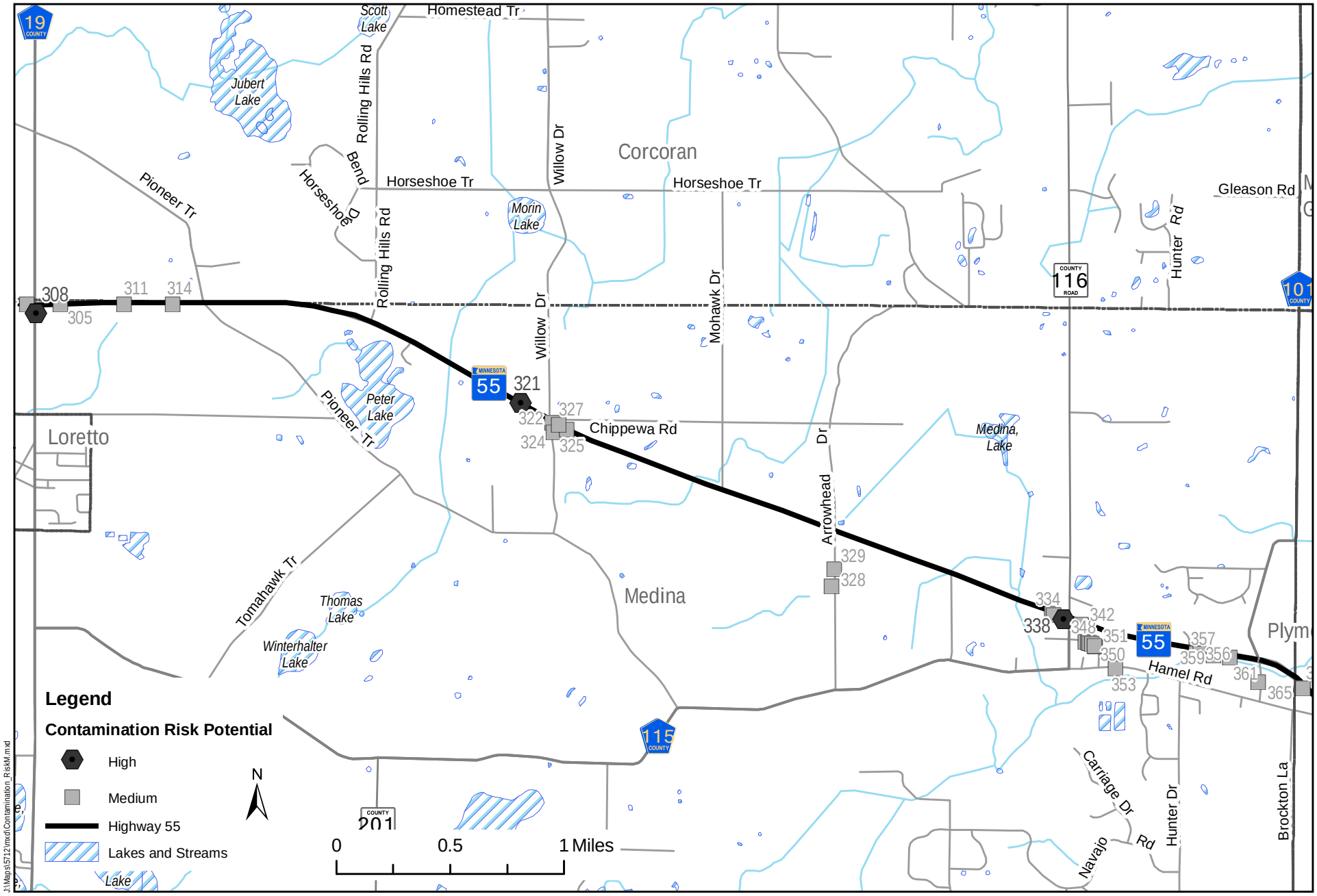
Figure 5B



CONTAMINATION RISK POTENTIAL: WEST SEGMENT

Figure 6A

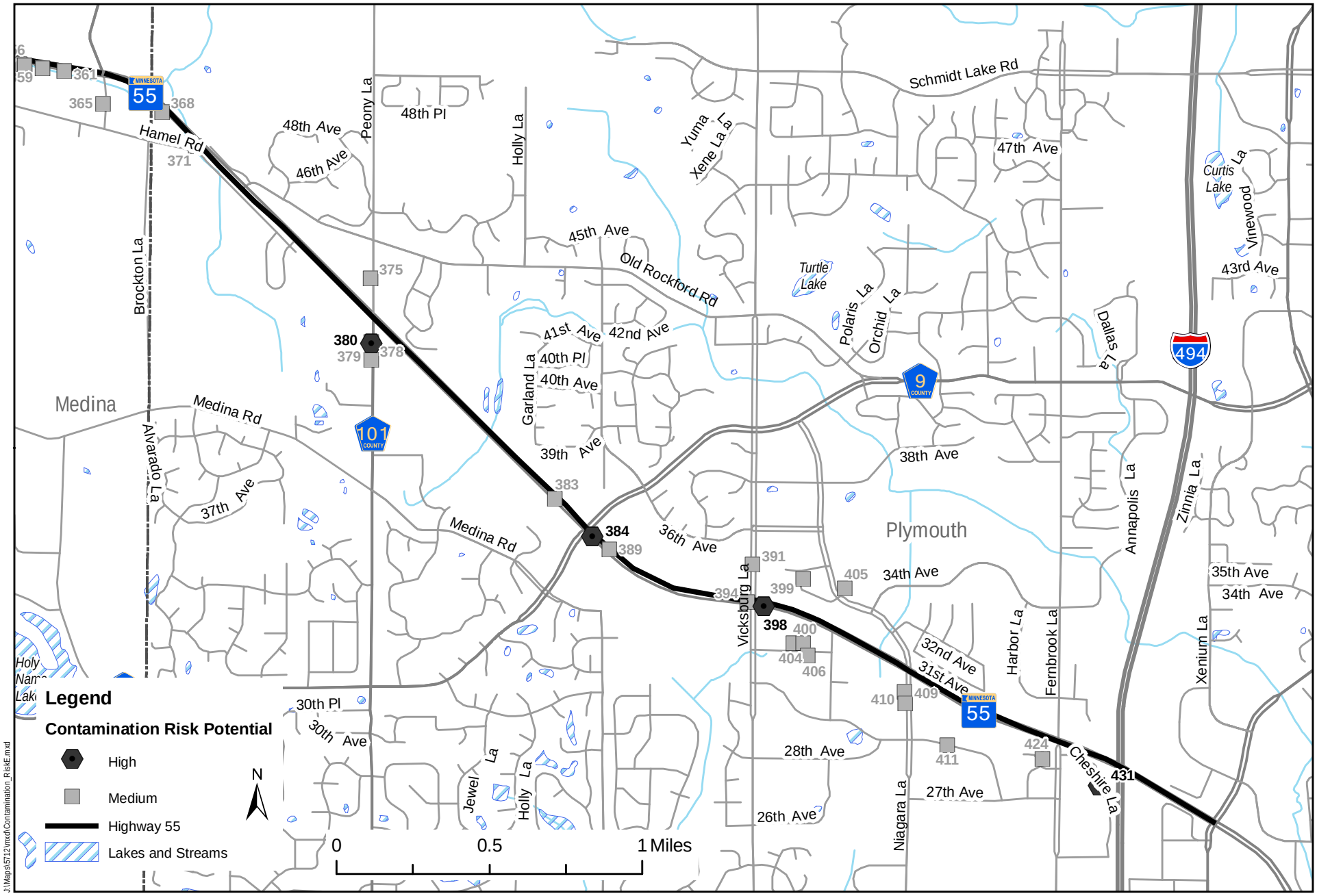
TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



CONTAMINATION RISK POTENTIAL: MIDDLE SEGMENT

Figure 6B

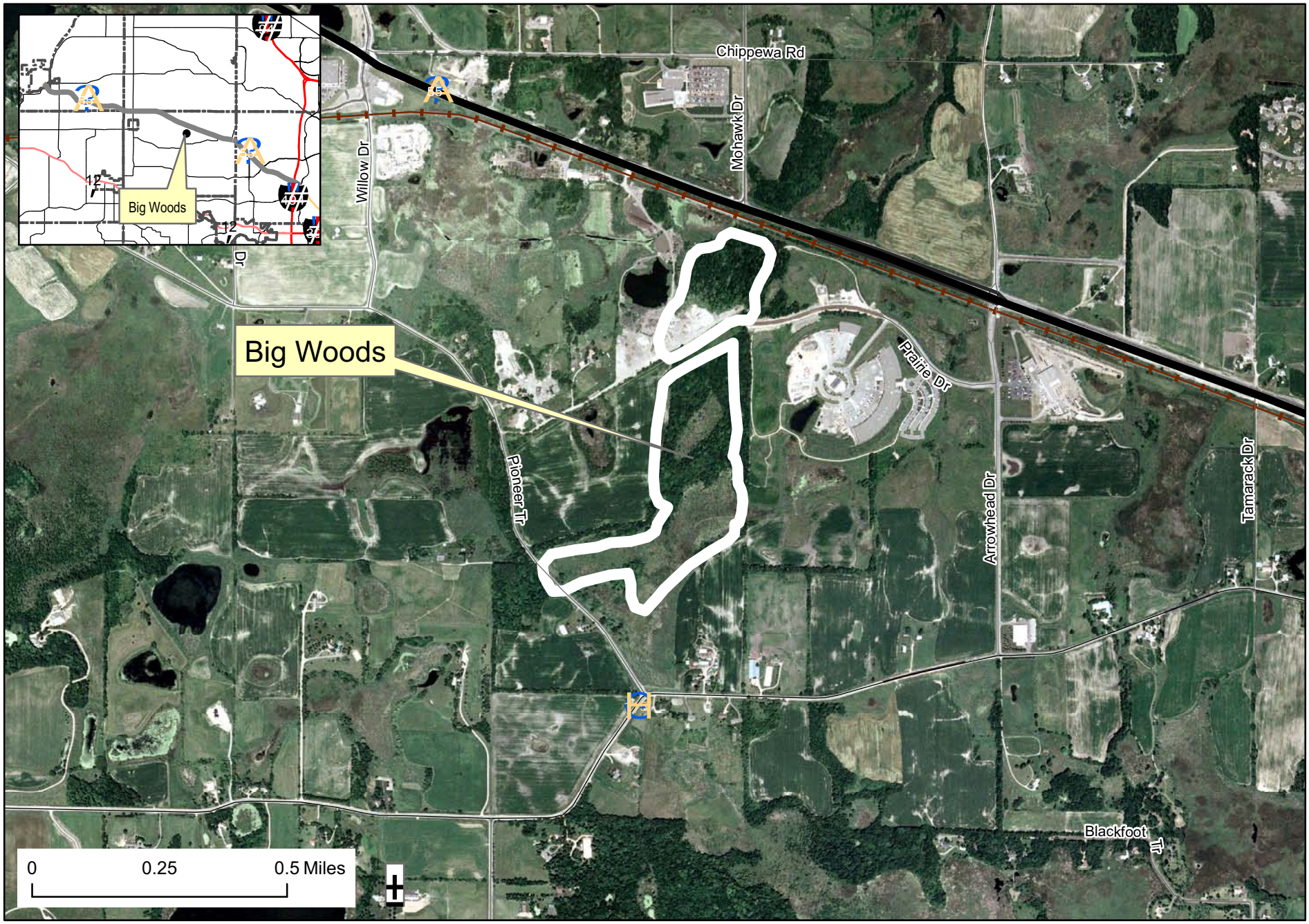
TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



CONTAMINATION RISK POTENTIAL: EAST SEGMENT

Figure 6C

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



J:\Maps\5712\mxd\fig_7_Big_Woods.mxd

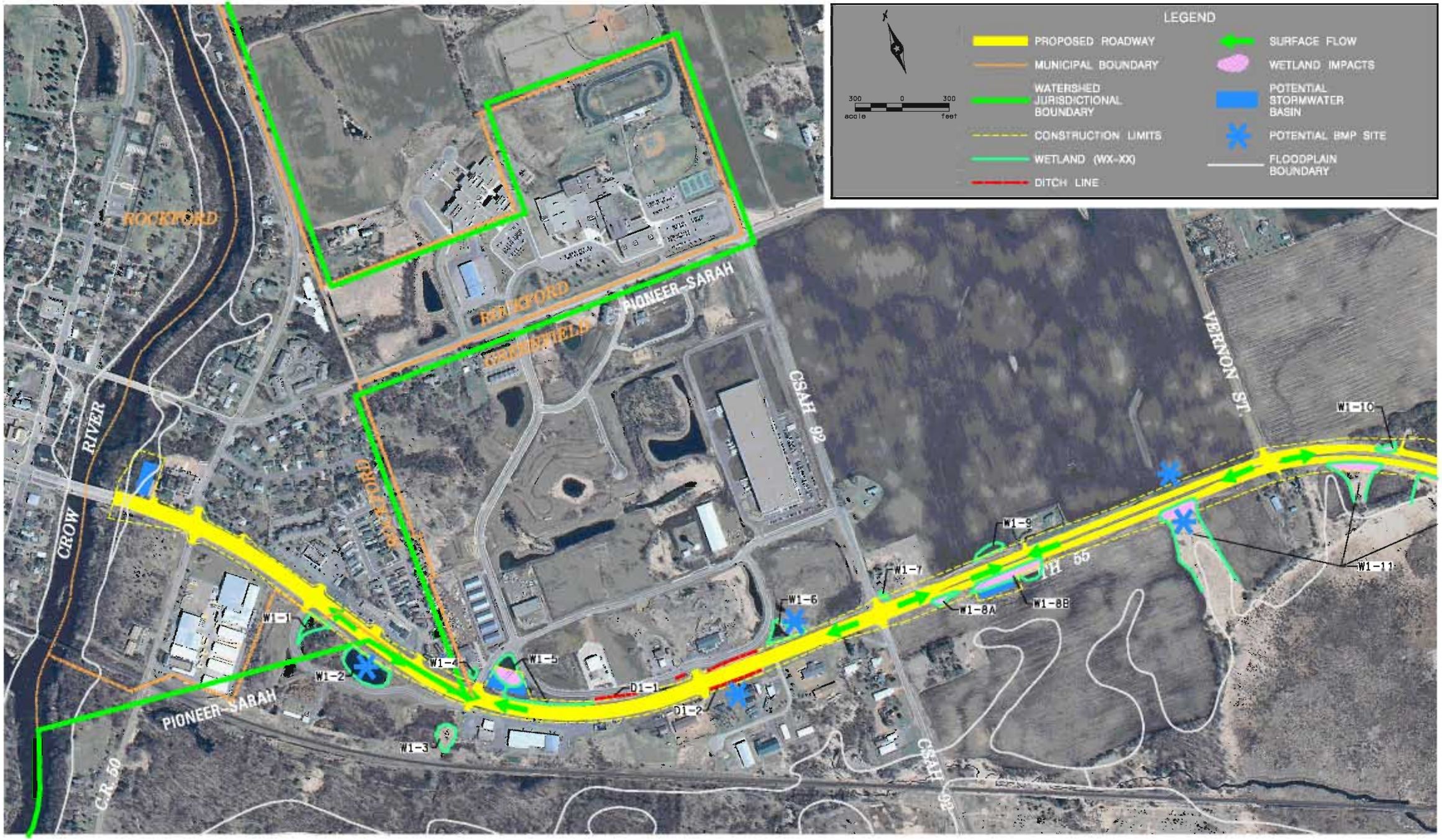
BIG WOODS REMNANT

Figure 7

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

10/18/07



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WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8A

5712
2/28/2008

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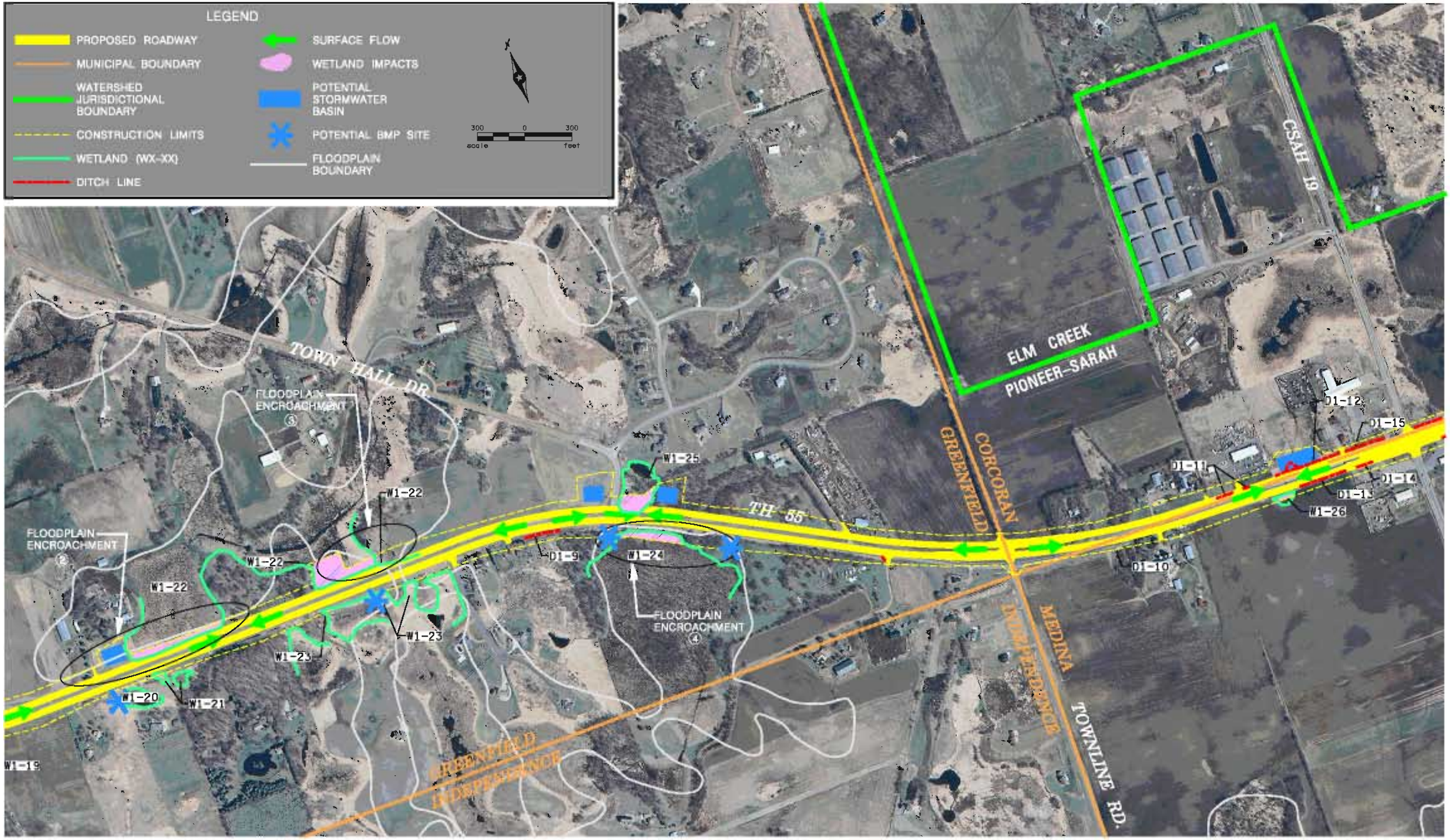
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8B

5712
2/28/2008



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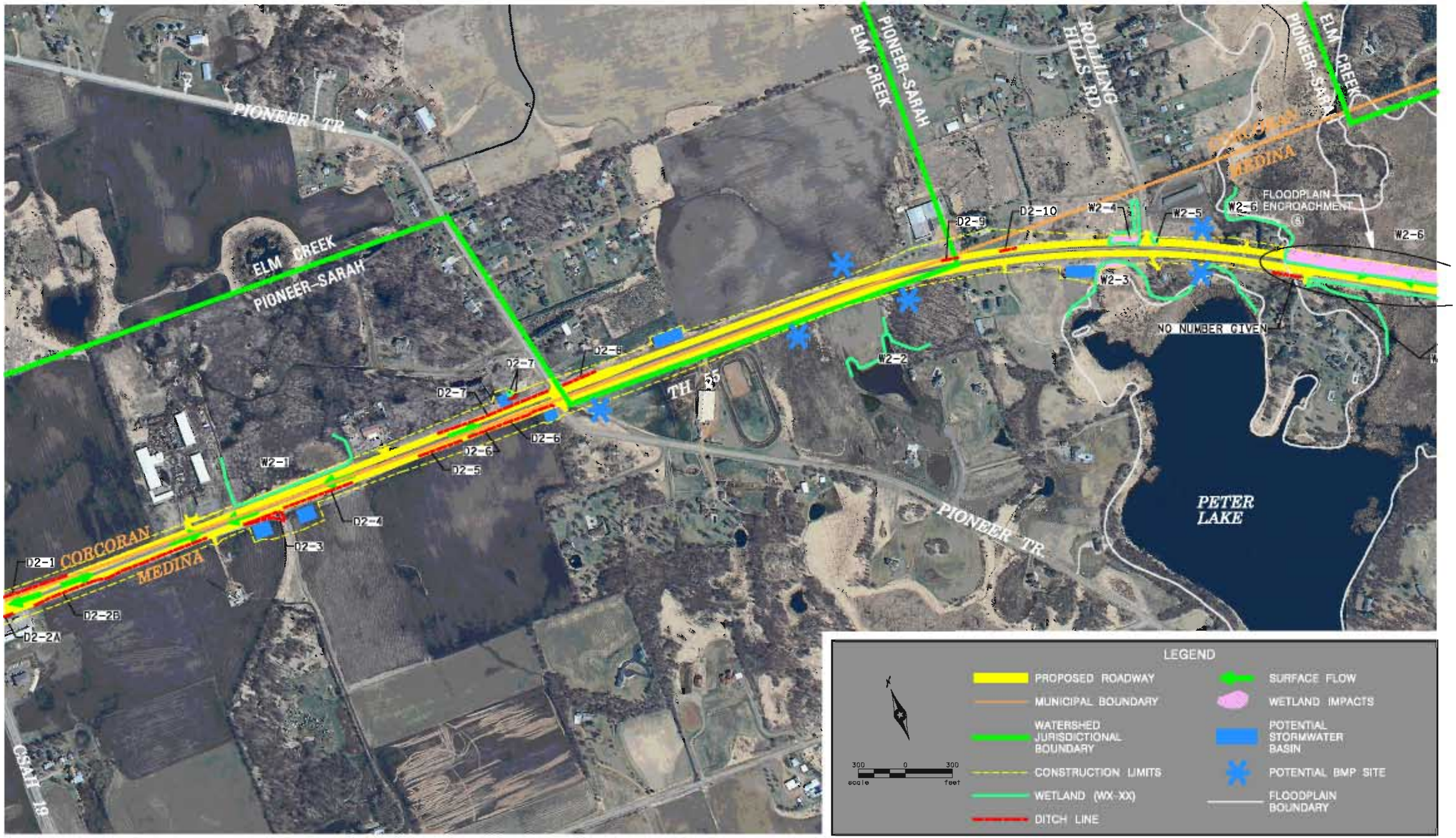
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8C

5712
2/28/2008



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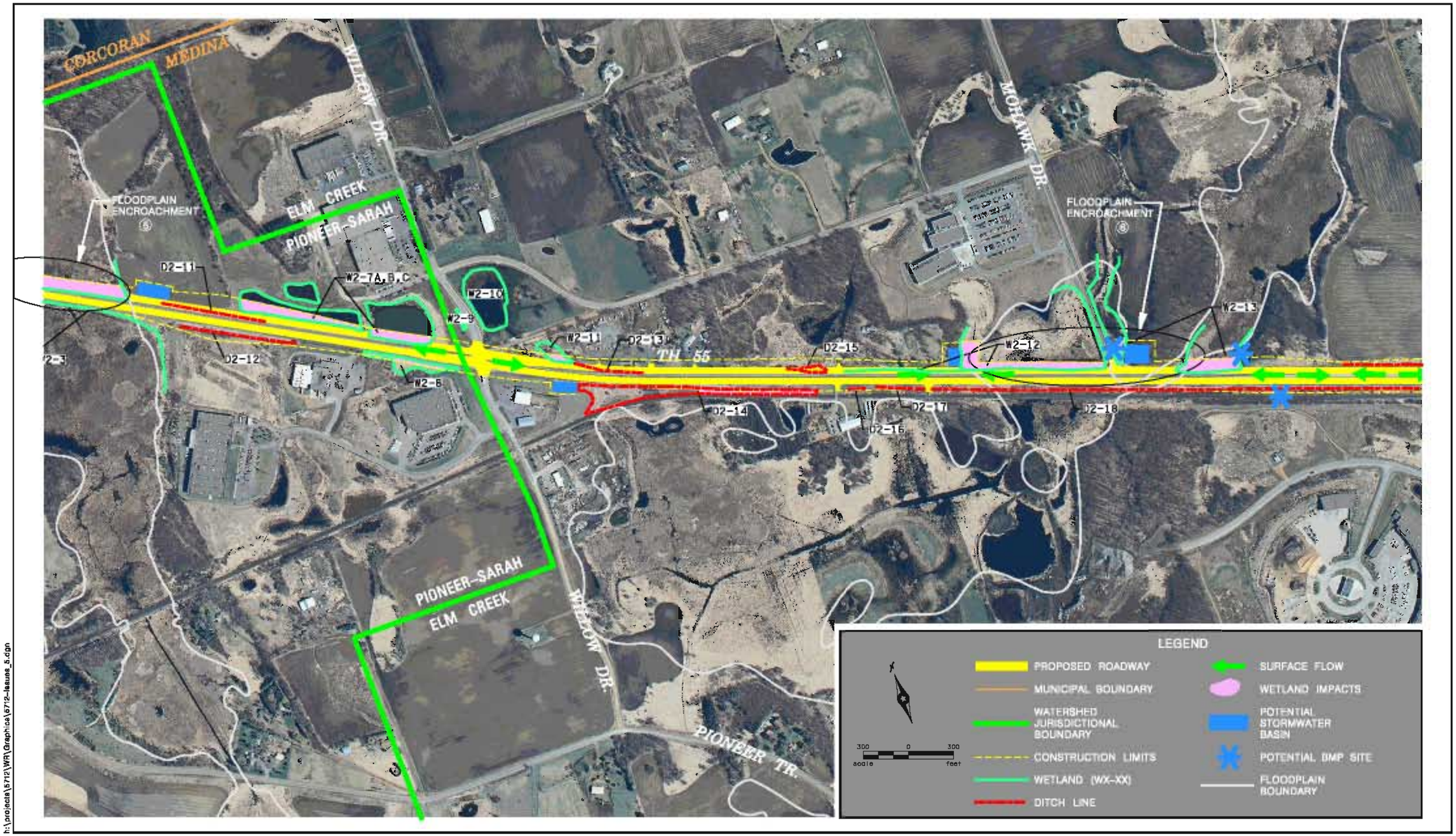
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8D

5712
2/28/2008



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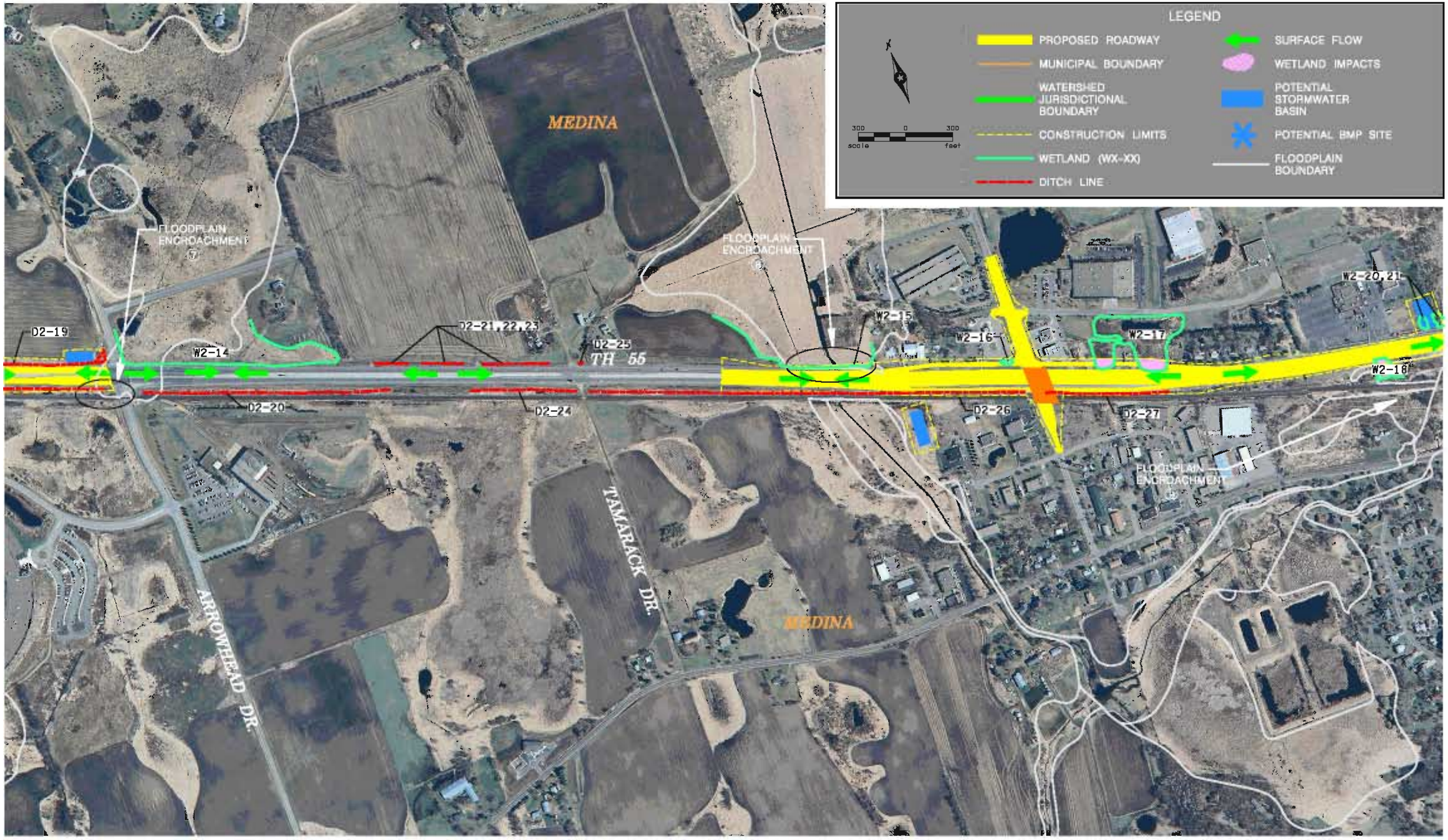
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, MnDOT

Figure 8E

5712
2/28/2008



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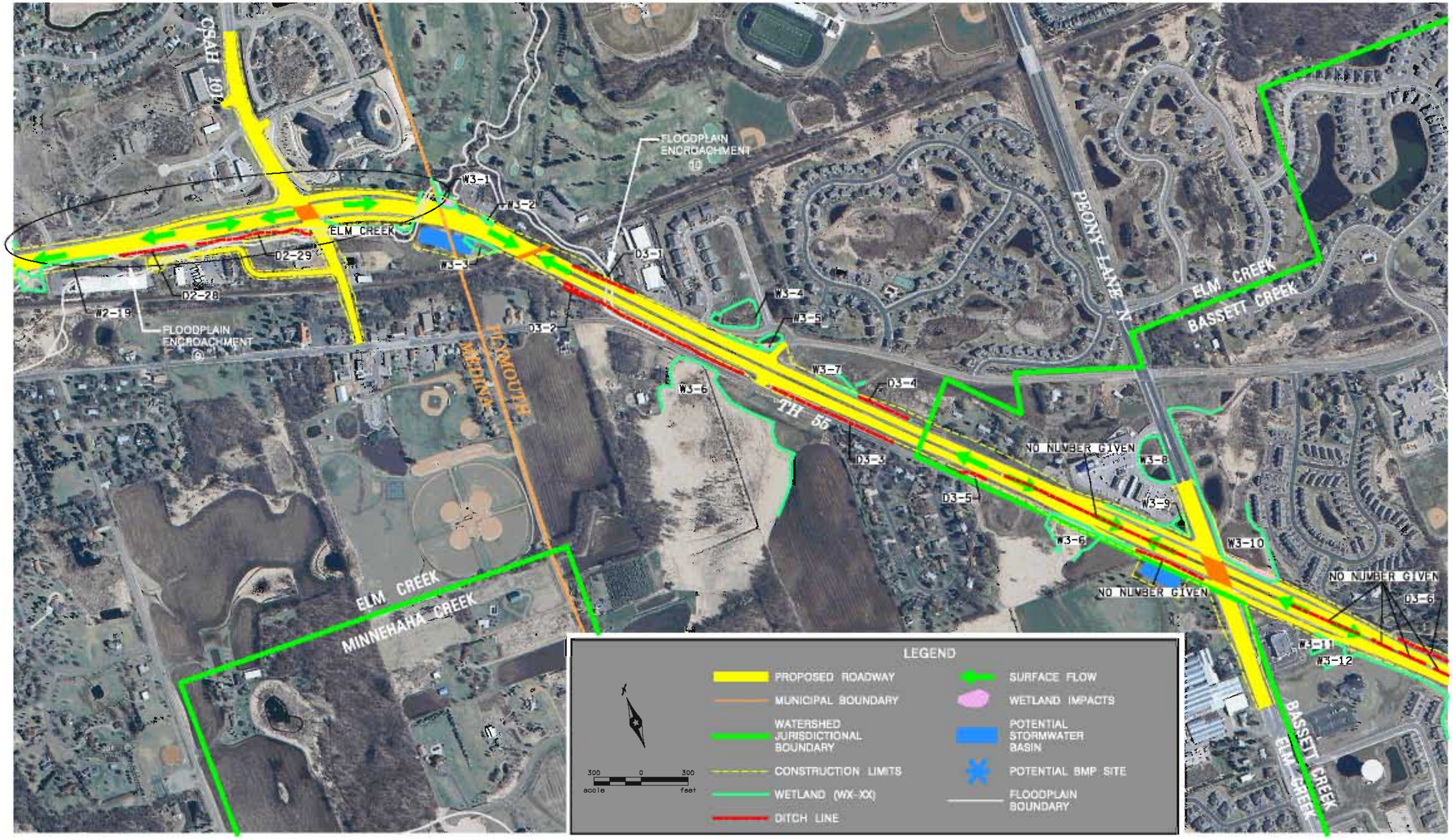
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8F

5712
2/28/2006



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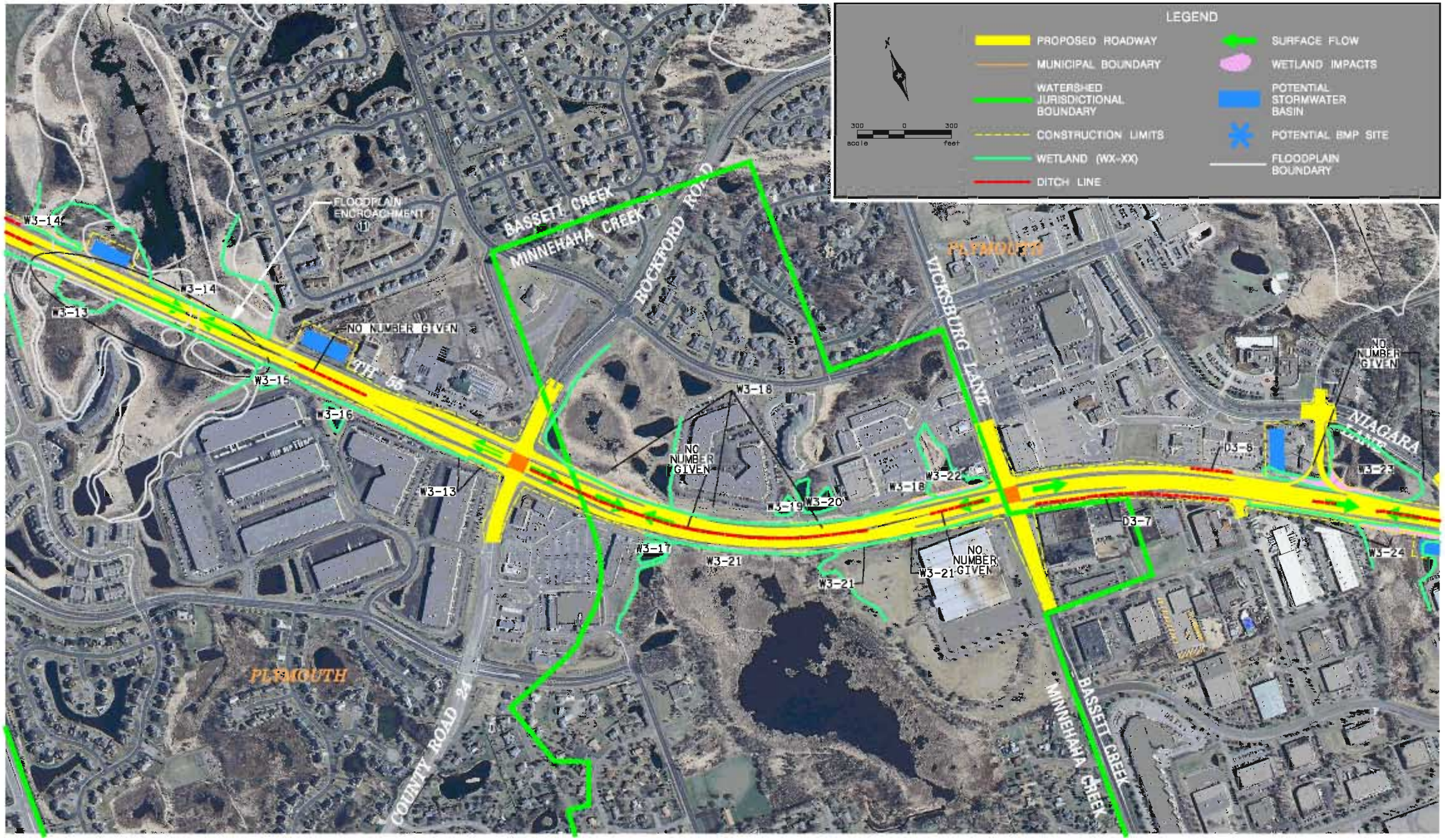
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

figure 8G

5712
2/28/2008



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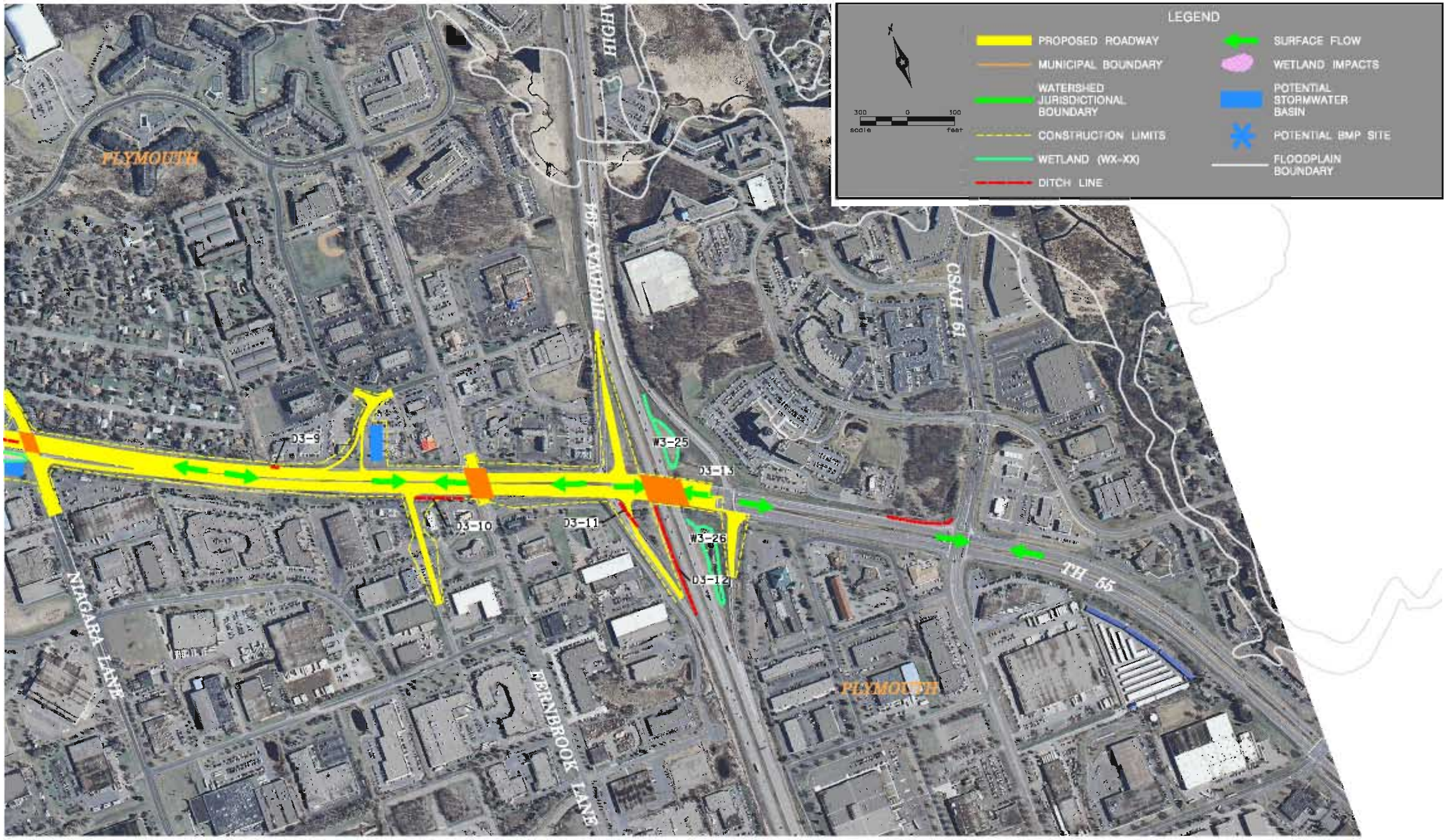
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8H

5712
2/28/2006



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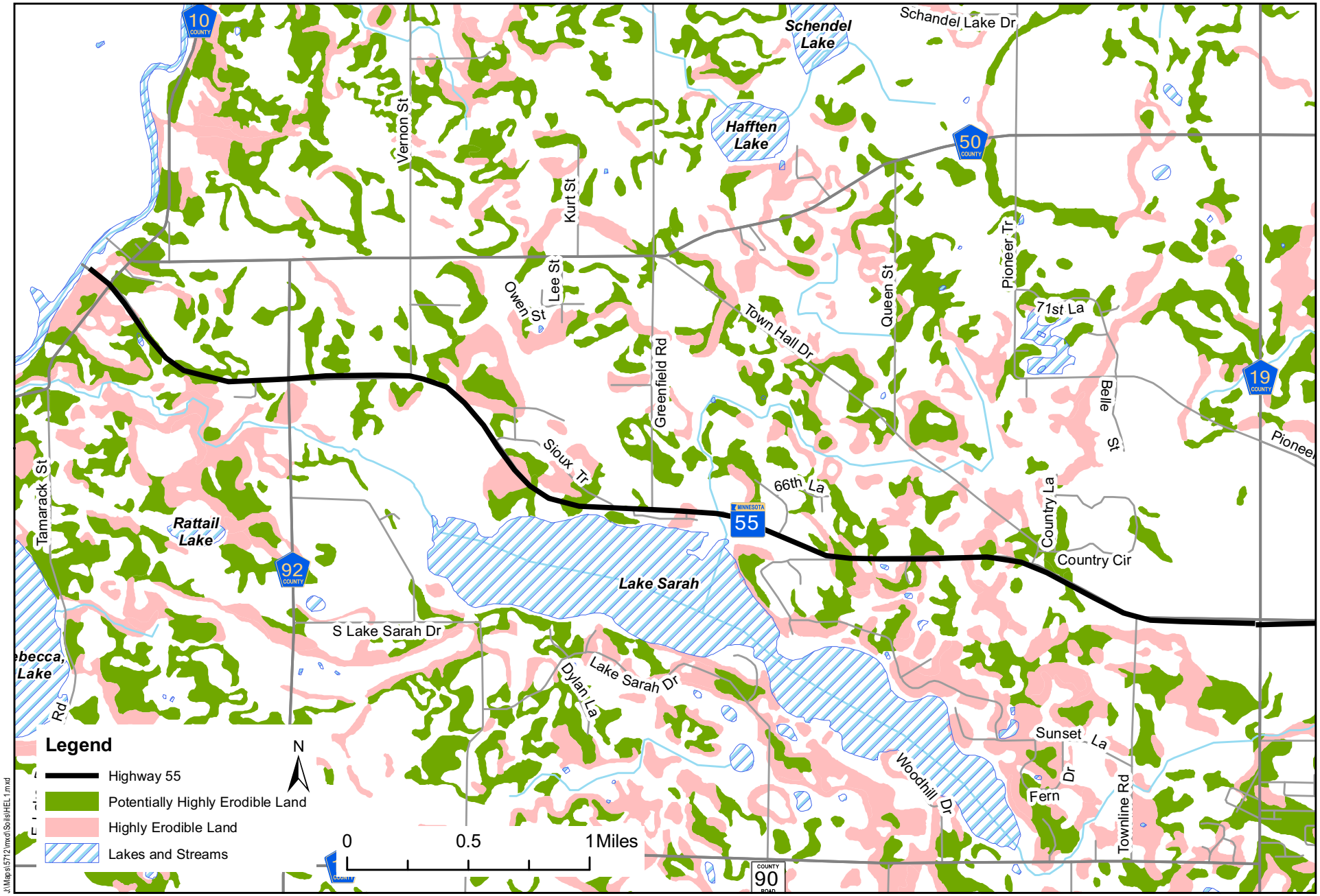
WRE ISSUES MAP

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT

Figure 8I

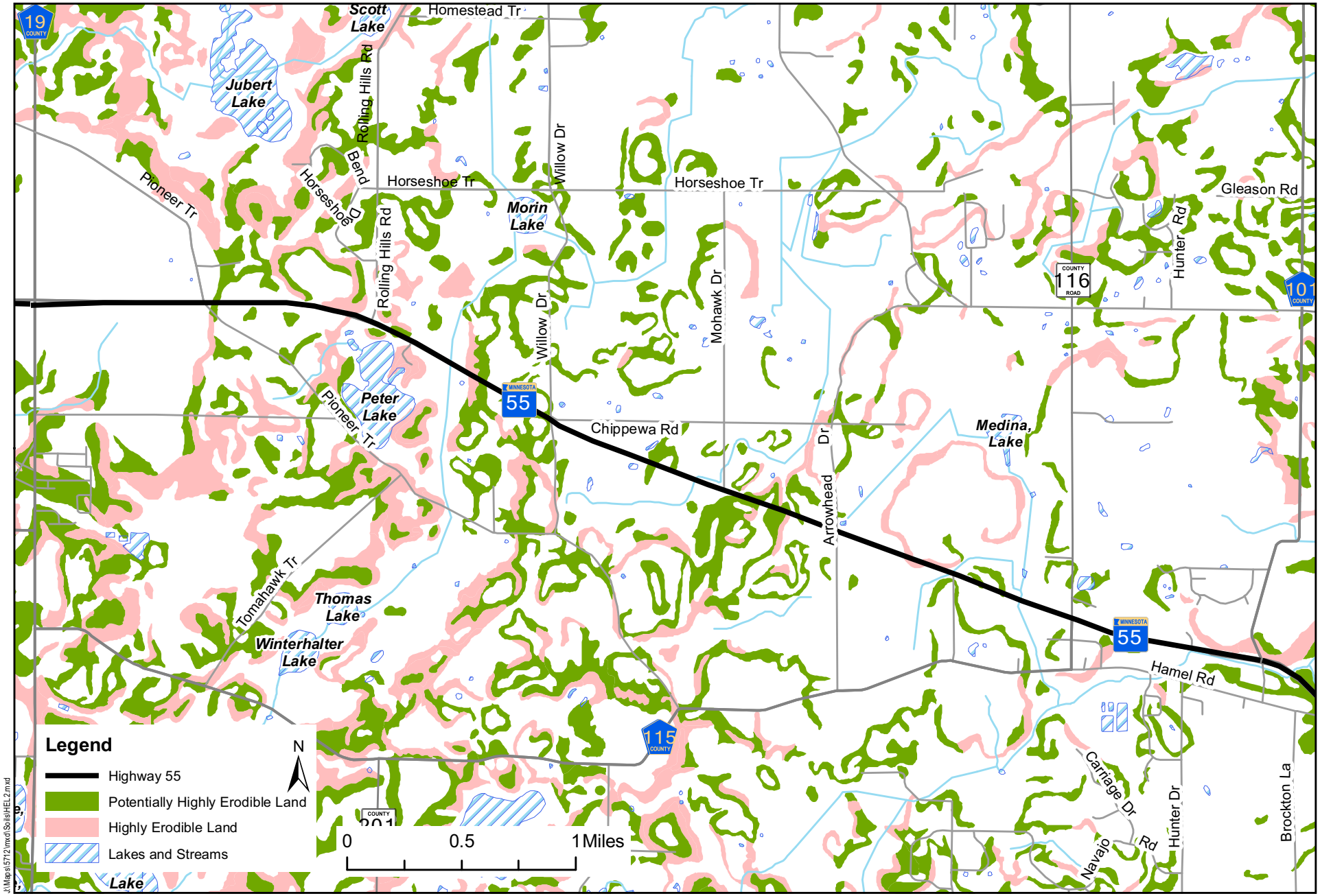
5712
2/28/2008



HIGHLY ERODIBLE LAND: WEST SEGMENT

Figure 9A

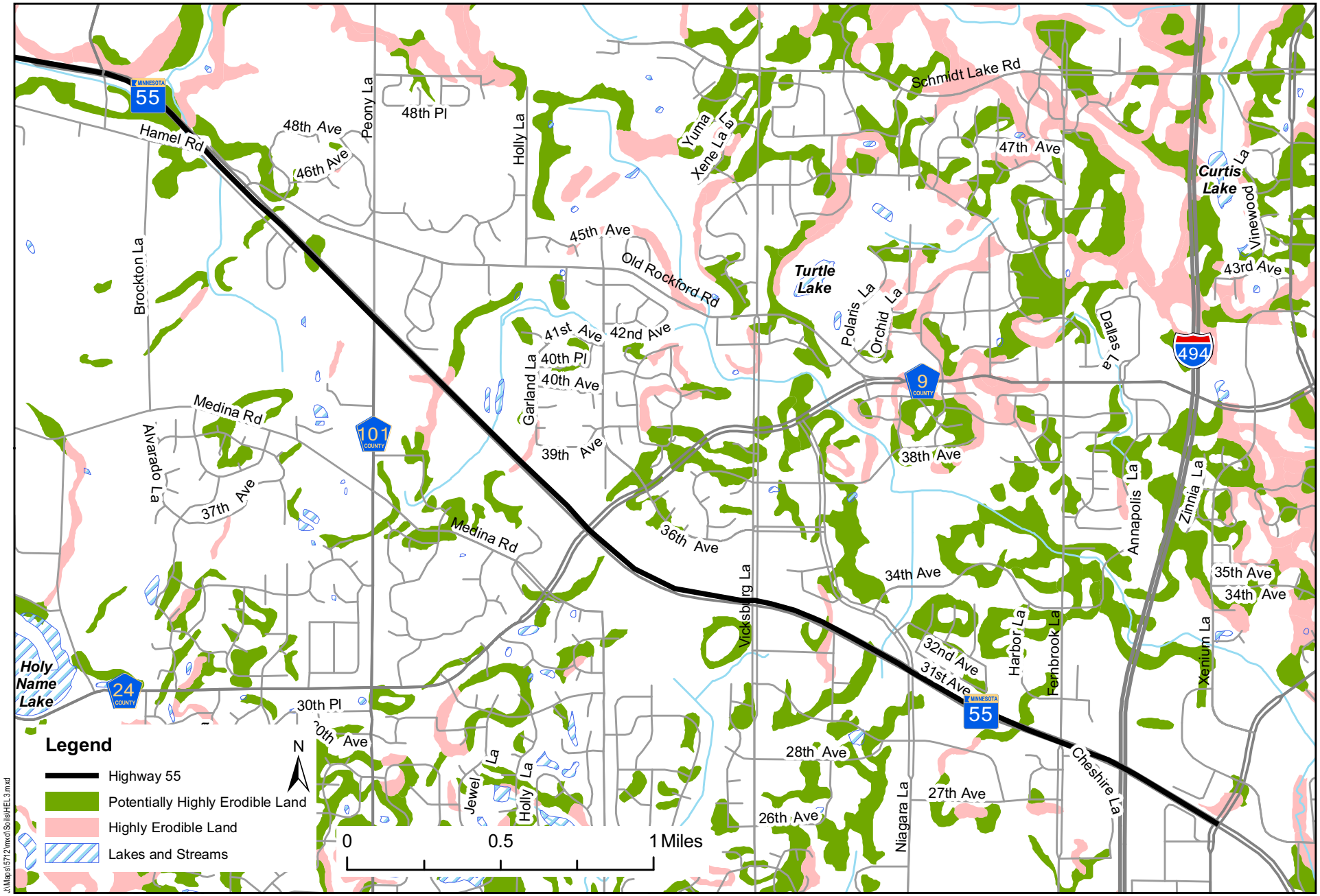
TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



HIGHLY ERODIBLE LAND: MIDDLE SEGMENT

Figure 9B

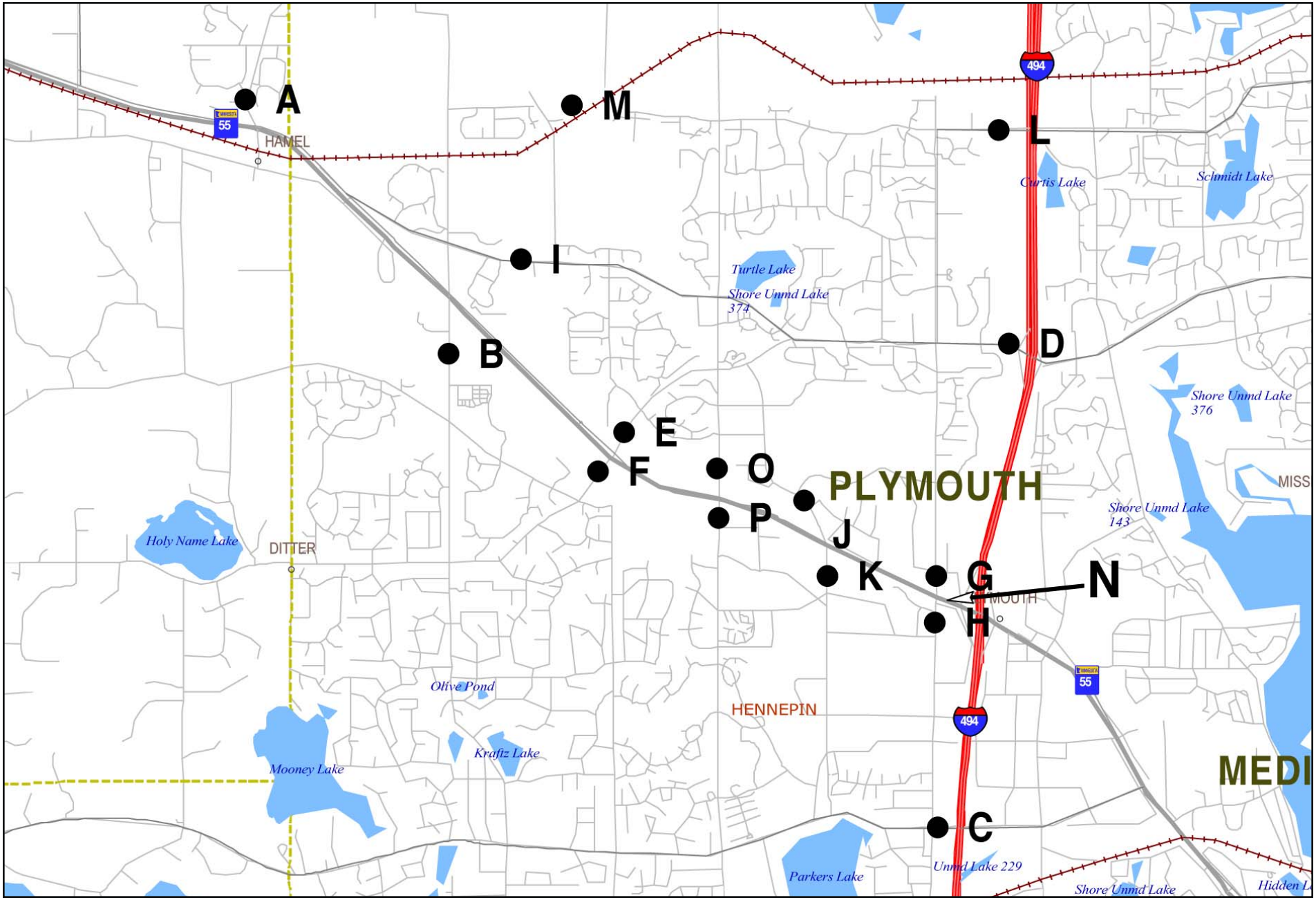
TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



HIGHLY ERODIBLE LAND: EAST SEGMENT

Figure 9C

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



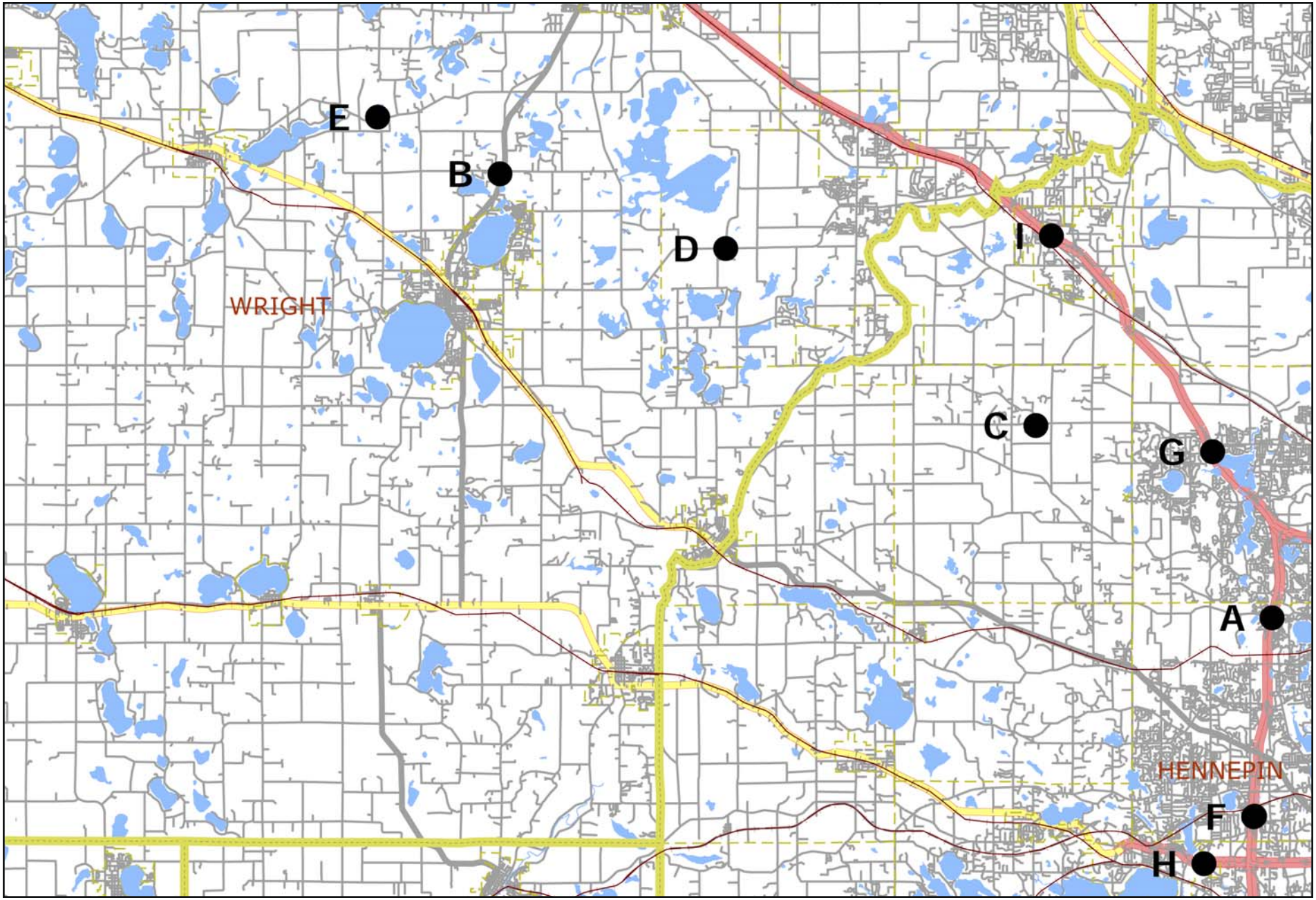
Graphics/Support/5712 TH55 EA-PreDesign/Figures/5712- FiguresHOR_103007.qxd

IMPACT ON AREA ROADWAYS – REFERENCE TO TABLE 21

Figure 10 A

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT



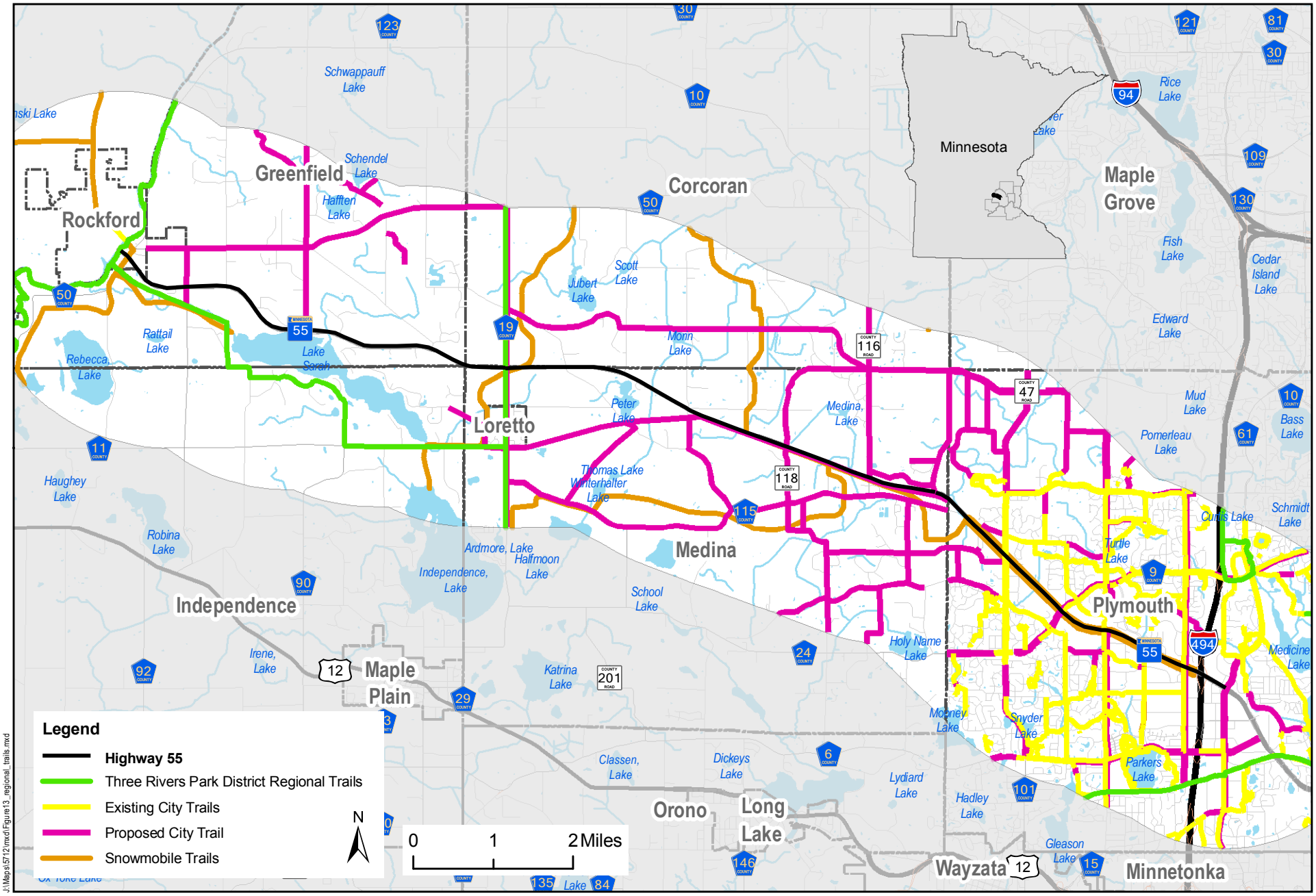
Graphics/Support/5712 TH55 EA-PreDesign/Figures/5712- FiguresHOR_103007.qxd

IMPACT ON AREA ROADWAYS – REFERENCE TO TABLE 22

Figure 10 B

TH 55 Environmental Assessment & Preliminary Design

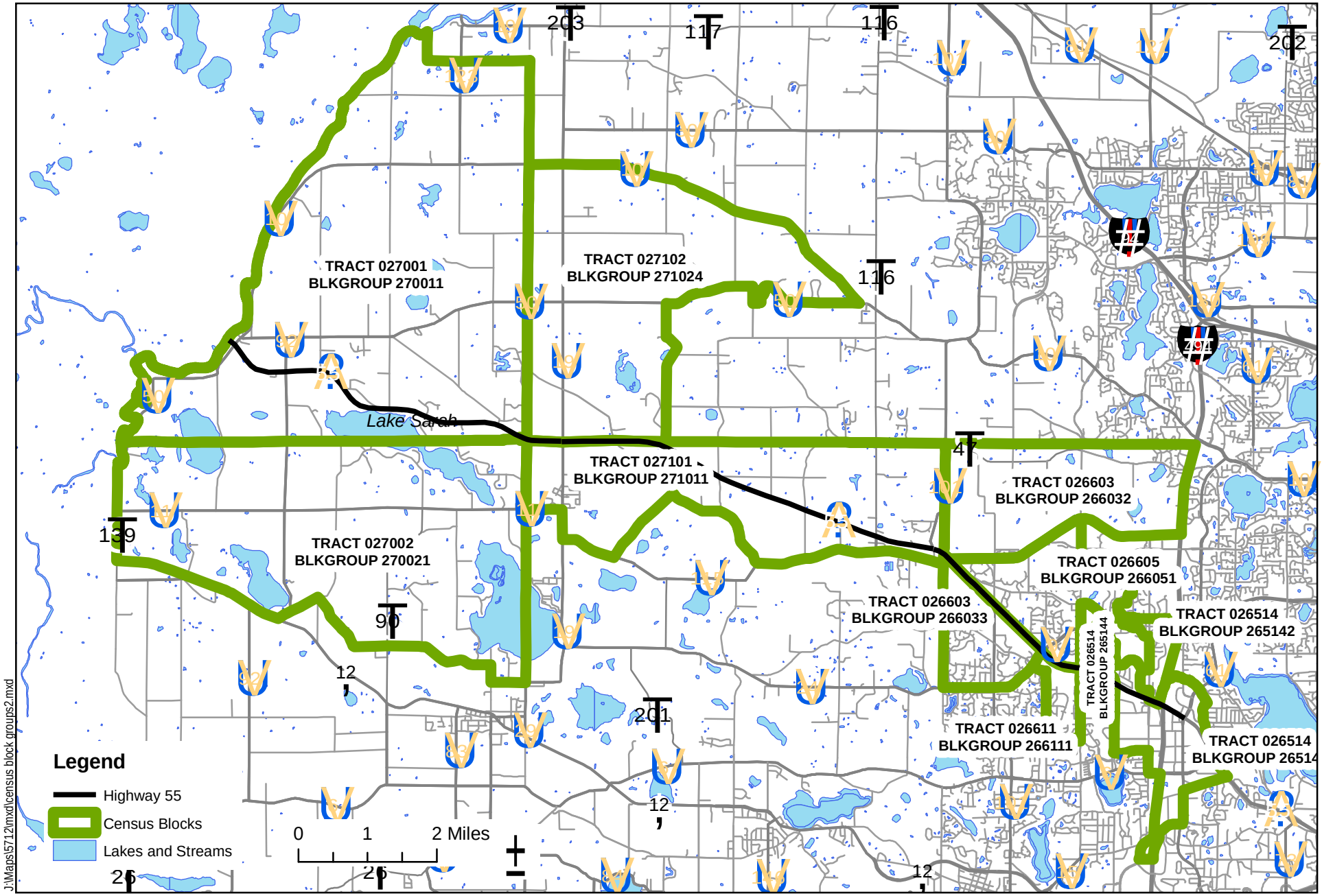
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 – Hennepin County, Mn/DOT



REGIONAL TRAILS

Figure 11

TH 55 Environmental Assessment & Preliminary Design
Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT



CENSUS BLOCK GROUPS

Figure 12

TH 55 Environmental Assessment & Preliminary Design

Rockford to Plymouth, S.P. 2722-68 & S.P. 27-596-02 - Hennepin County, Mn/DOT

APPENDIX B

CORRESPONDENCE

Minnesota Department of Transportation

Office of Environmental Services
395 John Ireland Boulevard, MS 620
St. Paul, MN 55155-1899

Fax: 651/ 284-3754
Phone: 651/ 284-3750

January 23, 2007

Christine Paulu
SRF Consulting Group, Inc.
Attention: Nancy Frick
One Carlson Parkway North
Plymouth, MN 55447

RE: No Effect Determination (Federal Threatened and Endangered Species)
S.P. 2722-68, 27-596-02, Trunk Highway 55
Roadway Expansion
Hennepin County

Dear Ms. Paulu:

In response to your request, the proposed action has been reviewed for potential effects to federally-listed threatened and endangered (T&E) species, candidate species and listed critical habitat. As a result of this review, a determination of no effect has been made. However, because the letting date has yet to be established and since there is a strong likelihood that the project will not be built for several years, it is recommended that this action be re-evaluated for impacts to federally-listed species, candidate species and listed critical habitat closer to construction.

If a Federal agency authorizes, funds, or carries out a proposed action, the responsible Federal agency, or its delegated agent, is required to evaluate whether the proposed action "may affect" listed species. If it is determined that the action "may affect" a listed species, then the responsible Federal agency shall request Section 7 consultation with the U. S. Fish and Wildlife Service. If the consultation shows "no effect" on the listed species, further consultation is not necessary.

Scope of Action
The proposed action involves expansion of Trunk Highway 55 from 4 to 6 lanes in the City of Plymouth and from 2 to 4 lanes in western Hennepin County.

Listed Species
According to the County Distribution of Minnesota's Federally-Listed Threatened, Endangered, Proposed, and Candidate Species list maintained by the U.S. Fish and Wildlife Service, Hennepin County is within the distribution range of the bald eagle (*Haliaeetus leucocephalus*) and the Higgins eye pearlymussel (*Lampsilis higginsii*), both federally-listed species.

Critical Habitat
There is no designated critical habitat within the action area.

Known Occurrences
According to the information provided by the Natural Heritage Database (updated 11-28-06) maintained by the Minnesota Department of Natural Resources and the U.S. Fish and Wildlife Service (Twin Cities ES Field Office), there are no known occurrences of federally-listed T&E or candidate species within the action area. As such, the proposed action has little to no potential to have any measurable influence on federally-listed T&E species, candidate species or on the habitat for which they depend.

If modifications are made or new information becomes available which indicates that listed species may be affected, please contact this office. This review was completed for federally-listed T&E and candidate species only. For information on state-listed T&E species, contact the Endangered Species Environmental Review Coordinator, Natural Heritage and Nongame Research Program, Minnesota Department of Natural Resources (651) 259-5107.

Sincerely,

Jason Alcott
Natural Resource Specialist, Senior

cc: Gerry Larson file

elm creek
Watershed Management Commission

ADMINISTRATIVE OFFICE
3235 Fernbrook Lane
Plymouth, MN 55447 PH:
763.553.1144
FAX: 763.553.9326 E-
mail: judie@jass.biz

TECHNICAL OFFICE
Hennepin County, DES
417 North 5th Street
Minneapolis, MN 55401-1397
PH: 612.596.1171
FAX: 612.348.8532
E-mail: Ali.Durgunoglu@co.hennepin.mn.us

December 20, 2007

James N. Grube, PE
Director of Transportation and County Engineer
Hennepin County Transportation Department
1600 Prairie Drive
Medina, MN 55340-5421

Re: CSAH 101/Sioux Drive at TH 55
Elm Creek project 2007-058

Dear Mr. Grube:

The Elm Creek Watershed Management Commission has received your letter of November 28, 2007 requesting comment on three conceptual options regarding realignment of the Elm Creek channel as part of future improvements to TH 55 between Plymouth and Rockford.

Your letter was reviewed at the Commission's December 12, 2007 meeting and the following comments were received:

1. While none of the options are favored, the Commissioners find Option 1 and Option 2 to be least desirable.

2. The natural resources value of the open creek channel must be maintained to the fullest extent possible. Any design should recognize that Elm Creek is, first, a natural resource, not only a stormwater conveyance channel, and must be preserved as an open channel for wildlife habitat and travel corridor. These values need to be restored in the design by leaving as much open channel as is feasibly possible.

This comment is in line with Policy C.3 of the Commission's second generation *Watershed Management Plan* that states: "The Commission will work with and support to the maximum extent practical the efforts of the Minnesota Department of Natural Resources, the US Corps of Engineers, the US Environmental Protection Agency, the US Fish and Wildlife Service, the Hennepin Conservation District, and Three Rivers Park District and other appropriate agencies in promoting public enjoyment and protecting fish, wildlife, and recreational resource values in the watershed."

3. Flood elevations should not be increased by the relocation of the creek and any lost flood storage must be replaced. Any proposed changes to the creek will be subject to the active rules and policies of the Commission at the time the application is received. Any floodway encroachment would require DNR approval and a FEMA map revision.

Thank you for the opportunity to provide preliminary comments on this project. We request that Hennepin County DOT continue to keep the Commission "in the loop" as they move forward.

Sincerely,

Judie A. Anderson
Administrator

JAA:tim

Cc: Troy Erickson, SRF Consulting Group
John Griffith, MnDOT
Rick Brown, SRF Consulting Group
Ali Durgunoğlu, HCDES

elm creek & pioneer-sarah creek Watershed Management Commissions

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November 7, 2006

NOV 2006
Received
SRF, Inc.

Ms. Christine Paulu
SRF Consulting Group, Inc.
One Carlson Parkway North
Plymouth, MN 55447

SUBJECT: TH 55 Environmental Assessment (EA)

Dear Ms. Paulu:

This is a joint response by the Elm Creek Watershed Management Commission (ECWMC) and the Pioneer-Sarah Creek Watershed Management Commission (PSCWMC) to your request for comments on the TH 55 EA. The following issues may be important for this project.

Watershed Jurisdictions:
Most of the TH 55 alignment from Co Rd 101 in Plymouth to Corcoran-Greenfield border lies within the ECWMC legal boundaries. A short stretch in Medina between Willow Drive and the west side of Rolling Hills Road, and the south half of the road along the Corcoran-Medina border are within PSCWMC. The entire alignment within the City of Greenfield is in PSCWMC.

Floodplains and Floodways:
Within ECWMC, Elm Creek and its tributaries cross TH 55 several times. There are floodplains and floodways along these streams, within the TH 55 right-of-way. Within PSCWMC, there are floodplains near Peter Lake in Medina, and near Sarah Lake in Greenfield. Depending where the project ends, there may be floodplain and floodway issues near Crow River in Rockford. Both Watersheds have floodplain management policies and standards.

Stormwater Management:
Both ECWMC and PSCWMC require rate and quality management for runoff originating from new impervious surfaces. The Watersheds have adopted a "non-degradation" policy for stormwater management.

Grading, Erosion & Sediment Control, SWPPP:
Both Watersheds would require a complete plan for grading, erosion & sediment control, and a SWPP.

Wetlands:
ECWMC and the PSCWMC are the LGUs administering the WCA in Corcoran and Greenfield, respectively. Medina and Plymouth are their own LGUs for the WCA. Most, if not all, of the wetland impacts associated with this project might qualify under the "BWSR Local Government Roads Wetland Replacement Program." The County would be responsible for all wetland delineations, applications and notices. Please refer to BWSR web page: http://www.bwsr.state.mn.us/wetlands/wcamanual/wcamanual02.pdf

Thanks you for the opportunity to comment on this project. Should you have any questions please contact Ali Durgunoglu or me at your convenience.

Sincerely

James C. Kujawa
Technical Advisor to the Commission's

cc Ali Durgunoglu, ECWMC
Judie Anderson, Executive Secretary

Bassett Creek Watershed Management Commission

www.bassettcreekwmo.org

• Crystal • Golden Valley • Medicine Lake • Minneapolis • Minnetonka • New Hope • Plymouth • Robbinsdale • St. Louis Park

November 22, 2006

Mr. James Grube
Hennepin County
1600 Prairie Drive
Medina MN 55340-5421

Re: Trunk Highway 55 Environmental Assessment

Dear Mr. Grube:

Thank you for providing the Bassett Creek Watershed Management Commission (BCWMC) with the opportunity to comment on the upcoming Environmental Assessment (EA) for the possible future expansion of Trunk Highway (TH) 55. The BCWMC reviewed the proposed EA at its November 16, 2006 meeting and offers the following comments:

General/Background

The portion of the study area located in the Bassett Creek watershed generally extends from Xenium Lane in Plymouth to the BCWMC's western boundary, roughly 1,800 feet northwest of TH 101. The segment between Vicksburg Lane and County Road 9 is outside the Bassett Creek watershed. Stormwater runoff from the study area within the Bassett Creek watershed discharges to Medicine Lake, which is the largest water body managed by the BCWMC and is on the MPCA's impaired waters list for excess nutrients (i.e., phosphorus) and mercury.

Businesses, taxpayers, homeowners, and private organizations have worked diligently to monitor and improve water quality in Medicine

Lake. The BCWMC and its member cities are incurring significant ongoing expenditures to improve water quality throughout the Bassett Creek watershed, and in the Medicine Lake watershed in particular. Because Medicine Lake is impaired, every effort must be made to improve, not just maintain, the lake's water quality. The BCWMC expects the TH 55 project design to include stormwater treatment and erosion control measures that will reduce the amount of phosphorus and sediment carried by stormwater runoff to Medicine Lake. The BCWMC also expects the county to consider measures to minimize the amount of increased impervious surfaces resulting from the TH 55 project.

Additional pollutants of concern to the BCWMC include fuel, oils, and metals from the construction site and/or construction vehicles, which could enter storm drains and downstream water resources if mobilized by stormwater

Michael Welch, BCWMC Chair
c/o Barr Engineering Company
4700 West 77th Street
Minneapolis, MN 55435
612-385-6885

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952-832-2601 (fax)

runoff. To prevent stormwater pollution during the construction period, the project must include measures to prevent polluted runoff from exiting construction sites.

Floodplain Issues

Plymouth Creek crosses TH 55 3,000 feet east of County Road 101/Peony Lane. The BCWMC-adopted 100-year floodplain elevation along Plymouth Creek is 982.5 upstream (south) of TH 55 and 982.0 downstream (north) of TH 55. The BCWMC will generally not allow filling within the BCWMC-established floodplain. Proposals to fill within the floodplain must obtain BCWMC approval and provide compensating storage and/or channel modifications so that the flood level is not increased at any point along the trunk systems due to fill. Floodplain management policies are listed in Section 5.2.2.2 of the BCWMC's 2004 Watershed Management Plan (available at http://www.bassettcreekwmo.org, see link to "Second Generation Plan").

Runoff and Rate Control

The BCWMC regulates stormwater runoff discharges and volumes to minimize flood problems, flood damages, and future costs of stormwater management systems. Expansion of TH 55 has the potential to significantly increase the amount of impervious surface, which will result in increased runoff rates if not controlled. Best management practices must be implemented to maintain runoff rates at existing levels and ensure flood profiles are not increased along Plymouth Creek.

Water Quality

The BCWMC and its member cities have committed significant resources to the improvement of the quality of stormwater runoff reaching the Mississippi River, by reducing nonpoint source pollution carried as stormwater runoff. Studies have shown that highway runoff is a primary contributor of phosphorus and contaminants to water resources. The BCWMC strongly encourages the County to implement best management practices to treat Trunk Highway 55 runoff to ensure that the expansion of the highway does not increase pollutant-loading to adjacent water bodies. The BCWMC's water quality policies are listed in Section 4.2 of the Watershed Management Plan.

Maintenance

Maintenance of stormwater management (water quality and flood control) features is critical to ensure proper operation. The EA should describe the maintenance measures the county proposes to undertake to ensure the efficacy of stormwater management features. The EA should also identify the parties responsible for inspections, the parties responsible for maintenance, and the inspection and maintenance schedules. The BCWMC is concerned that if these operation and maintenance responsibilities are not clearly laid out, the responsibility will fall on the member cities or BCWMC to perform the duties.

Erosion Control

The BCWMC goal is to prevent erosion and sedimentation to the greatest extent possible to protect the BCWMC's water resources from increased sediment loading and associated water quality problems. Temporary and permanent best management practices must be implemented to control construction and post-development runoff from the site and erosion. Erosion and sediment control policies are listed in Section 6.2 of the Watershed Management Plan.

Wetland Management

The BCWMC wetland goal is to achieve no net loss of wetlands in the Bassett Creek Watershed in conformance to the MN Wetland Conservation Act (WCA) and associated rules (Minnesota rules 8420). Plymouth is the local

governmental unit (LGU) responsible for administering the WCA. Wetland management policies are listed in Section 8.0 of the Watershed Management Plan.

The BCWMC's submittal and design requirements for projects (*Requirements for Improvements and Development Proposals*) and the Watershed Management Plan can be downloaded from the BCWMC website www.bassettcreekwmo.org.

The BCWMC understands that as the population in the western suburbs increases, so does the need to expand the highways. The BCWMC looks forward to working with you to restore and protect the health of the BCWMC's water resources. The BCWMC appreciates the opportunity to provide these comments early in the process. If you have questions, please contact Jim Herbert or Len Kremer, engineers for the BCWMC at 952-832-2600, or me at 612-385-6885.

Michael Welch
Chair
Bassett Creek Watershed Management Commission

c: Doran Cote, City of Plymouth
John Griffith, Mn/DOT
Christine Paulu, SRF Consulting Group, Inc.
Jim Herbert, Barr Engineering Co.

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MAY 4 2006
RECEIVED
CULTURAL RESOURCE UNIT

MINNESOTA HISTORICAL SOCIETY
State Historic Preservation Office

April 26, 2006

Ms. Elizabeth Abel
Cultural Resource Unit
MN Dept. of Transportation
Transportation Building, MS 620
395 John Ireland Boulevard
St. Paul, MN 55155-1899

Re: S.P. 8606-53
T.H. 55 expansion, I-494 to 500 feet NW of CSAH 5 in Annandale
Hennepin and Wright Counties
SHPO number: 2006-1447

Dear Ms. Abel:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We have reviewed the report of the survey of the project area. We have also recently reviewed the statewide farmstead evaluation/planning study completed by MnDOT. We have some questions related to the methodology of this project survey vis-à-vis the general approach to evaluation suggested in the broader study. Perhaps the best means of resolving these issues would be to schedule a consultation meeting. I would suggest including Susan Roth of our staff and myself in that meeting.

We look forward to working with you to complete this review.

Sincerely,

Kelly Gragg-Johnson

Dennis A. Gimmestad
Government Programs & Compliance Officer

345 Kellogg Boulevard West / Saint Paul, Minnesota 55102-1906 / Telephone 651-296-6126

Minnesota Department of Transportation

Transportation Building
395 John Ireland Boulevard
Saint Paul, Minnesota 55155-1899

September 22, 2006

Direct Line: (651) 284-3244
Mail Stop 620

Mr. Dennis A. Gimmestad
Government Programs & Compliance Officer
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, MN 55101

Re: SP 8606-53 (TH 55 expansion, I-494 to 500 feet NW of CSAH 5 in Annandale)
Hennepin and Wright Counties
Mn/DOT Agreement 86560
OSA License Nos. 04-076, 05-053, 05-054, 05-055, 05-056 and 05-057
SHPO No. 2006-1447

Dear Mr. Gimmestad:

Thank you for your letter of April 26, 2006, regarding Mn/DOT's architectural history survey of the above-referenced project. Your letter indicated that you had "some questions related to the methodology of this project survey vis-à-vis the general approach to evaluation" suggested by the statewide farmstead study completed for Mn/DOT by Gemini Research. Following receipt of your letter, I had a discussion with Susan Roth concerning some of those questions. As I recall our conversation, she expressed some concerns related to the vigor of the research design/methodology and to the assessment of the potential eligibility of individual barns within the survey area.

As I indicated to Susan during our conversation, Mn/DOT's statewide farmstead study was not used during the TH 55 survey as it was not yet available to our consultants. Mead & Hunt carried out the TH 55 architectural history work during late 2004 and early 2005, several months prior to Mn/DOT's receipt of the complete draft of the statewide study in June 2005. It then took several months for our staff to thoroughly review the draft study and determine what changes were required before Mn/DOT could begin to implement its recommendations. The methods and recommendations of the TH 55 survey meet the standards of previous work completed by Mn/DOT and reviewed by your office, and we believe it represents a good-faith effort to identify historic properties.

Enclosed please find photos of the surveyed barns that were not included in the Phase I report. The statewide farmstead study recommends that single animal husbandry elements should not be considered individually eligible for the National Register under Criterion C unless they are "especially distinctive, extensive, large, well-developed, or otherwise outstanding" (Granger and Kelly, 2005 draft). None of the surveyed barns meet these requirements. These barns reflect a predominance of diversified dairying and are typical of the area and their common type is not complemented by an illustrative farmstead. Therefore, our determination that none of the surveyed barns is individually eligible for the National Register remains appropriate.

We have had no previous correspondence with your office regarding the archaeological investigations completed for this project. Enclosed for your review please find one copy each of the final reports *Phase I Cultural Resources and Phase II Architecture/History Investigation for the Proposed Trunk Highway 55 Expansion, Hennepin and Wright Counties, Minnesota,* (Volumes I and II), and *Phase I Survey at Site 21HE356, and Phase II Archaeological Evaluations of Four Sites Along TH 55, Hennepin and Wright Counties, Minnesota,* submitted to Mn/DOT by Mead & Hunt, Inc., and Foth & Van Dyke and Associates, Inc. As the project is currently in the preliminary development stage, the archaeological survey addressed a 500-foot wide corridor centered on the existing TH 55 centerline (250 feet on either side of the centerline). This preliminary area of potential effects (APE) will encompass most project construction activities while allowing for some flexibility in roadway design. Construction will not extend beyond the Canadian Pacific Railway tracks; therefore, where the tracks are within 250 feet of the in-place TH 55 centerline, they formed the outer boundary of the archaeology APE.

The Phase I archaeological survey identified 1 previously recorded and 16 new precontact sites within the project APE. Foth & Van Dyke recommended that five sites warranted Phase II evaluation under National Register Criterion D. One of these five sites is not likely to be impacted by roadway reconstruction and was not evaluated. The following is a brief summary of the results of the archaeological investigations.

- Based on the results of the Phase I survey, Foth & Van Dyke recommended that sites **21HE358, 21HE359, 21WR150, 21WR151, 21WR154, 21WR152, 21WR157, 21WR158, 21WR159, 21HE263, 21HE356,** and **04MO94-14**[i] <u>are not eligible</u> for listing in the National Register of Historic Places. We concur with the consultant's recommendations.

- Following Phase II evaluation, Foth & Van Dyke recommended that sites **21HE357, 21WR148, 21WR153** and **21WR155** <u>are not eligible</u> for listing in the National Register of Historic Places. We concur with the consultant's recommendations.

- The fifth site Foth & Van Dyke recommended potentially eligible and warranting Phase II National Register evaluation is Site **21WR152**. This siste is located at the northern limits of the project APE and is separated from the in-place TH 55 roadway by the St. Timothy Cemetery (see Figure 25 of the Phase I report [Squitieri and Trocki 2006]). As it is unlikely that roadway reconstruction will extend beyond the cemetery limits, Mn/DOT did not conduct a National Register evaluation of site 21WR152. If the project does include work beyond the cemetery limits in the direction of 21WR152, Mn/DOT will complete a Phase II National Register evaluation of the site.

The project APE includes four historic properties: (1) the **Soo Line Railway** (currently Canadian Pacific) line between Minneapolis and North Dakota, identified during a previous Mn/DOT review; (2) the **Dickinson Spring Roadside Parking Area** (WR-RKT-006), located along TH 55 and identified during Mn/DOT's study of historic roadside development properties; (3) the **Wandersee farmstead** (WR-RKC-009) within the City of Rockford, identified during the present survey; and (4) the **Thayer Hotel** (WR-ANC-001) in Annandale, currently listed in the National Register of Historic Places. The effects of the proposed undertaking on these four properties cannot yet be determined. Currently, it appears that **Site 21WR152** is unlikely to be affected by proposed roadway reconstruction. We look

forward to consulting with you further when project design has progressed sufficiently for us to begin to determine effects to historic properties.

Sincerely,

Elizabeth J. Abel
Historical Archaeologist/Historian
Cultural Resources Unit

encs.

cc: Scott Anfinson, State Archaeologist
Claudia Dumont,Mn/DOT District 3
John Griffith, Mn/DOT Metro District
Daniel Rowe, Mn/DOT Metro District
Amy Squitieri, Mead & Hunt
Patricia Trocki, Foth & Van Dyke
Joe Hudak, Mn/DOT CRU
Mn/DOT CRU Project File
Mn/DOT CO Files
Minnesota Legislative Reference Library

[1] Field site 04MO94-14 consisted of cultural materials recovered from imported fill and was not assigned a state site number.

MINNESOTA HISTORICAL SOCIETY

State Historic Preservation Office

NOV 2006
RECEIVED
CULTURAL
RESOURCE
UNIT

October 30, 2006

Ms. Elizabeth Abel
Cultural Resources Unit
MN Dept. of Transportation
Transportation Building, MS 620
395 John Ireland Boulevard
St. Paul, MN 55155-1899

Re: S.P. 8606-53, T.H. 55 expansion, I-494 to 500 feet NW of CSAH 5 in Annandale
Hennepin and Wright Counties
SHPO Number: 2006-1447

Dear Ms. Abel:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We concur with your conclusion that, with one exception, the archaeological sites that were identified in the project area do not meet National Register criteria. The exception is 21WR0152. This site currently lies outside the area of potential effect. Should there be any changes in this area of the project, additional consultation should take place.

We look forward to consulting with you further with regard to project effects on other properties. Contact us at 651-296-5462 with questions or concerns.

Sincerely,

Kelly Gragg-Johnson

Dennis A. Gimmestad
Government Programs & Compliance Officer

Minnesota Department of Transportation

Transportation Building
395 John Ireland Boulevard
Saint Paul, Minnesota 55155-1899

June 29, 2007

Direct Line: (651) 366-3604
Mail Stop 620

Mr. Dennis A. Gimmestad
Government Programs & Compliance Officer
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Boulevard W.
St. Paul, MN 55101

Re: S.P. 2722-68 & 27-596-02 (TH 55 expansion, I-494 to west Hennepin County line)
Hennepin County
SHPO No. Pending

Dear Mr. Gimmestad:

We have reviewed the above-referenced undertaking pursuant to our FHWA-delegated responsibilities for compliance with Section 106 of the National Historic Preservation Act, as amended (36 CFR 800), and as per the terms of the June 2005 Programmatic Agreement (PA) between the FHWA and the State Historic Preservation Office (SHPO). Our office began review of this project under S.P. 8606-53 (SHPO File No. 2006-1447), which included potential expansion of Trunk Highway (TH) 55 from Interstate 494 (I-494) in Hennepin County to 500 feet NW of County State Aid Highway (CSAH) 5 in Annandale, Wright County. Since we initiated our review the undertaking has been split into two separate projects, a Hennepin County portion and a Wright County portion. This letter addresses our review of the Hennepin County project, which begins at I-494 and ends at the county line. The project has been allocated funding for right of way preservation and Mn/DOT is preparing an Environmental Assessment for this undertaking.

Enclosed please find preliminary concept design drawings (sheets 1-3) from SRF Consulting Group, Inc., dated June 13, 2007, showing the work proposed. The project includes reconstruction of intersections, access revisions, and upgrading existing two-lane sections of the roadway to four lanes. There will be little change in the roadway's horizontal or vertical alignments. Additional right of way will be required. Please note that our review on behalf of the FHWA does not include potential future construction planned by local municipalities and shown in the concept drawings. These are locally proposed projects that are not dependent on TH 55 reconstruction. The project area of potential effects (APE) for architecture/history properties was determined to extend 500 feet on either side of the existing TH 55 centerline in rural areas and 250 feet in urban areas. In Plymouth, the APE was widened to encompass residential properties that may be affected by new traffic patterns at the intersection of Niagara Lane/Plymouth Drive and TH 55. For archaeological resources, the project APE extended 250 feet on either side of the current TH 55 centerline in rural areas and varied in urban areas. In Plymouth, the archaeology APE included only the current right of way, as construction will not extend beyond this limit. In addition, since proposed construction will not extend beyond the Canadian Pacific Railway right of way (r/w), this boundary was used to define the extent of the APE where it came nearer than 250 feet from the current TH 55 centerline.

Mn/DOT has completed Phase I and II archaeological and architecture/history surveys for the project and has consulted with your office regarding the National Register eligibility of identified historic properties (SHPO File No. 2006-1447). The Mn/DOT surveys identified no archaeological sites listed in or eligible for listing in the National Register of Historic Places within the project APE.

There is one architecture/history property eligible for the National Register within the project APE. The APE includes a portion of the Minneapolis, St. Paul & Sault Ste. Marie (Soo Line) Railway mainline (now operated by the Canadian Pacific Railway) where it crosses TH 55. The rail line was determined eligible for listing in the National Register of Historic Places by our office in a previous review (S.P. 2722-XX; SHPO File No. 2003-2546). The basis for our determination of eligibility and the property's period of significance are detailed in my July 23, 2003, letter to you (please see copy enclosed). Mn/DOT has recently completed the final draft of the *Railroads in Minnesota, 1962-1956*, Multiple Property Documentation Form, which I referred to in reaffirming my 2003 determination. The MPDF supports our determination that the Soo Line main line running between Minneapolis and Boynton, North Dakota, is a railroad corridor historic district eligible for listing in the National Register of Historic Places. The portion of the railroad corridor within the project APE is still in operation and retains its historically significant features; therefore, it is a contributing portion of the historic district. Bridge 5847 carrying the rail line over TH 55 will be replaced (please see enclosed concept sheet #3). Bridge 5847 was built in 1940 and post-dates the railroad corridor historic district's period of significance (1886-1906). The bridge is not eligible for the National Register as an individual property. Bridge 5847 is a 110-foot long span. In order to cross TH 55 and potential frontage roads, the replacement bridge will measure approximately 256 feet in length. A temporary shoo-fly will be built to carry the rail line during roadway construction. The project will impact a very limited segment of the railroad corridor historic district by removing a non-contributing bridge and small portions of the adjoining grade to accommodate a new, longer bridge. No right of way will be acquired from the railroad and the rail line will retain its existing alignment. The rail line within the historic district will remain active

Therefore, it is the determination of this office that the proposed project will have **no adverse effect** on historic properties. As per the terms of the 2005 PA, please provide your comments on this project within 30 days of receipt. If the project scope changes, we will conduct an additional review.

Sincerely,

Elizabeth J. Abel
Historical Archaeologist/Historian
Cultural Resources Unit (CRU)

encs.

cc: Scott Anfinson, State Archaeologist
Nancy Frick, SRF Consulting Group
Joe Hudak, Mn/DOT CRU
Mn/DOT CRU Project File
Mn/DOT CO File

MINNESOTA HISTORICAL SOCIETY
State Historic Preservation Office

AUG 2007
RECEIVED
CULTURAL
RESOURCE
UNIT

August 17, 2007

Ms. Elizabeth Abel
Cultural Resources Unit
MN Dept. of Transportation
Transportation Building, MS 620
395 John Ireland Boulevard
St. Paul, MN 55155-1899

Re: S.P. 2722-68 & 27-596-02, T.H. 55
T.H. 55 expansion from I-494 to west Hennepin County line
Hennepin County
SHPO Number: 2007-2515

Dear Ms. Abel:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We have two comments on this project review:

1. We note that this project has been allocated funding for corridor preservation. Certainly, it is sound planning to complete a cultural resource survey at the time of corridor planning; we also recognize that the road design at this point is at the concept level. Is there an anticipated construction schedule for the project at this time? Perhaps the Section 106 process should not conclude with a finding of effect until the plans are more fully developed, and the construction process is nearer. Or, alternatively, a Programmatic Agreement could be written that recognizes the need for more detailed review of identification activities and project plans at a later date. We would be happy to discuss this issue with you further.

2. We concur with the determination that the Minneapolis, St. Paul & Sault Ste. Marie (Soo Line) Railroad meets National Register criteria. Your transmittal indicates a period of significance for this line from 1886-1906. It would seem that this rail line might have exerted a significant influence over the route through central Minnesota for a longer period into the 20th century, which could make Bridge 5847 a contributing element of the line. Again, we would be happy to discuss this issue with you further.

Contact us at 651-259-3456 with questions or concerns.

Sincerely,

Dennis A. Gimmestad
Government Programs & Compliance Officer

Minnesota Department of Transportation

Transportation Building
395 John Ireland Boulevard
Saint Paul, Minnesota 55155-1899

January 8, 2008

Direct Line: (651) 366-3604
Mail Stop 620

Mr. Dennis A. Gimmestad
Government Programs & Compliance Officer
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Boulevard W.
St. Paul, MN 55101

Re: S.P. 2722-68 & 27-596-02 (TH 55 expansion from I-494 to Hennepin County line)
Hennepin County
SHPO No. 2007-2515

Dear Mr. Gimmestad:

Thank you for your August 17, 2007, letter to me commenting on our review of the above-referenced project.

In answer to your suggestion that perhaps the Minneapolis, St. Paul & Sault Ste. Marie (Soo Line) main line corridor exerted influence over central Minnesota for a longer period of significance than we determined, we note that there were several other rail lines providing service to central Minnesota that predate construction of the Soo Line's main corridor between Minneapolis and Lidgerwood, ND. Like, the Soo Line's main corridor, these lines operated well into the late twentieth century. As outlined on the enclosed detail from the 1930 *Railroad Commissioner's Map of Minnesota,* three Great Northern system lines and one Northern Pacific line provided long-distance rail service to central Minnesota. The two Great Northern lines are located no farther than 18 miles from the Soo's main line. In addition, the Willmar and Sioux Falls Railway (later Great Northern) between St. Cloud and Willmar (1885) and the Northern Pacific's line between Morris and Sauk Center (1882) predate the Soo's main line and provided additional rail service to central Minnesota.

The historical significance of the Soo Line's main line corridor from Minneapolis to Lidgerwood derives from its association with industrial flour milling in Minneapolis. From its inception in 1886 until 1906, the main line was the primary transporter of wheat for the millers that financed and controlled the Soo Line. In 1906, the railway built the "Wheat Line" from Thief River Falls through the Red River Valley to Kenmare, ND. The "Wheat Line" became the primary route within the Soo Line system for transporting wheat from the growers to the Minneapolis mills. However, grain brought in on the "Wheat Line" still required use of the main line corridor between Glenwood and Minneapolis to reach the mills.

The period of significance for the main line may be expanded to include not only the period in which the entire main line corridor (Minneapolis to Lidgerwood, ND) provided the primary route for wheat shipments, but also the period when wheat from the Red River Valley via the "Wheat Line" used the segment of the main line between Glenwood and Minneapolis. Flour milling in Minneapolis declined dramatically beginning in the 1930s and the Minneapolis, St. Paul & Sault Ste. Marie filed for bankruptcy in 1937. The company was reorganized and emerged from receivership in 1943. During the war years, it provided passenger service but was not a significant transporter of military personnel or equipment. The period of significance for the Soo Line's main line corridor between Minneapolis and Lidergerwood, ND, does not extend beyond 1937, the date when the Minneapolis flour mills had declined and the Minneapolis, St. Paul and Sault Ste. Marie Railway filed for bankruptcy. Bridge 5847 was built by the State Highway Department in 1940 in association with the widening of TH 55. Therefore, our determination that Bridge 5847 post-dates the period of significance for the Soo Line's main line and is a non-contributing element of the Soo Line main line railroad corridor historic district remains appropriate.

We appreciate your comments regarding whether a determination of effects by our office is appropriate at this time. The expansion of TH 55 is not currently part of Mn/DOT's 20-year plan, and no funds are available at this time for construction of the preferred alternative. The intent of the EA/EAW is to support the future use of federal funding for right of way protection and to allow for small improvement projects, consistent with the design concept, to be carried out as funding becomes available. Our Section 106 determination of effects would be more appropriate for each of these smaller projects as they are proposed, and the assessment of eligible properties is reviewed and updated, as appropriate, via the NEPA documentation process.

In the interest of providing clarity when further work within the corridor is proposed, I am briefly summarizing our findings regarding SP 2722-68/27-596-02 to date. **Archaeology**: Mn/DOT surveyed the project area of potential effects (APE) in 2005 and 2006. The APE extends 250 feet on either side of the TH 55 centerline, except within the City of Plymouth, where it did not extend beyond the current TH 55 right of way. There are no National Register-eligible archaeological sites within the project APE. **Architecture/History**: Mn/DOT surveyed the project APE in 2005 and 2006. The only National Register-eligible property within the project APE is the Soo Line's main line railroad corridor historic district, between Minneapolis and Lidgerwood, ND. The segment of the corridor district within the project APE is an active rail line and retains its historic integrity; therefore, it is a contributing segment of the railroad corridor historic district. Bridge 5847, carrying the Soo Line over TH 55, post-dates the line's period of significance and is not a contributing element of the railroad corridor historic district.

Again, thank you for providing us with your comments regarding this review. We look forward to further consultation with your office as individual projects within the corridor are proposed.

Sincerely,

Elizabeth J. Abel
Historical Archaeologist/Historian
Cultural Resources Unit (CRU)

enc.

cc: Nancy Frick, SRF
Joe Hudak, Mn/DOT CRU
Mn/DOT CRU Project File
Mn/DOT CO File

MINNESOTA HISTORICAL SOCIETY

State Historic Preservation Office

JAN 2008
RECEIVED
CULTURAL
RESOURCE
UNIT

January 23, 2008

Ms. Elizabeth Abel
Cultural Resources Unit
MN Dept. of Transportation
Transportation Building, MS 620
395 John Ireland Boulevard
St. Paul, MN 55155-1899

Re: S.P. 2722-68 & 27-596-02
T.H. 55 expansion from I-494 to Hennepin County line
Hennepin County
SHPO Number: 2007-2515

Dear Ms. Abel:

Thank you for your consideration of our 17 August 2007 comments on the above referenced review.

We look forward to working with your office in the review of various aspects of this project as they are developed. Contact us at 651-259-3456 with questions or concerns.

Sincerely,

Kelly Gragg-Johnson

for Dennis A. Gimmestad
Government Programs & Compliance Officer

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 10/29/07	4. Sheet 1 of _____
1. Name of Project Trunk Hwy 55 from Plymouth to Rockford	5. Federal Agency Involved	
2. Type of Project Highway Corridor Improvements	6. County and State Hennepin, Minnesota	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 11-1-07	2. Person Completing Form weikle
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☒ NO ☐		4. Acres Irrigated / Average Farm Size
5. Major Crop(s) Corn Soybeans Hay	6. Farmable Land in Government Jurisdiction Acres: 228 400 % 81	7. Amount of Farmland As Defined in FPPA Acres: 181 115 %79
8. Name Of Land Evaluation System Used LE Part of Lesa	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS 12-28-07

PART III *(To be completed by Federal Agency)*		Alternative Corridor For Segment _____			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		28.3			
B. Total Acres To Be Converted Indirectly, Or To Receive Services		1.9			
C. Total Acres In Corridor		0 30.2	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*					
A. Total Acres Prime And Unique Farmland		20.3			
B. Total Acres Statewide And Local Important Farmland		4.4			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		.0001364			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		44.3			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*		89.2			
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	9			
2. Perimeter in Nonurban Use	10	5			
3. Percent Of Corridor Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	20			
5. Size of Present Farm Unit Compared To Average	10	9			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	2			
8. On-Farm Investments	20	4			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	2			
TOTAL CORRIDOR ASSESSMENT POINTS	160	0 51	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100				
Total Corridor Assessment (From Part VI above or a local site assessment)	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

APPENDIX C

TRAFFIC OPERATIONS ANALYSIS

SRF No. 0065712

MEMORANDUM

TO: Rick Brown, P.E., Vice President
Nancy Frick, AICP, Senior Associate

FROM: John Hagen, P.E., PTOE, Senior Associate
Jordan Mancl, Engineer

DATE: October 18, 2007

SUBJECT: TH 55 Environmental Assessment and Preliminary Layout
Traffic Operations Analysis

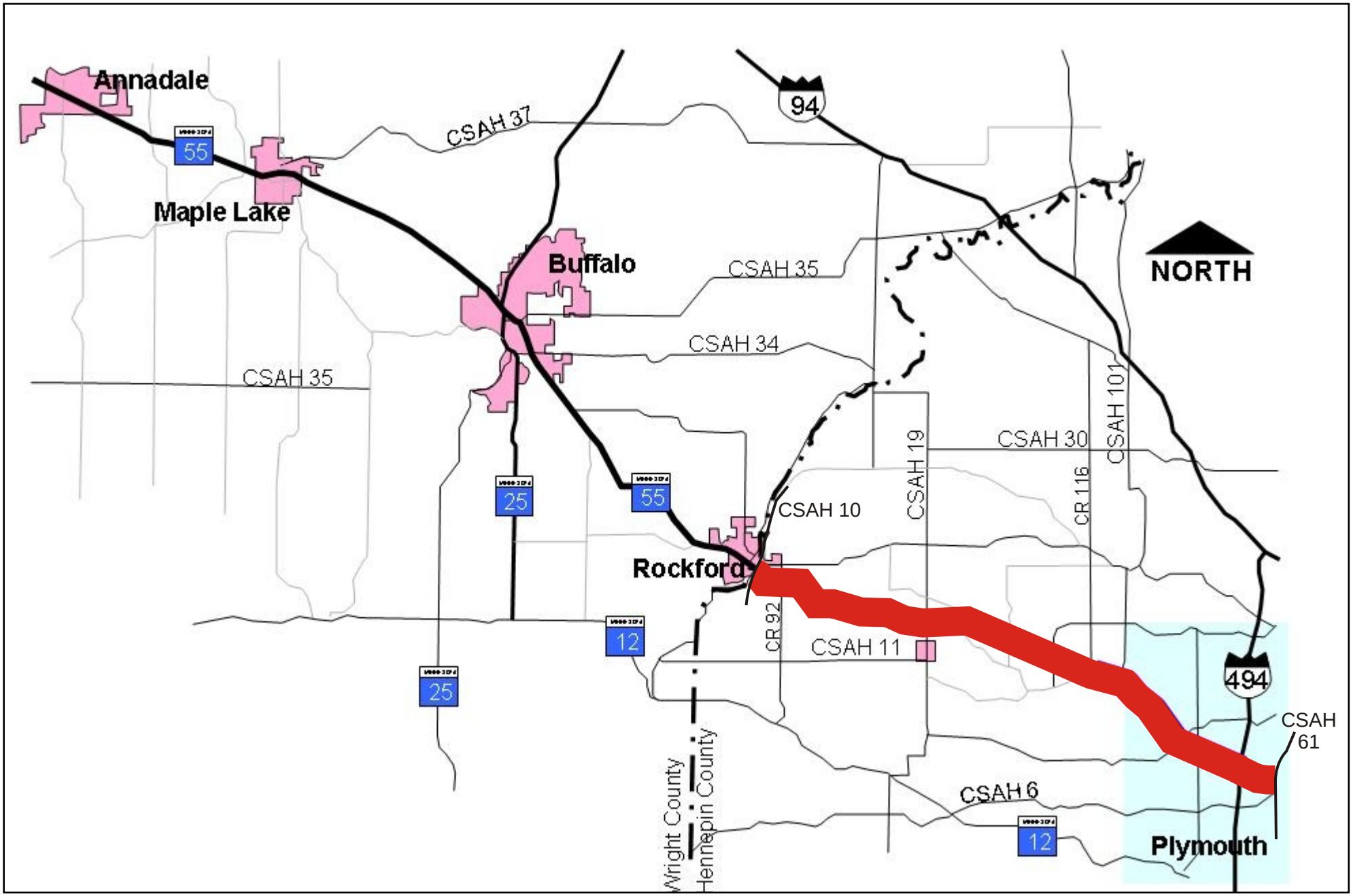
INTRODUCTION

As part of the TH 55 Environmental Assessment and Preliminary Layout, we have completed a traffic operations analysis of the existing and proposed roadway alternatives along TH 55 from CSAH 61 in Plymouth to CSAH 50/CSAH 10 in Rockford. The purpose of this traffic operations study is to identify, describe, and quantify the existing and forecast year traffic operations within the project study segment (see Figure 1). The existing, year 2030 No Build, and year 2030 Build traffic operations were analyzed for both a.m. and p.m. peak hour.

It should be noted that in April 2005, SRF Consulting Group, Inc. performed a TH 55 Future Traffic Demand Study from CSAH 61 in Plymouth to Willow Drive in Medina. The objective of that study was to assist Mn/DOT and the TH 55 Corridor Coalition in fully understanding traffic impacts associated with future improvements and expansion of TH 55. The results of the study were used to assist Mn/DOT and the TH 55 Corridor Coalition in future studies such as this environmental assessment and preliminary layout. Traffic forecasts from this previous study were used to develop turning movements for existing, year 2030 no build, and year 2030 build conditions on TH 55 from CSAH 61 to Willow Drive.

Study Segment

As shown in Figure 1, the study segment along TH 55 extends from CSAH 61 in Plymouth west to CSAH 50/CSAH 10 in Rockford. TH 55 is currently a four-lane facility from CSAH 61 to just west of Arrowhead Drive and is a two-lane facility from just west of Arrowhead Drive to just east of CSAH 50/CSAH 10. TH 55 then becomes a four-lane facility just east of CSAH 50/CSAH 10 through into Rockford.



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PROJECT SEGMENT

TH 55 EA & PRELIMINARY LAYOUT
Minnesota Department of Transportation

Figure 1

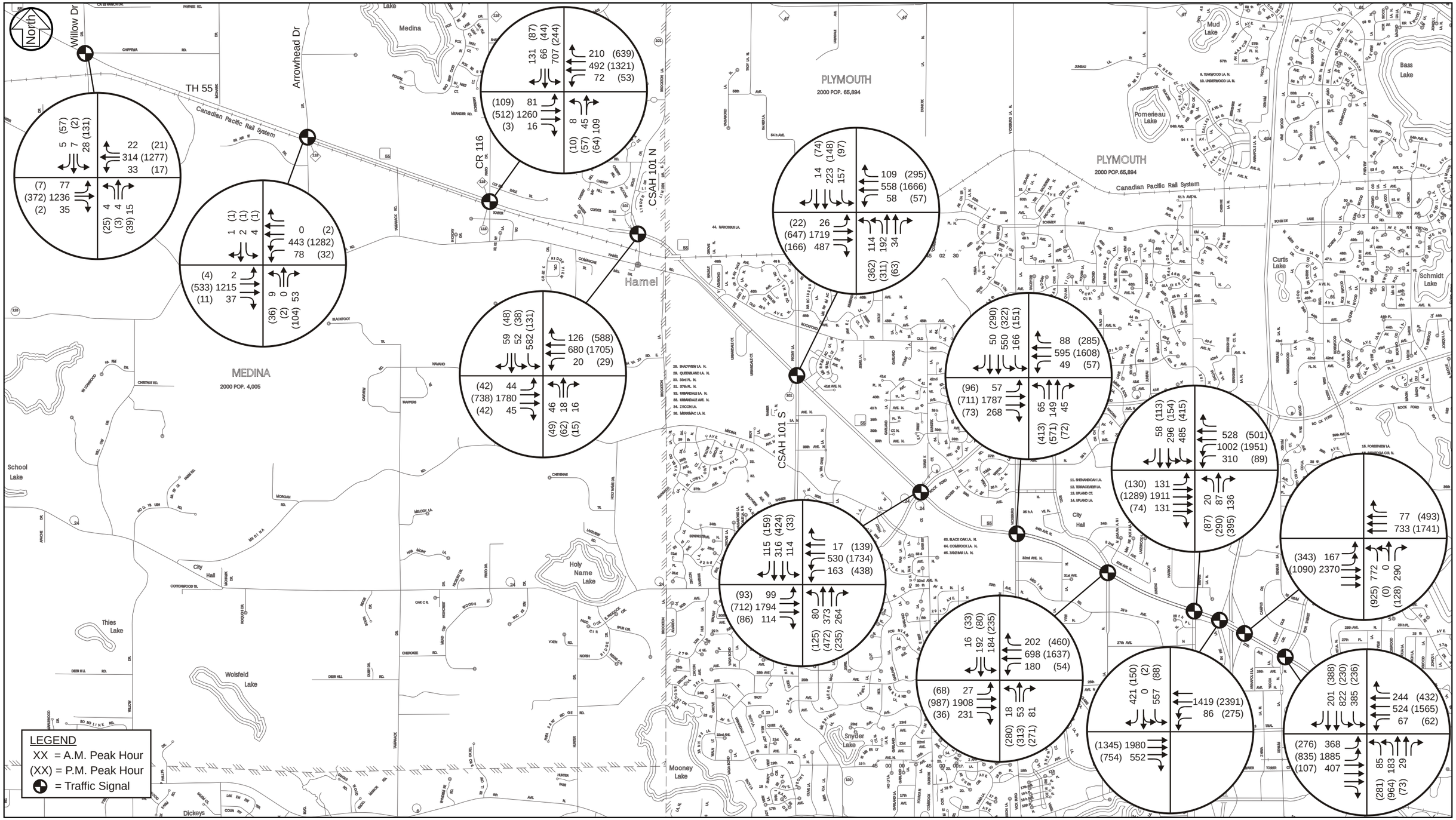
The key intersections that will be analyzed as part of this study include:

- TH 55 and CSAH 61
- TH 55 and I-494 East Ramp
- TH 55 and I-494 West Ramp
- TH 55 and Fernbrook Lane
- TH 55 and Plymouth Boulevard
- TH 55 and Vicksburg Lane
- TH 55 and CSAH 21/CSAH 9
- TH 55 and CSAH 101 (S)
- TH 55 and CSAH 101 (N)
- TH 55 and CR 116
- TH 55 and Arrowhead Drive
- TH 55 and Willow Drive
- TH 55 and Town Line Road
- TH 55 and Town Hall Drive
- TH 55 and Lake Sarah Heights Drive
- TH 55 and Vernon Street
- TH 55 and CSAH 19
- TH 55 and Greenfield Road
- TH 55 and CSAH 92
- TH 55 and CSAH 50/CSAH 10

EXISTING CONDITIONS

A traffic operations analysis was performed for a.m. and p.m. peak hour existing conditions to compare what the impacts that future traffic growth will have on the existing network. Current traffic controls include signalization at all key intersections, except TH 55/Townline Road, TH 55/Town Hall Drive, TH 55/Lake Sarah Heights Drive, TH 55/Vernon Street, and TH 55/Greenfield Road which are controlled by a side-street stop. SRF Consulting Group, Inc. collected a.m. and p.m. peak hour turning movement counts at each of the intersections stated above. Existing geometrics, traffic controls, as well as a.m. and p.m. peak hour traffic volumes for all key intersections are shown in Figures 2 and 3.

An operations analysis was conducted for the a.m. and p.m. peak hours at each of the respective peak hour key intersections to determine how traffic currently operates along the project segment. All signalized intersections were analyzed using the Synchro/SimTraffic software and unsignalized intersections were analyzed using the Highway Capacity Software. Capacity analysis results identify a Level of Service (LOS), which indicates how well an intersection is operating. The LOS results are based on average delay per vehicle. Intersections are given a ranking from LOS A through LOS F. LOS A indicates the best traffic operation and LOS F indicates an intersection where demand exceeds capacity. LOS A through D is generally considered acceptable by drivers.



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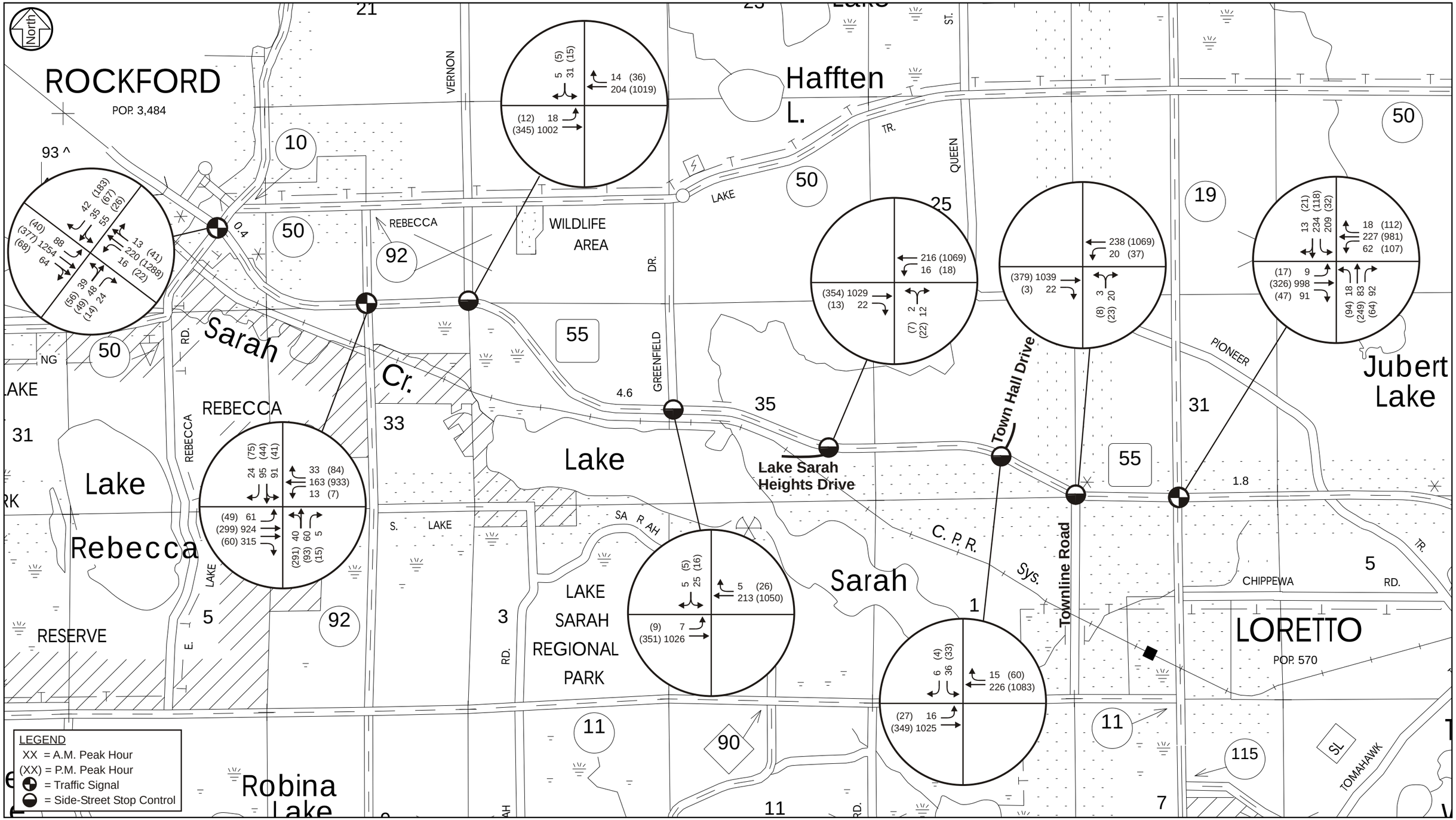
EXISTING CONDITIONS (1 of 2)

TH 55 CORRIDOR STUDY
Minnesota Department of Transportation

Figure 2



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EXISTING CONDITIONS (2 of 2)

TH 55 CORRIDOR STUDY
Minnesota Department of Transportation

Figure 3

For the analysis of side-street stop controlled intersections, the operations can be described in two ways. First, the overall intersection level of service is documented, which provides the average delay per vehicle for all approaches. However, at an intersection with side-street stop control, the mainline does not stop. Therefore, the majority of delay is experienced by vehicles on the side street. In addition to providing an average delay for all approaches, it is important to indicate the level of service on the side-street approach. It is typical of intersections with higher mainline traffic volumes to experience high levels of delay (poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during the peak periods.

Results of the analysis shown in Table 1 indicate that several intersections operate at a LOS E or worse in the a.m. and p.m. peak period. The intersections that operated at a LOS E or worse in the a.m. peak hour include TH 55/CSAH 19, TH 55/CR 116, and TH 55/I-494 East Ramp. The intersections that operated at a LOS E or worse in the p.m. peak hour include TH 55/CSAH 50/CSAH 10, TH 55/CSAH 92, TH 55/Vernon Street, TH 55/Vicksburg Lane, TH 55/Fernbrook Lane, TH 55/I-494 East Ramp, and TH 55/CSAH 61.

Table 1
Existing Intersection Capacity
A.M. and P.M. Peak Hour Intersection Level of Service[1]

Location	Existing Conditions (2004)			
	AM		PM	
	LOS	Delay (sec)	LOS	Delay (sec)
CSAH 50/CSAH 10	C	25	**F**	130
CSAH 92	C	30	**F**	>180
Greenfield Road[2]	A/C	5	A/C	5
CSAH 19	**E**	65	C	35
Vernon Street[2]	A/C	10	**F/F**	115
Lake Sarah Heights Drive[2]	A/B	10	A/C	10
Town Hall Drive[2]	A/C	5	A/D	10
Town Line Road[2]	A/B	10	A/C	10
Willow Drive	C	25	C	25
Arrowhead Drive	B	10	B	20
CR 116	**F**	100	C	25
CSAH 101 (N)	C	30	C	25
CSAH 101 (S)	D	45	D	45
CSAH 21/CSAH 9	D	55	D	50
Vicksburg Lane	D	45	**F**	95
Plymouth Blvd.	D	45	D	45
Fernbrook Lane	D	45	**F**	175
I-494 West Ramp	C	35	B	20
I-494 East Ramp	**F**	115	**F**	>180
CSAH 61	D	50	**F**	105

[1]LOS is a measure of congestion. Mn/DOT defines acceptable LOS to be LOS D or better.
[2]Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.

YEAR 2030 NO-BUILD CONDITIONS

Traffic forecasts were developed for year 2030 no-build conditions. No-build volumes from CSAH 61 to Willow Drive were taken from the previous TH 55 Future Traffic Demand Study. The no-build numbers for the remainder of the intersections were developed using the same model that produced the forecasts contained in the earlier study. No-build conditions assume that the geometrics on the roadway will not change in the future while land use will develop around the corridor. Signal timing optimizations are also made in the no-build scenario. Figures 4 and 5 display the background traffic estimates for year 2030 no-build conditions.

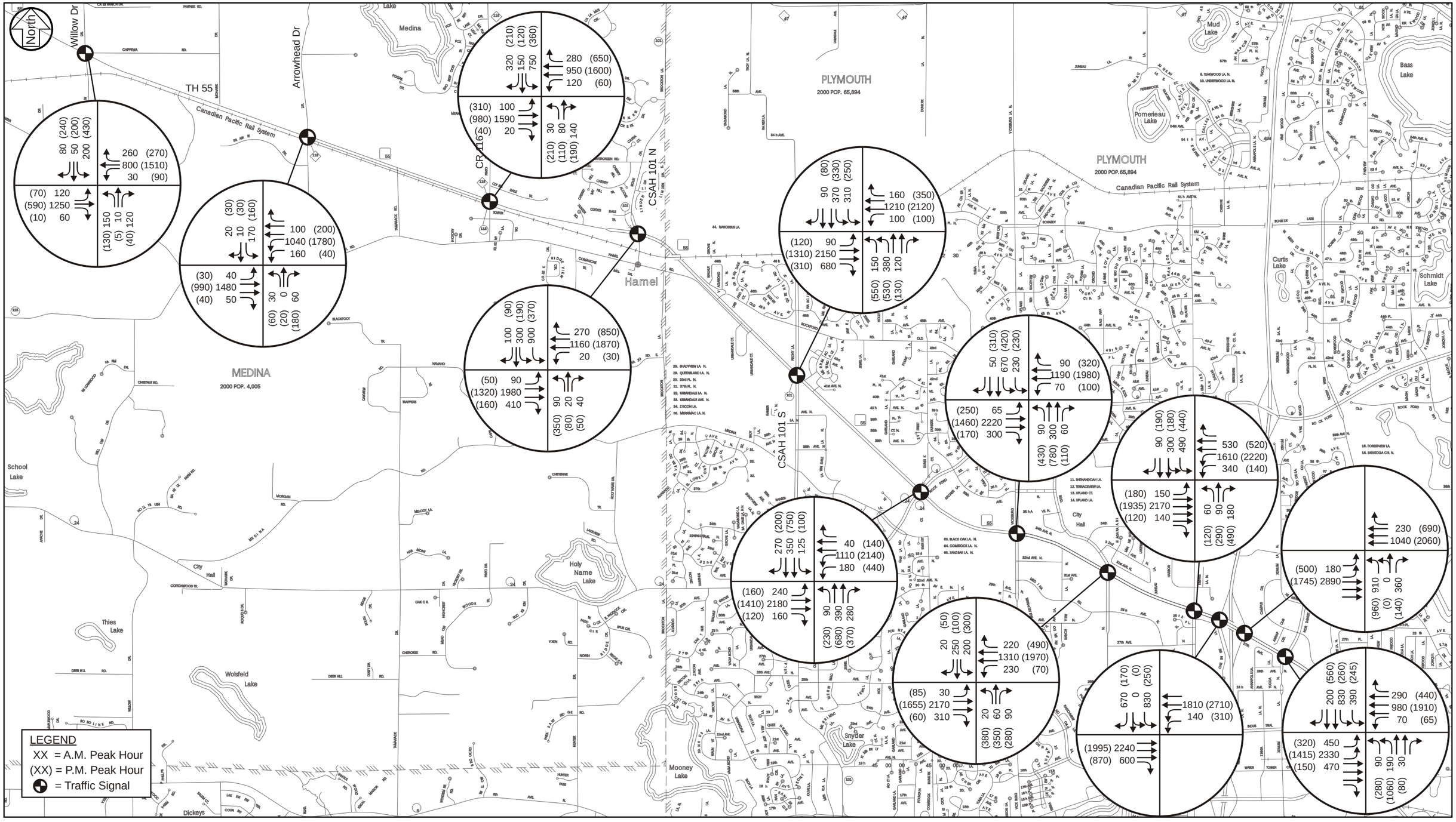
An a.m. and p.m. peak hour operations analysis was conducted for year 2030 no-build conditions. The analysis results shown in Table 2 indicate that most intersections operate at an unacceptable LOS E or worse. The poor LOS results are primarily due to the lack of lane capacity on mainline TH 55.

Table 2
Year 2030 No-Build Intersection Capacity
A.M. and P.M. Peak Hour Intersection Level of Service[1]

Location	Future No-Build Conditions (2030)			
	AM		PM	
	LOS	Delay (sec)	LOS	Delay (sec)
CSAH 50/CSAH 10	**F**	>180	**F**	>180
CSAH 92	**F**	>180	**F**	>180
Greenfield Road[2]	A/C	5	**E/F**	40
CSAH 19	**F**	>180	**F**	>180
Vernon Street[2]	A/C	10	**F/F**	>180
Lake Sarah Heights Drive[2]	A/C	10	B/D	15
Town Hall Drive[2]	A/C	5	A/**F**	10
Town Line Road[2]	**E/F**	40	B/D	15
Willow Drive	**F**	115	**F**	>180
Arrowhead Drive	C	35	**E**	80
CR 116[3]	**F**	>180	**F**	150
CSAH 101 (N)[3]	**F**	>180	**F**	105
CSAH 101 (S)[3]	**E**	75	**E**	75
CSAH 21/CSAH 9[4]	**E**	60	**F**	140
Vicksburg Lane[4]	**E**	80	**F**	>180
Plymouth Blvd.[3]	**E**	65	**F**	160
Fernbrook Lane	D	55	**F**	180
I-494 West Ramp	**F**	160	D	40
I-494 East Ramp	**F**	>180	**F**	>180
CSAH 61	D	45	**F**	>180

[1]LOS is a measure of congestion. Mn/DOT defines acceptable LOS to be LOS D or better.

[2]Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.



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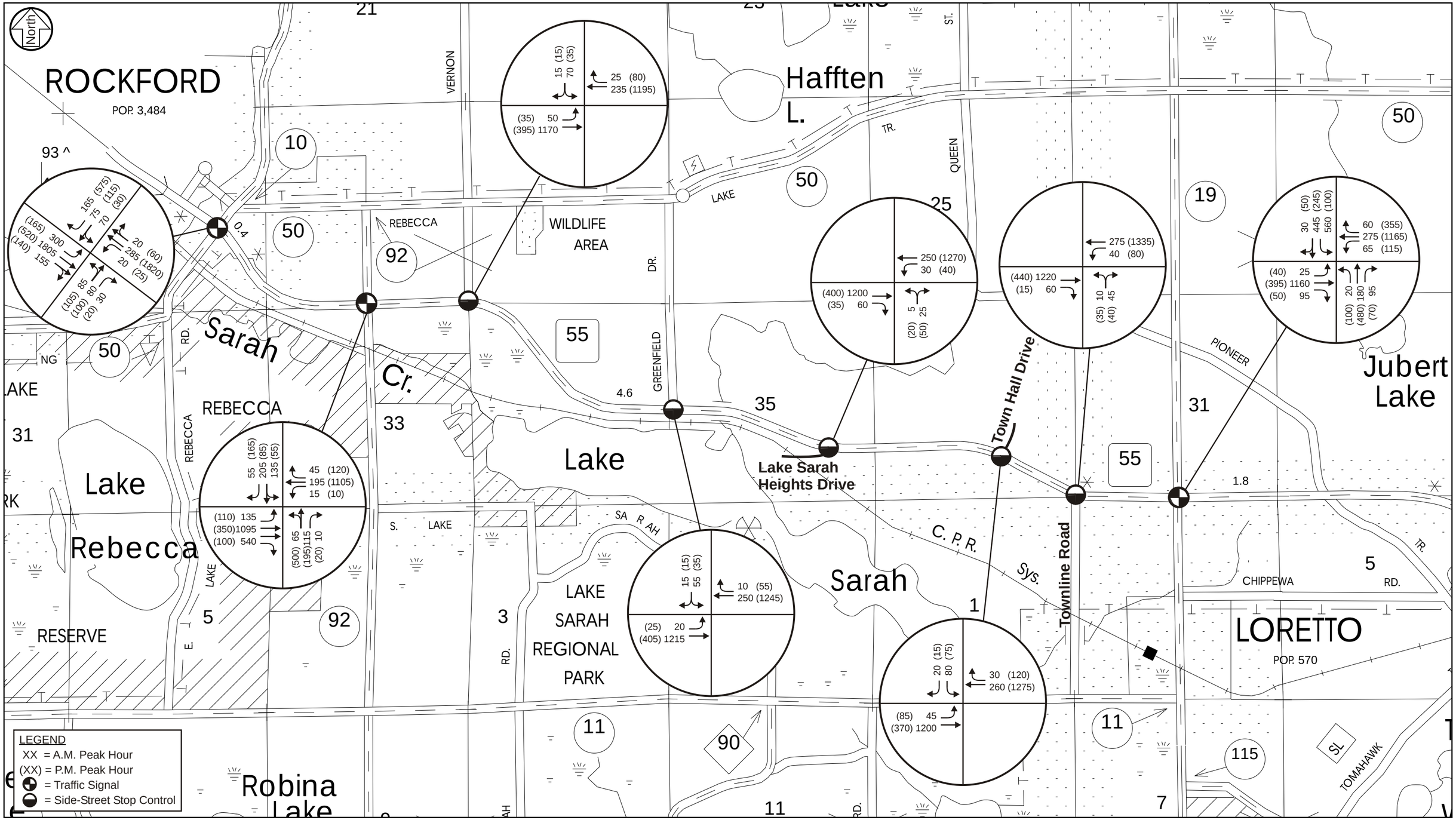
YEAR 2030 NO BUILD CONDITIONS (1 of 2)

TH 55 CORRIDOR STUDY
Minnesota Department of Transportation

Figure 4



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YEAR 2030 NO BUILD CONDITIONS (2 of 2)

TH 55 CORRIDOR STUDY
Minnesota Department of Transportation

Figure 5

YEAR 2030 BUILD CONDITIONS

To analyze the 2030 build conditions, traffic forecasts were produced based on the build improvements made to the TH 55 corridor. The TH 55 corridor will be improved to a freeway section from I-494 through CR 116, and then from CR 116 to CSAH 50/CSAH 10, TH 55 will be improved to a four-lane divided highway. The intersection control improvements assumed at the key intersections along the TH 55 study segment under year 2030 Build conditions are as follows:

- TH 55/Fernbrook Lane: Intersection will become with button hook configurations on the north and south side.
- TH 55/Vicksburg Lane: Intersection will become a half Single-point Urban Interchange (SPUI) and half tight diamond interchange controlled by one traffic signal.
- TH 55/Rockford Road: Intersection will become a half SPUI and half tight diamond interchange controlled by one traffic signal.
- TH 55/CSAH 101 (S): Intersection will become an interchange with a standard tight diamond configuration.
- TH 55/CSAH 101 (N): Intersection will become an interchange with a standard tight diamond configuration.
- TH 55/CR 116: Intersection will become an interchange with a standard tight diamond configuration.
- TH 55/Townline Road and Town Hall Drive: Town Hall Drive will be realigned to tie in with the current location of Townline Road and the traffic control at this intersection will be upgraded to a traffic signal.
- TH 55/Lake Sarah Heights Drive: The intersection will become a right-in/right-out intersection.

Under 2030 build conditions, several turn bays will be added or lengthened to various intersections along TH 55. Figures 6 and 7 indicate all build geometric improvements as well as the build turning movement volumes. The 2005 study helped in producing the build turning movement volumes from CSAH 61 to Willow Drive, while the other intersection's volumes were produced from the forecast model.

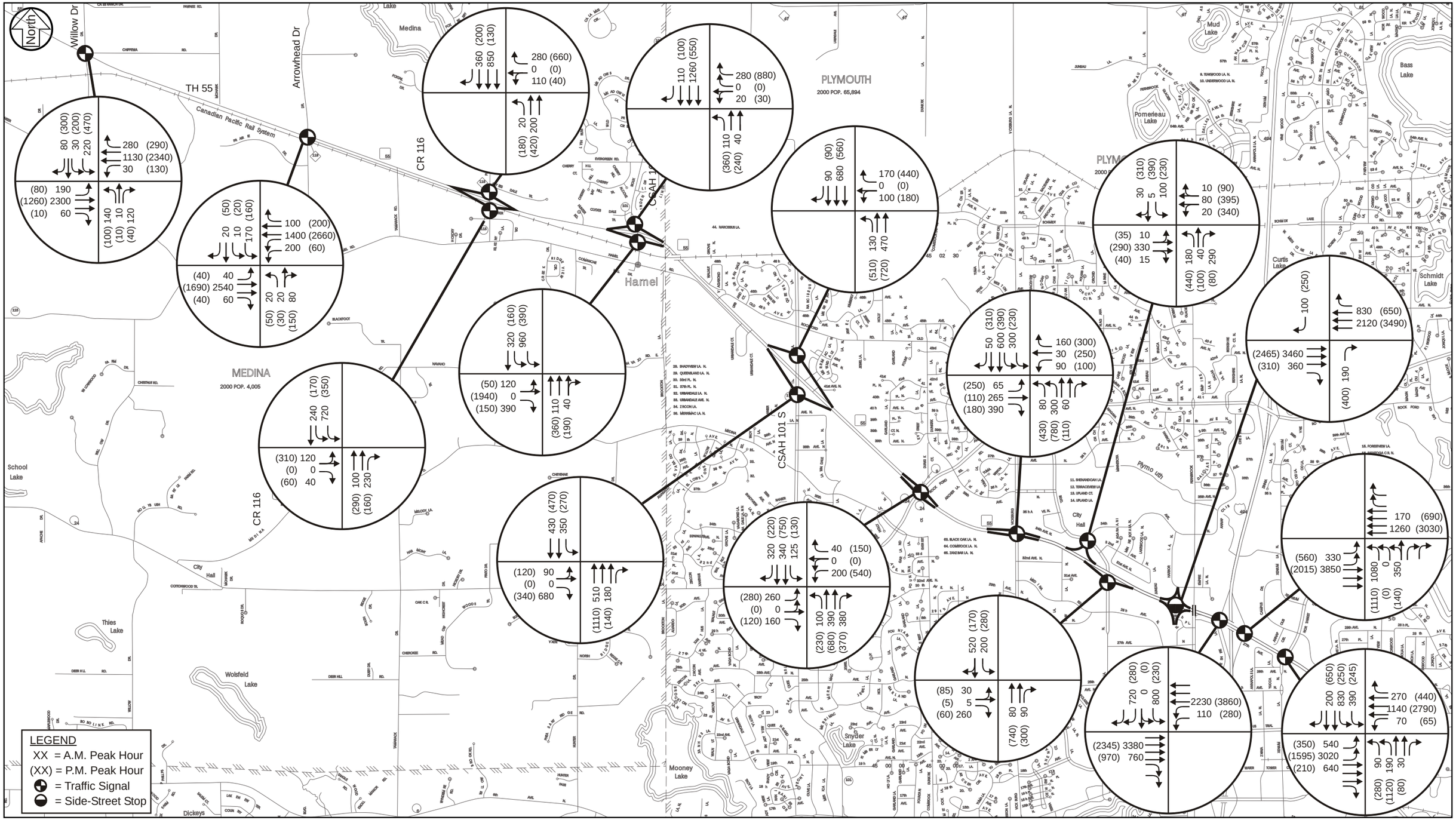
An operations analysis was completed for year 2030 build conditions during the a.m. and p.m. peak hours at each of the key intersections to determine how well the new build geometrics can accommodate the forecasted 2030 numbers. The analysis results shown in Table 3 indicate that most intersections operate at a LOS D or better under year 2030 build conditions during the a.m. and p.m. peak period assuming the recommended improvements shown in Figures 6 and 7. The only intersections do not operate at acceptable LOS D or better under year 2030 build conditions are the TH 55 intersections with Willow and Arrowhead Drives, and the intersections in the vicinity of the TH 55/I-494 interchange.

Table 3
Year 2030 Build Intersection Capacity
A.M. and P.M. Peak Hour Intersection Level of Service[1]

Location	Build Conditions (2030)			
	AM		PM	
	LOS	Delay (sec)	LOS	Delay (sec)
CSAH 50/CSAH 10	D	55	D	50
CSAH 92	C	30	D	45
Greenfield Road[2]	A/C	5	A/**E**	5
CSAH 19	D	45	D	40
Vernon Street[2]	A/D	5	A/D	5
Lake Sarah Heights Drive[2]	A/B	5	A/A	5
Town Hall Drive/Town Line Road	B	15	C	20
Willow Drive	**E**	65	**F**	110
Arrowhead Drive	**F**	90	**F**	90
CR 116 North Ramps	B	15	B	15
CR 116 South Ramps	A	5	B	15
CSAH 101 North Ramps	B	15	B	20
CSAH 101 South Ramps	B	10	C	30
CSAH 101 North Ramps	B	15	C	30
CSAH 101 South Ramps	C	25	D	40
CSAH 21/CSAH 9	C	30	D	50
Vicksburg Lane	D	40	D	50
Plymouth Blvd. North Ramps	B	15	C	20
Plymouth Blvd. South Ramps	C	25	C	25
Fernbrook Lane	N/A	N/A	N/A	N/A
I-494 West Ramp	**F**	>180	**F**	>180
I-494 East Ramp	**E**	65	**E**	75
CSAH 61	**F**	90	**F**	>180

[1]LOS is a measure of congestion. Mn/DOT defines acceptable LOS to be LOS D or better.

[2]Indicates an unsignalized intersection. The overall LOS is followed by the worst approach LOS.



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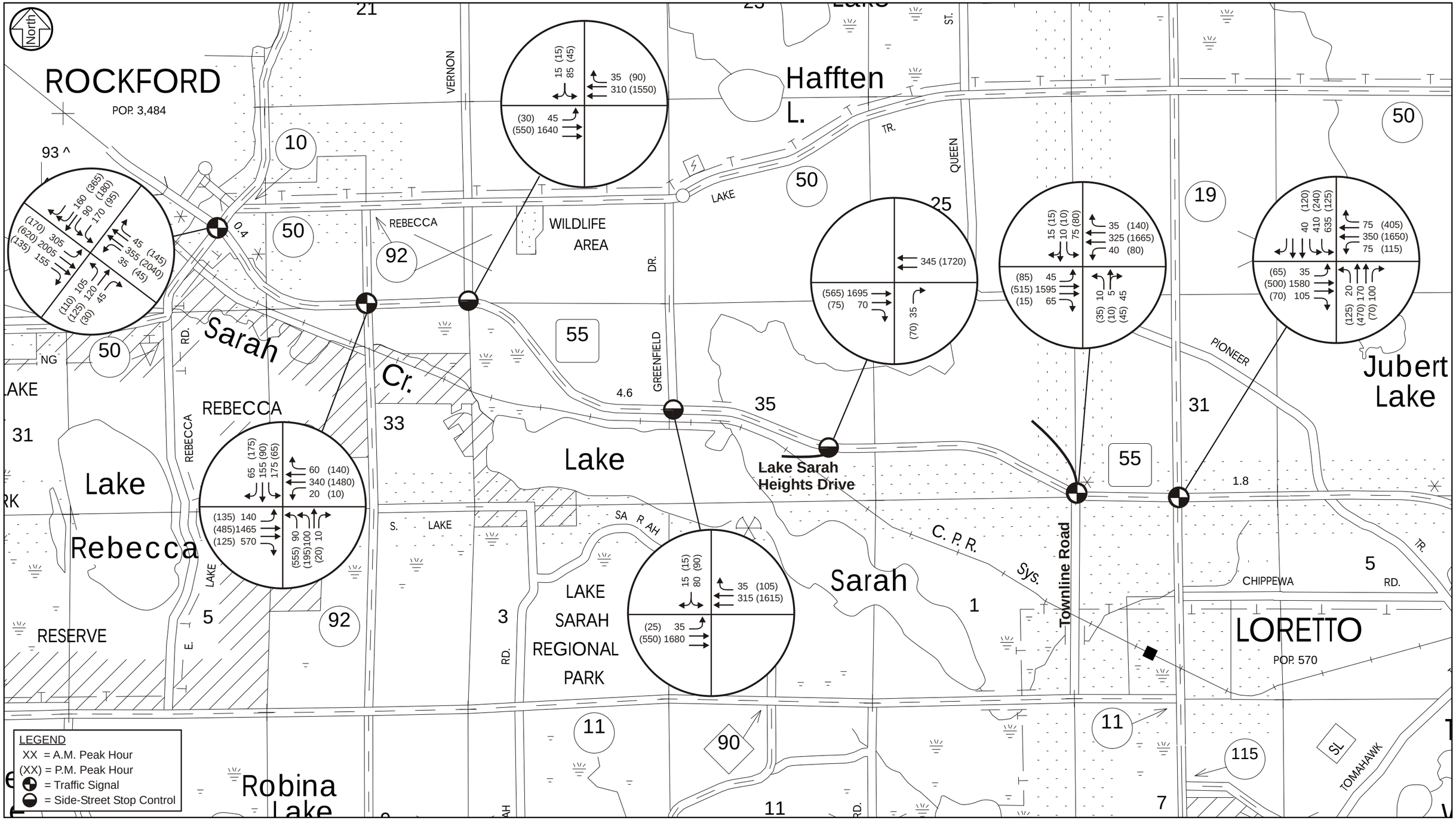
YEAR 2030 BUILD VOLUMES (1 of 2)

TH 55 CORRIDOR STUDY
Minnesota Department of Transportation

Figure 6



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YEAR 2030 BUILD CONDITIONS (2 of 2)

TH 55 CORRIDOR STUDY
Minnesota Department of Transportation

Figure 7

TH 55 at Willow Drive and Arrowhead Drive

Under current 2030 build forecasts, which assume improvements on TH 55 from I-494 to Annandale and no improvements to I-94 West of Fish Lake, the TH 55 intersections with Willow and Arrowhead Drives will not function at LOS D or better (See Table 4 below).

Table 4
Year 2030 Peak Hour Capacity Analysis
Level of Service Results

Intersection	A.M. Peak			P.M. Peak		
	LOS	Delay (seconds)	95th Percentile Queues (feet)	LOS	Delay (seconds)	95th Percentile Queues (feet)
TH 55 / Willow Drive	**E**	**65**	1,450 EB	**F**	**> 180**	2,710 WB
TH 55 / Arrowhead Drive	**F**	**90**	**2,920 EB**	**F**	**120**	**4,490 WB**

Note: The 95th-percentile queues represent the longest queue in the peak direction of travel.

The improvements to TH 55 are currently unfunded (similar to the improvements to I-94); however, I-94 West of Rogers was placed in the Governor's bonding package and growth and overall system importance (High Priority IRC plus interstate route) would suggest that capacity improvements are likely to occur on I-94 before TH 55. If this were assumed, we would expect approximately a 700 vehicle/hour reduction in TH 55 traffic. Under this assumption, we reanalyzed the problem intersections and found that they operated near or better than the LOS D/E threshold with significantly lower 95th percentile queues (See Table 5 below).

Table 5
Year 2030 Peak Hour Capacity Analysis: With Improvements to I-94/I-494 & TH 55
Level of Service Results

Intersection	A.M. Peak			P.M. Peak		
	LOS	Delay (seconds)	95th Percentile Queues (feet)	LOS	Delay (seconds)	95th Percentile Queues (feet)
TH 55 / Willow Drive	D	35	580 EB	**E**	**65**	1,010 WB
TH 55 / Arrowhead Drive	**D/E**	**55**	**1,770 EB**	D	35	**1,090 WB**

Note: The 95th-percentile queues represent the longest queue in the peak direction of travel.

The traffic operations at the next downstream intersection (CR 116) assumed the same 700 vehicle per hour reduction in TH 55 traffic. Based on a critical lane volume analysis, a six-lane at-grade facility would operate at the LOS D/E threshold; however, we feel strongly that this is the proper place to transition to a grade-separated facility given the key north-south role that CR 116 plays in western Hennepin County, and the tight intersection spacing which limits side street queues which can develop as a result of the heavy movements to and from TH 55 at this location.

Given, 1) the above regional demand modeling uncertainties that were tested, 2) the fact that a transition from freeway to expressway needs to occur somewhere along the corridor, and 3) the addition of more through lanes on TH 55 west of CR116 would significantly add to costs and impacts, yet only affect a very small portion of the daily traffic (peak of the peak), it is suggested that the four-lane expressway design that has been presented is an appropriate and fiscally responsible solution.

Weave Area between Fernbrook Lane and I-494

The proposed TH 55 "interim" improvements, in the area of Fernbrook Lane and I-494, replace the existing signal at Fernbrook Lane with a buttonhook interchange. The proposed interchange configuration will combine the heavy southbound left-turn and northbound right-turn from the existing intersection to a proposed eastbound buttonhook on-ramp. There is a concern that this combined heavy movement, while it is proposed to enter eastbound TH 55 as an add lane condition; will have limited weaving distance (approximately 1,350 feet) until the I-494 West Ramps. This is cause for some operational and safety concerns.

To further examine this concern, the proposed TH 55 interim improvement layout was analyzed using existing a.m. and p.m. peak hour traffic volumes (year 2005). The volumes were adjusted to reflect ramp volumes collected in 2007. This analysis specifically examines the weave section on eastbound TH 55 between the proposed buttonhook interchange and the I-494 West Ramp intersection. The on-ramp from the buttonhook interchange enters TH 55 as a free movement onto an add lane. Based on the modeling results, queues are expected do develop on the northbound to eastbound ramp at the buttonhook interchange during both peak hours. In addition, eastbound mainline traffic is expected to experience reduced speeds near the beginning of the weave segment during both peak hours. Based on current operations of similar roadway designs in the area, vehicles will tend to slow or possibly stop and wait for an acceptable gap on the mainline, even though this is intended as a free flow weave condition.

To address this issue, the possibility of installing a simple two-phase traffic signal on eastbound TH 55 at the proposed button hook location was analyzed. Based on the analysis, the following conclusions are offered for the TH 55 weave area between Fernbrook Lane and I-494:

- The progression of mainline traffic could be maintained by coordinating the signal with the signals at the I-494 ramps.
- The 95th-percentile queue in the eastbound direction is less than 600 feet during the a.m. peak and less than 400 feet during the p.m. peak hour.
- The on-ramp from the buttonhook will require a second right-turn lane with at least 300 feet of storage.
- This signal will address potential safety and operational issues caused by weave movements and should be shown for all alternatives that do not reconfigure the I-494/TH 55 interchange to a system interchange.

TH 55/I-494 Interchange Area

The proposed TH 55 "interim" improvements in the vicinity of the TH 494 interchange and CSAH 61 include the following:

- TH 55/I-494 West Ramp
  - Additional southbound right-turn lane
  - Additional eastbound right-turn lane
  - Additional eastbound through lane
  - Additional westbound through lane

- TH 55/I-494 East Ramp
  - Additional northbound right-turn lane
  - Additional westbound right-turn lane
  - Additional northbound left-turn lane
  - Additional westbound through lane

As shown previously in Table 3, these interim improvements in the TH 55/I-494 interchange area will not result in acceptable levels of service under year 2030 build conditions. Additional concepts have been developed for the TH 55/I-494 interchange area, and planning-level analyses have been conducted. However, since the TH 55/I-494 interchange will be ultimately be reconstructed as part of the future I-494 improvement project, the detailed analysis for these TH 55/I-494 interchange concepts will be performed as part of the future I-494 project.

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis, the following conclusions and recommendations are offered for your consideration:

- TH 55 should be improved to a four-lane expressway facility from just west of Arrowhead Drive to CSAH 50/CSAH 10 in Rockford.
- TH 55 should be improved to a four-lane grade-separated "freeway" section from just west of CR 116 to I-494.
- Interchange lane configurations and traffic control along the TH 55 four-lane freeway section should be implemented as indicated in Figure 6.
- Side-street lane configurations along the TH 55 four-lane expressway segment should be implemented as indicated in Figure 7.
- Additional alternatives need to be developed to mitigate the impacts that the year 2030 traffic volumes have on the TH 55/I-494 interchange area. A detailed analysis of these alternatives should be conducted as part of a future I-494 improvement project.

APPENDIX D

TH 55 CORRIDOR ACCESS FRAMEWORK

TH 55 Corridor Access Framework

December 2006

The long-term vision for the TH 55 corridor is to transition the corridor to a multi-lane divided facility that provides a high level of mobility and safety to users. Communities along the corridor and the TH 55 Coalition have supported elevating TH 55's functional classification from a minor arterial to principal arterial. This requested change along with TH 55's designation as a High-Priority Regional Corridor and the high volume of traffic that is projected to use the corridor is consistent with more aggressively managing access along the corridor including eliminating and restricting current access. Providing a coherent and reasonable vision for treating access in the corridor will benefit users and will help lay the groundwork for future expansion of the corridor.

The following access framework is intended to assist staff in the development of the TH 55 preliminary design layout and it is intended to guide communities in planning of long-term access to the corridor. While this framework does not prescribe absolute rules or requirements (i.e., some exceptions or deviations may be needed to treat special instances or cases) it is intended to give substantial direction in assessing future treatment of current access in the corridor as well as suggest policy changes that would guide future access requests and development proposals. It is acknowledged that this framework will likely be the catalyst for initiating discussions with the communities as the corridor design and environmental process unfolds.

1. Grade -Separated Locations

Sources of major conflicts should be considered for grade separation to improve safety and operations of the corridor, as well as improve flow, operations and pedestrian connectivity on cross-streets.

> ***Guidance:*** *Major intersections with other arterial and/or collector routes, where mainline volumes are forecast to exceed 55,000 vehicles per day (i.e. TH 55 volumes), should be considered for grade separations.*

2. Public Street Full-Access Points

Signalized access to the corridor should be limited to maintain mobility and provide safety when accessing or crossing the corridor.

> ***Guidance****: Full-access intersections should be limited to the junction of minor arterial routes, and some key collector routes. The minimum spacing between these routes should be one-half to one-mile. Current and future intersection points meeting these criteria have been identified in the corridor (attached figure to be developed), and local communities should plan arterial or collector routes at these locations.*

3. Intermediate Public Access Points

Other public access points along the corridor should be minimized to reduce the number of conflicts and to maintain safe operations within the corridor.

> ***Guidance****: Limited intermediate public access points may be permitted to provide circulation and minimize overloads at other full-access intersections. These access points will not be signalized, and will be restricted to right-in/right-out. Therefore, these access points should be part of a parallel system of collector routes that can provide access to other adjacent full-access signalized intersections.*

4. Turn Lanes

All public-street intersections should be designed so that turning traffic is separated from through traffic to reduce the number of conflicts.

> ***Guidance****: Turn lanes should be provided at all public-street access points and at major traffic generators. Turn lane length should be designed to accommodate operational speeds in the corridor (note: special consideration should be given to turn lane length; for example TH 52 turn lanes south of the Twin Cities were recommended to be extended due to higher operational speeds in the corridor).*

5. Private Access Points

Private access should be minimized or eliminated, whenever possible, for safety reasons and to protect the operational integrity of the corridor.

> ***Guidance****:*
> - *All feasible efforts should be made to minimize and/or eliminate existing private residence and business access.*
> - *No additional direct private and business access should be permitted*
> - *Private access that can't be eliminated will be restricted to right-in/right-out.*

6. Parcel Splits

The ability to control access can be lost as parcels are divided to create new parcels. Parcels are most often created by either dividing an existing parcel (known as a parcel split) or by undergoing a formal platting process. While the platting process has provisions for plat reviews and planning commission reviews, many local ordinances and subdivision regulations are structured to allow parcel splits (creation of new parcels) without formal review or comments. This can result in agencies having to provide access to these parcels, even though it may affect mobility and safety.

> ***Guidance****: In an effort to minimize future problems and right-of-way costs, it is recommended that no additional parcel splits be permitted without providing alternate*

access (i.e., access to other local public streets, not TH 55). It is recommended that local agencies review development ordinances and subdivision regulations to ensure that they can address this issue as part of their planning and review process.

7. Subdivisions

The subdivision process provides more control to cities and planning officials in shaping development along the corridor.

Guidance**:** *Proposed subdivisions along the corridor need to be consistent with the overall long-range corridor access plan. Therefore, it is recommended that subdivisions provide access to adjacent parcels and provide reasonable frontage or backage roads consistent with the intent of the TH 55 Plan. In addition, existing access locations that are adjacent to or are within the new subdivisions area should be reviewed for incorporation into proposed plats. Proposed plats should provide minimum set-backs for the nearest secondary intersection (driveway or street) from TH 55. This set-back distance should be a minimum of 750 feet on any intersecting arterial and/or collector that is currently or could potentially be signalized.*

Cities along the corridor and Hennepin County are expected to adopt the overall TH 55 plan by including supporting materials in their comprehensive and transportation plans. In addition it is expected that cities and Hennepin County will work towards the overall plan by guiding development (e.g., providing proper set-backs, limiting access, planning frontage/backage roads) through their land use and subdivision policies

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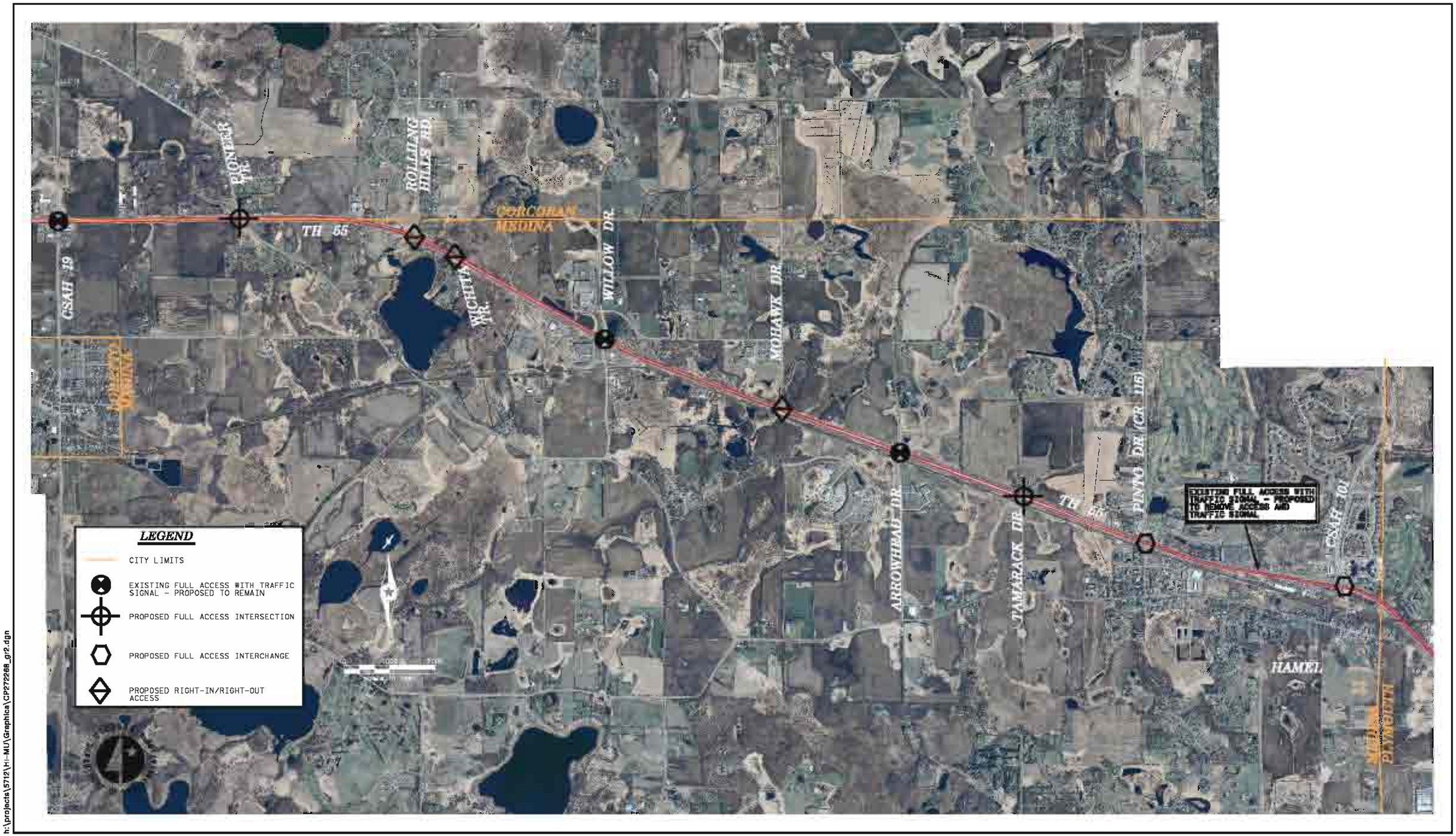
TH 55 CORRIDOR ACCESS FRAMEWORK

TH 55 EA

S.P. 2722-68 & S.P. 27-596-02PE

Figure D-1A



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TH 55 CORRIDOR ACCESS FRAMEWORK

TH 55 EA

S.P. 2722-68 & S.P. 27-596-02PE

Figure D-1B

LEGEND

- CITY LIMITS
- EXISTING FULL ACCESS WITH TRAFFIC SIGNAL - PROPOSED TO REMAIN
- PROPOSED FULL ACCESS INTERSECTION
- PROPOSED FULL ACCESS INTERCHANGE
- PROPOSED RIGHT-IN/RIGHT-OUT ACCESS

MINNESOTA DEPARTMENT OF TRANSPORTATION

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TH 55 CORRIDOR ACCESS FRAMEWORK

TH 55 EA

S.P. 2722-68 & S.P. 27-596-02PE

Figure D-1C

APPENDIX E

TH 55 – FERNBROOK TO CSAH 61 IN PLYMOUTH
OPERATIONS MEMORANDUM

SRF No. 0065712

MEMORANDUM

TO: Rick Brown, P.E., Vice President
Nancy Frick, AICP, Senior Associate

FROM Dennis R. Eyler, P.E., P.T.O.E.

DATE: October 16, 2007

SUBJECT: TH 55 – Fernbrook to CSAH 61, in Plymouth Traffic Operations

A preliminary traffic operations analysis has been completed for the two basic design alternatives for this corridor. Those alternatives are (1) a 6 lane at-grade facility with signals at each major intersection and (2) a four lane grade separated facility with possible alternative designs for I-494 and for CSAH 61. For the "ultimate" grade separated alternative an improved interchange with free flowing key movements was assumed for I-494. (See Figure 1 attached.) For a possible interim phase where TH 55 is grade separated to the west, an improved diamond was assumed for the I-494 interchange. For both of these alternatives an at-grade intersection with traffic signal control was assumed for the intersection at CSAH 61. In effect there are three alternatives that were evaluated: at-grade, grade separated west of I-494 and grade separated including the I-494 interchange.

I. The at-grade concept

In this segment, the at-grade concept assumes a basic design with three through lanes in each direction. Auxiliary lanes are also provided eastbound through Fernbrook Lane to connect to the turn lanes to the entrance ramps to both northbound and southbound I-494 for a total of 5 eastbound through lanes at Fernbrook. Double left turn lanes are also provided on TH 55 at the ramp intersections and at Fernbrook Lane.

At I-494, the southbound exit ramp would be revised to have two right turn lanes and two left turn lanes. The right turn lanes would be signal controlled in order to manage the weaves between the west ramp and Fernbrook. The northbound exit would have three left turn lanes and two right turn lanes. The right turn lanes would also be signal controlled to manage the weave between the east ramp and CSAH 61.

At CSAH 61 the assumption made for the year 2030 forecasts was that TH 55 would be widened to three basic through lanes in each direction, extending to TH 169. In the westbound direction, TH 55 would be widened to provide four through lanes plus a left turn lane and a right turn lane. The right through lane would exit onto northbound I-494 at the east ramp. This would result in one additional westbound through lane over what currently exists at this intersection. The southbound right turn on CSAH61 should also be revised from its current free right to a dual right with signal control.

II. Grade separated concept that begins at Fernbrook and extends to the west

Fernbrook

Several interchange designs have been investigated for this location. If the grade separated alternative is selected for TH 55 to the west, ideally the I-494 interchange should have a design that provides free flowing ramp connections and also reduces the potential for weaving traffic. However, an interim design could be considered.

If a folded ramp design, or button hook ramp arrangement is used at Fernbrook then the interchange at I-494 must ultimately be revised to address potential weaving issues. However, if the I-494 interchange modifications must wait for a subsequent project, then the entrance loop from Fernbrook to eastbound TH 55 should be modified to enter as a dual right turn with signal control. The use of a traffic signal will enable traffic from Fernbrook to cross eastbound TH 55 to reach the eastbound left turn lanes at the east ramp of I-494.

For any interim design to be successful from an operations standpoint, in this area, it must address the eastbound weave between traffic entering from Fernbrook and the existing left turn to enter northbound I-494.

I-494

For this alternative, the design of this interchange would be the same as it would be for the at-grade alternative; which is an improved diamond.

CSAH 61

The layout of this intersection would be the same as it would be for the at-grade alternative which would feature the addition of a fourth westbound through lane and a revision to the southbound right turn.

III. Grade separated concept that extends through I-494, but ends west of CSAH 61

Fernbrook

With the folded ramp design, or button hook ramp arrangement at Fernbrook then a modified cloverleaf design that features two inverted or left land loops could be used at I-494 and would meet the free flow goal while providing adequate weaving operation if collector distributor

roadways are utilized between Fernbrook and I-494. The use of roundabouts on the button hook ramps provides a point of clear demarcation of the end and beginning of the ramp roadways and the end and beginning of the surface street roadways.

I-494

Until such time as a grade separation is constructed at CSAH 61, a traffic signal will be required at the intersection of eastbound TH 55 and the ramp that serves both exits from I-494 (east ramp). This signal controlled intersection will greatly reduce the weaving problems between the east ramp and the turn lanes at CSAH 61.

The proposed cloverleaf with inverted loops may be perceived as a less than adequate interchange design for the junction of two freeways. However, it does not have any at-grade intersections. Except for the ½ intersection at the east ramp which is an interim measure until an interchange is constructed at CSAH 61. This interchange design does not have any weaving areas between loops within the interchange. In fact because it has no loop to loop weaving it has capacity nearly equal to that of a full directional interchange at a much lower construction cost.

CSAH 61

The layout of this intersection would be the same as it would be for the at-grade alternative with four westbound through lanes. The disposition of those lanes from left to right would be: westbound TH 55, westbound TH 55, exit to Fernbrook C-D road and both I-494 exits. West of CSAH 61, westbound TH 55 would be widened to 5 lanes. The disposition of the five lanes would be as follows from left to right: westbound TH 55, westbound TH 55, exit to Fernbrook C-D road, exit to southbound I-494 and exit to northbound I-494.

Operations Analysis with Respect to TH 55 at CSAH 61

An operations analysis using Synchro was performed for the at-grade alternative with the year 2030 pm peak hour forecast volumes. In that analysis the intersections at Vicksburg Lane, Fernbrook Lane and the east ramp at I-494 operated at level of service “F”. The spill back from those intersections affected the operation of TH 55 and CSAH 61 to the point where that intersection also operated at level of service “F”.

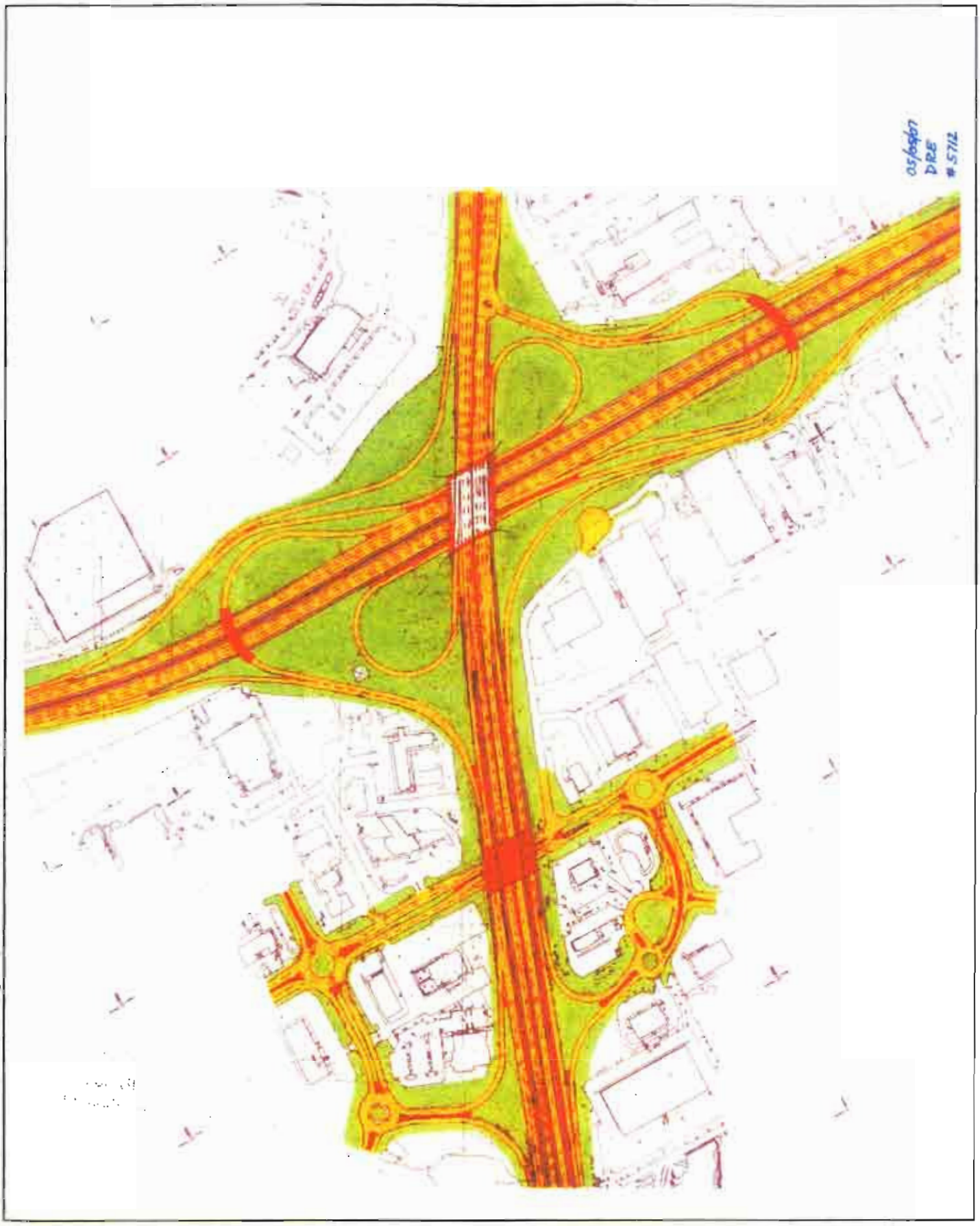
A detailed operations analysis was not performed for the grade separated alternative where the I-494 interchange remained as a diamond with signals at the ramp intersection. However, since the east ramp, even with three left turn lanes from the ramp and three lanes each way on TH 55 would operate at LOS “F” it was assumed that the backup would affect CSH 61 and cause it to also operate at LOS “F”.

Traffic Simulation

For both the at-grade alternative and the full grade separated alternative, VISSIM simulation models were developed. For both alternatives the CSAH 61 intersection remained at-grade. For the at-grade alternative congestion at the intersections to the west spilled back into the CSAH 61

intersection causing it to fail. For the full grade separated alternative the operation at CSAH 61 appeared to be stable which meant that it was in the LOS "D" range.

A critical lane calculation was performed for the year 2030 pm peak hour volumes and the proposed geometry. That calculation yielded a critical lane volume of 1400 which meant that from a planning level perspective the operation would be acceptable. This was based on traffic strictly adhering to the downstream lane assignments which direct the westbound TH 55 through traffic to use the left two lanes. If any of the westbound traffic uses one of the other westbound through lanes to pass through the CSAH 61 intersection, then the critical lane volumes would be lower and the level of service would improve.



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I-494 / TH 55 Interchange Concept

TH 55 from Rockford to Plymouth
S.P. 2722-68 & S.P. 27-596-02
Hennepin County

Figure 1

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