Application

01967 - 2014 Roadway Expansion

02043 - CSAH 81 (Bottineau Boulevard) Expansion

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	11/26/2014 1:13 PM

Primary Contact

Name:*		Carla	J	Stueve
	Salutation	First Name	Middle Name	Last Name
Title:	Transportation Engineer			
Department:				
Email:	Carla.Stueve@hennepin.us			
Address:	1600 Prairie Drive			
*	Medina	Minnesota	55340	
	City	State/Province	Postal Code/Zip	
Phone:*	612-596-0356			
	Phone		Ext.	
Fax:				
What Grant Programs are you most interested in?	Regional Solicitation - Roadways Including Multimodal Elements			

Organization Information

Name:	HENNEPIN COUNTY

Jurisdictional Agency (if different):

Organization Type: County Government

Organization Website:

Address: DPT OF PUBLIC WORKS

1600 PRAIRIE DR

*	MEDINA	Minnesota	55340
	City	State/Province	Postal Code/Zip

County: Hennepin

Phone:* 763-745-7600 Ext.

Fax:

PeopleSoft Vendor Number 0000028004A9

Project Information

Project Name CSAH 81 (Bottineau Boulevard) Expansion

Primary County where the Project is Located Hennepin

Jurisdictional Agency (If Different than the Applicant):

Brief Project Description (Limit 2,800 characters; approximately 400 words)

The proposed CSAH 81 (Bottineau Boulevard) Expansion Project would reconstruct 1.57 miles of the existing 4-lane divided rural roadway to a 6-lane divided urban roadway in the City of Brooklyn Park. This project would continue the county's implementation of reconstructing CSAH 81 from Trunk Highway 100 to CSAH 30. The proposed project begins approximately 200 feet north of CSAH 8 (71st Avenue) and terminates approximately 200 feet south of 83rd Avenue.

CSAH 81 is classified as an "A" Minor Arterial roadway that functions as an Expander.

Project elements along the corridor will include a 10-ton pavement design, concrete curb and gutter, a raised concrete median, and storm sewer.

Project elements at the intersections will include the replacement of traffic signals, lighting, left and right-turn lanes at the intersections, and dual left-turn lanes as warranted by traffic volumes.

Bicycle and pedestrian elements along the corridor will include ADA-compliant pedestrian ramps, multi-use trail, countdown timers, and accessible pedestrian signals.

Include location, road name/functional class, type of improvement, etc.

Project Length (Miles) 1.57

Connection to Local Planning:

Reference the name of the appropriate comprehensive plan, regional/statewide plan, capital improvement program, corridor study document [studies on trunk highway must be approved by MnDOT and the Metropolitan Council], or other official plan or program of the applicant agency [includes Safe Routes to School Plans] that the project is included in and/or a transportation problem/need that the project addresses. List the applicable documents and pages.

Hennepin County plans on reconstructing the entire CSAH 81 corridor from Highway 100 to CSAH 30. Since this would include major roadway improvements for 7.5 miles, the corridor was split into five smaller projects. The CSAH 81 (Bottineau Boulevard) Expansion Project is the fourth project proposed for the corridor (CP 0922).

Connection to Local Planning

The City of Brooklyn Park acknowledges the county's efforts to improve CSAH 81 in its Comprehensive Plan.

The CSAH 81 Expansion Project is included in Hennepin County's approved 2014-2018 Transportation Capital Improvement Program.

Project Funding

Are you applying for funds from another source(s) to implement this project?	No
If yes, please identify the source(s)	
Federal Amount	$7,000,000.00
Match Amount	$9,800,000.00
Minimum of 20% of project total	
Project Total	$16,800,000.00
Match Percentage	58.33%
Minimum of 20% *Compute the match percentage by dividing the match amount by the project total*	
Source of Match Funds	Hennepin County

Preferred Program Year

Select one:	2019

MnDOT State Aid Project Information: Roadway Projects

County, City, or Lead Agency	Hennepin County
Functional Class of Road	CSAH 81 is classified as an "A" Minor Arterial that functions as an Expander.

Road System *TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET*	CSAH - County State Aid Highway
Name of Road *Example; 1st ST., MAIN AVE*	Bottineau Boulevard
Zip Code where Majority of Work is Being Performed	55445
(Approximate) Begin Construction Date	06/03/2019
(Approximate) End Construction Date	10/30/2020
LOCATION	
From: **(Intersection or Address)** *Do not include legal description;* *Include name of roadway if majority of facility runs adjacent to a single corridor.*	200' North of CSAH 8 (71st Avenue North)
To: **(Intersection or Address)**	200' South of 83rd Avenue North
Type of Work *Examples: grading, aggregate base, bituminous base, bituminous surface, sidewalk, signals, lighting, guardrail, bicycle path, ped ramps, bridge, Park & Ride, etc.)*	Grading, aggregate base, bituminous base and surfacing, curb and gutter, multiuse facilities, pedestrian ramps, storm sewer, and traffic signals
Old Bridge/Culvert?	No
New Bridge/Culvert?	No
Structure is Over/Under **(Bridge or culvert name):**	N/A

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$756,000.00
Removals (approx. 5% of total cost)	$756,000.00
Roadway (grading, borrow, etc.)	$2,268,000.00
Roadway (aggregates and paving)	$5,292,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$1,512,000.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$1,512,000.00
Traffic Control	$756,000.00
Striping	$151,200.00

Signing	$75,600.00
Lighting	$0.00
Turf - Erosion & Landscaping	$756,000.00
Bridge	$0.00
Retaining Walls	$0.00
Noise Wall	$0.00
Traffic Signals	$756,000.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$1,680,000.00
Other Roadway Elements	$302,400.00
Totals	**$16,573,200.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$226,800.00
Sidewalk Construction	$0.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$0.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$0.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$0.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$0.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$226,800.00**

Specific Transit and TDM Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Fixed Guideway Elements	$0.00
Stations, Stops, and Terminals	$0.00

Support Facilities	$0.00
Transit Systems (e.g. communications, signals, controls, fare collection, etc.)	$0.00
Vehicles	$0.00
Transit and TDM Contingencies	$0.00
Other Transit and TDM Elements	$0.00
Totals	**$0.00**

Transit Operating Costs

OPERATING COSTS	**Cost**
Transit Operating Costs	$0.00
Totals	**$0.00**

Totals

Total Cost	$16,800,000.00
Construction Cost Total	$16,800,000.00
Transit Operating Cost Total	$0.00

Requirements - All Projects

All Projects

1.The project must be consistent with the goals and policies in these adopted regional plans: Thrive MSP 2040 (2014), the 2030 Transportation Policy Plan (amended 2013), the 2030 Regional Parks Policy Plan (amended 2013), and the 2030 Water Resources Management Policy Plan (2005).

Check the box to indicate that the project meets this requirement. Yes

2.Applicants that are not cities or counties in the seven-county metro area with populations over 5,000 must contact the MnDOT Metro State Aid Office prior to submitting their application to determine if a public agency sponsor is required.

Check the box to indicate that the project meets this requirement. Yes

3.Applicants must not submit an application for the same project in more than one funding sub-category.

Check the box to indicate that the project meets this requirement. Yes

4.The requested funding amount must be more than or equal to the minimum award and less than or equal to the maximum award. The cost of preparing a project for funding authorization can be substantial. For that reason, minimum federal amounts apply. Other federal funds may be combined with the requested funds for projects exceeding the maximum award, but the source(s) must be identified in the application. Expansion, reconstruction/modernization, and bridges must be between $1,000,000 and $7,000,000. Roadway system management must be between $250,000 and $7,000,000.

Check the box to indicate that the project meets this requirement. Yes

5.The project must comply with the Americans with Disabilities Act.

Check the box to indicate that the project meets this requirement. Yes

6.The project must be accessible and open to the general public.

Check the box to indicate that the project meets this requirement. Yes

7.The owner/operator of the facility must operate and maintain the project for the useful life of the improvement.

Check the box to indicate that the project meets this requirement. Yes

8.The project must represent a permanent improvement with independent utility. The term independent utility means the project provides benefits described in the application by itself and does not depend on any construction elements of the project being funded from other sources outside the regional solicitation, excluding the required non-federal match. Projects that include traffic management or transit operating funds as part of a construction project are exempt from this policy.

Check the box to indicate that the project meets this requirement. Yes

9.The project must not be a temporary construction project. A temporary construction project is defined as work that must be replaced within five years and is ineligible for funding. The project must also not be staged construction where the project will be replaced as part of future stages. Staged construction is eligible for funding as long as future stages build on, rather than replace, previous work.

Check the box to indicate that the project meets this requirement. Yes

10.The project applicant must send written notification regarding the proposed projected to all affected communities and other levels and units of government prior to submitting the application.

Check the box to indicate that the project meets this requirement. Yes

Requirements - Roadways Including Multimodal Elements

Expansion and Reconstruction/Modernization Projects Only

1.The project must be designed to meet 10-ton load limit standards.

Check the box to indicate that the project meets this requirement. Yes

2.Federal funds are available for roadway construction and reconstruction on new alignments or within existing right-of-way, including associated construction and excavation, bridges, or installation of traffic signals, signs, utilities, bikeway or walkway components and transit components.
The project must exclude costs for right-of-way, studies, preliminary engineering, design, or construction engineering. Noise barriers, drainage projects, fences, landscaping, etc., are not eligible for funding unless included as part of a larger project, which is otherwise eligible.

Check the box to indicate that the project meets this requirement. Yes

Bridge Projects Only

3.The bridge project must be identified as a Principal Arterial (Non-Freeway facilities only) or A Minor Arterial as shown on the latest TAB approved roadway functional classification map.

Check the box to indicate that the project meets this requirement.

4.Bridges selected in previous Bridge Improvement and Replacement solicitations (1994 2011) are not eligible. A previously selected project is not eligible unless it has been withdrawn or sunset prior to the deadline for proposals in this solicitation.

Check the box to indicate that the project meets this requirement.

5.Projects requiring a grade-separated crossing of a Principal Arterial of freeway design must be limited to the federal share of those project costs identified as local (non-MnDOT) cost responsibility using MnDOTs Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities manual. In the case of a federally funded trunk highway project, the policy guidelines should be read as if the funded trunk highway route is under local jurisdiction.

Check the box to indicate that the project meets this requirement.

6.The bridge must carry vehicular traffic. Bridges can carry traffic from multiple modes. However, bridges that are exclusively for bicycle or pedestrian traffic must apply under one of the Bicycle and Pedestrian Facilities sub-categories. Rail-only bridges are ineligible for funding.

Check the box to indicate that the project meets this requirement.

7.The length of the bridge must equal or exceed 20 feet.

Check the box to indicate that the project meets this requirement.

8.Project limits for bridge projects are limited from abutment to abutment.

Check the box to indicate that the project meets this requirement.

9.The project must exclude costs for studies, preliminary engineering, design, construction engineering, and right-of-way.

Check the box to indicate that the project meets this requirement.

Bridge Replacement Projects Only

10.The bridge must have a sufficienty rating less than 50. Additionally, it must also be classified as structurally deficient or functionally obsolete.

Check the box to indicate that the project meets this requirement.

Bridge Rehabilitiation Projects Only

11.The bridge must have a sufficienty rating less than 80. Additionally, it must also be classified as structurally deficient or functionally obsolete.

Check the box to indicate that the project meets this requirement.

Other Attachments

File Name	Description	File Size
Attachment 01 - Brooklyn Park - Letter of Support.pdf	Letter of Support	37 KB
Attachment 02 - Brooklyn Park Comprehensive Plan - Connection to Local Planning.pdf	Connection to Local Planning	249 KB
Attachment 03 - Brooklyn Park Comprehensive Plan - Neighborhood Plan.pdf	Neighborhood Plan	261 KB
Attachment 04 - Hennepin County - Traffic Volume Count.pdf	Traffic Volume Count	108 KB
Attachment 05 - Hennepin County - Turning Movement Count.pdf	Turning Movement Count	135 KB
Attachment 06 - Hennepin County - Heavy Commercial Count.pdf	Heavy Commercial Count	70 KB
Attachment 07 - MnDOT - Crash History.pdf	Crash History	156 KB
Figure 01 - Project Basemap.pdf	Project Basemap	392 KB
Figure 02 - Project Aerials.pdf	Project Aerials	857 KB
Figure 03 - Existing Roadway Elements.pdf	Existing Roadway Elements	218 KB
Figure 04 - Proposed Roadway Elements.pdf	Proposed Roadway Elements	176 KB
Figure 05 - Proposed Layout.pdf	Proposed Layout	6.4 MB
Figure 06 - Proposed Typical Section.pdf	Proposed Typical Section	118 KB
Figure 07 - 2030 Comprehensive Plan - Existing Land Use Features.pdf	Existing Land Use Features	171 KB
Figure 08 - 2030 Comprehensive Plan - 2030 Land Use Features.pdf	2030 Land Use Features	202 KB
Figure 09 - 2030 Comprehensive Plan - 2030 Traffic Analysis Zones.pdf	2030 Traffic Analysis Zones	156 KB
Figure 10 - 2030 Comprehensive Plan - Historic Development and Transportation Patterns.pdf	Historic Development and Transportation Patterns	200 KB
Figure 11 - 2030 Comprehensive Plan - Existing Sidewalk and Trail Network.pdf	Existing Sidewalk and Trail Network	192 KB
Figure 12 - 2030 Comprehensive Plan - Potential Sidewalk and Trail Network.pdf	Potential Sidewalk and Trail Network	234 KB
Figure 13 - 2030 Comprehensive Plan - Existing Bus Route Network.pdf	Existing Bus Route Network	319 KB

Figure 14 - 2030 Comprehensive Plan - Existing Transit Facilities and Corridors.pdf	Existing Transit Facilities and Corridors	207 KB
Figure 15 - 2030 Comprehensive Plan - Citywide Transportation Issues.pdf	Citywide Transportation Issues	205 KB
Figure 16 - Bottineau Boulevard Corridor Study - Planned Roadway Improvements.pdf	Hennepin County Planned Roadway Improvements	119 KB
Figure 17 - 2030 Comprehensive Plan - Planned Roadway Improvements.pdf	Brooklyn Park Planned Roadway Improvements	244 KB
Figure 18 - 2014 Hennepin County CIP - CSAH 81 Expansion.pdf	Hennepin County CIP - CP 0922	253 KB
Figure 19 - Metro Transit - Bottineau LRT Extension.pdf	Bottineau Blue Line Extension	430 KB

Reliever: Freeway Facility or

Facility being relieved

Number of hours per day volume exceeds capacity (based on the Congestion Report) 0

Reliever: Non-Freeway Facility or

Facility being relieved

Number of hours per day volume exceeds capacity (based on the table below) 0

Non-Freeway Facility Volume/Capacity Table

Hour	NB/EB Volume	SB/WB Volume	Capacity	Volume exceeds capacity
12:00am - 1:00am			0	
1:00am - 2:00am			0	
2:00am - 3:00am			0	
3:00am - 4:00am			0	
4:00am - 5:00am			0	
5:00am - 6:00am			0	
6:00am - 7:00am			0	
7:00am - 8:00am			0	

8:00am - 9:00am	0
9:00am - 10:00am	0
10:00am - 11:00am	0
11:00am - 12:00pm	0
12:00pm - 1:00pm	0
1:00pm - 2:00pm	0
2:00pm - 3:00pm	0
3:00pm - 4:00pm	0
4:00pm - 5:00pm	0
5:00pm - 6:00pm	0
6:00pm - 7:00pm	0
7:00pm - 8:00pm	0
8:00pm - 9:00pm	0
9:00pm - 10:00pm	0
10:00pm - 11:00pm	0
11:00pm - 12:00am	0

Expander/Augmentor/Non-Freeway Principal Arterial

Select one:	Expander
Area	1.693
Project Length	1.569
Average Distance	1.079
Upload Map	01 - Roadway Area Definition - CSAH 81 (Bottineau Boulevard) Expansion.pdf

Measure B: Current Heavy Commercial Traffic

Location	South of Highway 169
Current daily heavy commercial traffic volume	3990.0

Measure C: Project Location Relative to Jobs, Manufacturing, and Education

Select all that apply

Direct connection to or within a mile of a Job Concentration	
Direct connection to or within a mile of a Manufacturing/Distribution Location	Yes

Direct connection to or within a mile of an Educational Institution	Yes
Project provides a direct connection to or within a mile of an existing local activity center identified in an adopted county or city plan	Yes
County or City Plan Reference (Limit 700 characters; approximately 100 words)	The Brooklyn Park Comprehensive Plan has identified the intersection of CSAH 81/CSAH 152 as an existing transit and commercial node. The intersection currently serves as a gateway to the city. The Starlite Transit Center located in the southeast quadrant provides retail businesses and services to the area. The city is proposing to change the existing land use to neighborhood commercial and mixed use for areas surrounding this intersection. As of 2014, there is a light rail transit station also planned at this intersection. These improvements will support pedestrian, bicycle, transit, and vehicle transportation modes.
Upload Map	04 - Regional Economy - CSAH 81 (Bottineau Boulevard) Expansion.pdf

Measure A: Current Daily Person Throughput

Location	North of CSAH 152 / 130 (Brooklyn Boulevard)
Current AADT Volume	23400.0
Existing Transit Routes on the Project	565, 687, 705, 764

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	70.0
Current Daily Person Throughput	30490.0

Measure B: 2030 Forecast ADT

Use Metropolitan Council model to determine forecast (2030) ADT volume	Yes
METC Staff - Forecast (2030) ADT volume	34000.0
OR	
Approved county or city travel demand model to determine forecast (2030) ADT volume	
Forecast (2030) ADT volume	0

Measure A: Project Location and Impact to Disadvantaged Populations

Select one:

Project located in Racially Concentrated Area of Poverty	Yes
Project located in Concentrated Area of Poverty	
Projects census tracts are above the regional average for population in poverty or population of color	
Project located in a census tract that is below the regional average for population in poverty or populations of color or includes children, people with disabilities, or the elderly.	

Response (Limit 1,400 characters; approximately 200 words)

The CSAH 81 Expansion Project will provide a multimodal corridor that extends regional infrastructure to a new area. This project will serve as the county's investment to promote its complete streets policy that includes safe and efficient facilities for all transportation modes. Upon project completion, residents across all races, ethnicities, economic means, and abilities will face fewer barriers that restrict where to live, where to work, and how to travel. Descriptions of how the project will benefit each transportation mode are listed below:

Pedestrians - Installation of new off-street facilities (pedestrian ramps, APS, and countdown timers) that will tie into the existing sidewalk network to promote a mobile and healthy lifestyle

Bicycles - Installation of new facilities that will serve as direct routes for both commuter and recreational trips

Vehicles - Addition of through lanes, intersection improvements (signal replacements and turn lanes) will provide reductions in vehicle delays vehicles on CSAH 81 and cross traffic approaching from intersecting roadways

Commercial Vehicles - Reconstruction of the existing roadway will provide accessibility to markets and raw materials by freight

Transit - The project will provide all transportation users with access to the proposed Blue Line Extension of the LRT.

Upload Map	02 - Socio Economic - CSAH 81 (Bottineau Boulevard) Expansion.pdf

Measure B: Affordable Housing

City/Township	Segment Length (Miles)
Brooklyn Park	1.57
	2

Total Project Length

Total Project Length	1.57

Affordable Housing Scoring - To Be Completed By Metropolitan Council Staff

City/Township	Segment Length (Miles)	Total Length (Miles)	Score	Segment Length/Total Length	Housing Score Multiplied by Segment percent
Brooklyn Park	1.57	1.57	62.0	1.0	62.0
		2	**62**	**1**	**62**

Affordable Housing Scoring - To Be Completed By Metropolitan Council Staff

Total Project Length (Miles)	1.57
Total Housing Score	62.0

Measure A: Year of Roadway Construction

Year of Original Roadway Construction or Most Recent Reconstruction	Roadway Segment Length (Miles)	Calculation	Calculation 2
1957.0	1.69	3307.33	1957.0
	2	**3307**	**1957**

Average Construction Year

Weighted Year	1957.0

Total Segment Length (Miles)

Total Segment Length	1.69

Measure A: Cost Effectiveness of Vehicle Delay Reduction

Total Project Cost from Cost Sheet	$16,800,000.00
Total Peak Hour Vehicle Delay Without The Project	38.0
Total Peak Hour Vehicle Delay With The Project	31.0
Total Peak Hour Vehicle Delay Reduced by Project	7.0
Cost Effectiveness	$2,400,000.00
Synchro or HCM Reports	CSAH 81 Expansion - Synchro Report.pdf

Measure B: Cost Effectiveness of Emissions Reduction

Total Project Cost from Cost Sheet	$16,800,000.00
Total Peak Hour Kilograms Reduced by Project	0.61
Cost Effectiveness	$27,540,983.61
Synchro or HCM Reports	CSAH 81 Expansion - Synchro Report.pdf

Measure A: Benefit/Cost of Crash Reduction

Project Benefit/Cost Ratio	0.23
Worksheet Attachment	MnDOT HSIP - BC Worksheet - CSAH 81 Expansion.pdf

Measure A: Transit Connections

Existing Routes Directly Connected to the Project	565, 687, 705, 764
Planned Transitways directly connected to the project (alignment and mode determined and identified in the 2030 TPP)	Bottineau LRT (METRO Blue Line Extension)
Upload Map	03 - Transit Connections - CSAH 81 (Bottineau Boulevard) Expansion.pdf

Response

Met Council Staff Data Entry Only

Route Ridership	154786.0
Transitway Ridership	8640000.0

Measure B: Bicycle and Pedestrian Connections

Previously, the CSAH 81 corridor did not include any bicycle or pedestrian facilities outside of Minneapolis, however, that is no longer the case. Recent improvements have been implemented along CSAH 81 by Hennepin County that included a multi-use facility adjacent to the roadway. The CSAH 81 Expansion Project is a continuation of the county's goal to reconstruct the entire corridor.

A multi-use trail is an integral part of the CSAH 81 Expansion Project, as it will provide a direct northwest/southeast route for bicycles and pedestrians that includes connection to Greenhaven Park, a future light rail transit station, and a commercial node. Improved access for bicycles and pedestrians will support the county's goal of a healthy lifestyle.

Response (Limit 1,400 characters; approximately 200 words)

There are currently sidewalks along most signalized intersecting roadways. The intersection of CSAH 81/CSAH 152 is an existing transit and commercial node, as identified by the city's 2030 Comprehensive Plan. As of 2014, there is a light rail transit station for the Blue Line Extension planned at this intersection.

In the Brooklyn Park 2030 Comprehensive Plan a proposed trail is identified that will run parallel to Shingle Creek. This trail will provide an east/west connection between CSAH 81 and CSAH 103. The trail will also connect to Greenhaven Park.

Measure C: Multimodal Facilities

Response (Limit 1,400 characters; approximately 200 words)

The existing CSAH 81 (Bottineau Boulevard) corridor includes a rural cross-section with no adjacent bicycle or pedestrian facilities. This expansion project will include a multimodal facility that contains a boulevard space to serve as a buffer between the roadway and trail. The project also includes a raised median and curb and gutter that will provide a safer roadway design.

This project includes the following intersection elements as well:

- New traffic signals

- ADA compliant pedestrian ramps

- Countdown timers

- Accessible Pedestrian Signals (APS)

There are currently sidewalks located along the following east/west streets that intersect the CSAH 81 project:

- 73rd Avenue

- CSAH 152

- 79th Avenue

These intersections and facilities will serve as important connections for northbound/southbound bicycle and pedestrian traffic along CSAH 81.

The City of Brooklyn Park is proposing a multiuse trail that will run parallel to Shingle Creek that will connect CSAH 103 to CSAH 81 and Green Haven Park.

An LRT Station is planned for the intersection at CSAH 152 as part of the Blue Line Extension, which will further increase the number of trips generated at this commercial node.

Transit Projects Not Requiring Construction

If the applicant is completing a transit or TDM application, only Park-and-Ride and other construction projects require completion of the Risk Assessment below. Check the box below if the project does not require the Risk Assessment fields, and do not complete the remainder of the form. These projects will receive full points for the Risk Assessment.

Check Here if Your Transit Project Does Not Require Construction

Measure A: Risk Assessment

1)Project Scope (5 Percent of Points)

Meetings or contacts with stakeholders have occurred Yes

100%

Stakeholders have been identified

40%

Stakeholders have not been identified or contacted

0%

2)Layout or Preliminary Plan (5 Percent of Points)

Layout or Preliminary Plan completed Yes

100%

Layout or Preliminary Plan started

50%

Layout or Preliminary Plan has not been started

0%

Anticipated date or date of completion 08/14/2007

3)Environmental Documentation (10 Percent of Points)

EIS

EA Yes

PM

Document Status:

Document approved (include copy of signed cover sheet)	Yes	CSAH 81 Expansion - Environmental Document - Cover Sheet.pdf

100%

Document submitted to State Aid for review

75%

Document in progress; environmental impacts identified

50%

Document not started

0%

Anticipated date or date of completion/approval 02/24/2009

4)Review of Section 106 Historic Resources (15 Percent of Points)

No known potential for archaeological resources, no historic resources known to be eligible for/listed on the National Register of Historic Places located in the project area, and project is not located on an identified historic bridge Yes

100%

Historic/archeological review under way; determination of no historic properties affected or no adverse effect anticipated

80%

Historic/archaeological review under way; determination of adverse effect anticipated

40%

Unknown impacts to historic/archaeological resources

0%

Anticipated date or date of completion of historic/archeological review:

Project is located on an identified historic bridge

5)Review of Section 4f/6f Resources (15 Percent of Points)

(4f is publicly owned parks, recreation areas, historic sites, wildlife or waterfowl refuges; 6f is outdoor recreation lands where Land and Water Conservation Funds were used for planning, acquisition, or development of the property)

No Section 4f/6f resources located in the project area

100%

Project is an independent bikeway/walkway project covered by the bikeway/walkway Negative Declaration statement; letter of support received

100%

Section 4f resources present within the project area, but no known adverse effects Yes

80%

Adverse effects (land conversion) to Section 4f/6f resources likely

30%

Unknown impacts to Section 4f/6f resources in the project area

0%

6)Right-of-Way (15 Percent of Points)

Right-of-way or easements not required

100%

Right-of-way or easements has/have been acquired

100%

Right-of-way or easements required, offers made

75%

Right-of-way or easements required, appraisals made

50%

Right-of-way or easements required, parcels identified

25%

Right-of-way or easements required, parcels not identified Yes

0%

Right-of-way or easements identification has not been completed

0%

Anticipated date or date of acquisition 12/03/2018

7)Railroad Involvement (25 Percent of Points)

No railroad involvement on project

100%

Railroad Right-of-Way Agreement is executed (include signature page) 100%

Railroad Right-of-Way Agreement required; Agreement has been initiated

60%

Railroad Right-of-Way Agreement required; negotiations have begun

40%

Railroad Right-of-Way Agreement required; negotiations not begun Yes

0%

Anticipated date or date of executed Agreement 12/03/2018

8)Construction Documents/Plan (10 Percent of Points)

Construction plans completed/approved (include signed title sheet)

100%

Construction plans submitted to State Aid for review

75%

Construction plans in progress; at least 30% completion

50%

Construction plans have not been started Yes

0%

Anticipated date or date of completion 12/03/2018

9)Letting

Anticipated Letting Date 03/05/2019

BROOKLYN PARK
5200 85th Ave. N., Brooklyn Park, MN 55443-4301 • Phone 763-424-8000 • Fax 763-493-8391
TDD 763-493-8392

November 21, 2014

James N. Grube, P.E.
Director of Transportation and County Engineer
Transportation Department
1600 Prairie Drive
Medina, Minnesota 55340

Re: Letter of Support for Hennepin County's Regional Solicitation Application and Project Bottineau Boulevard (CSAH 81) Roadway Expansion Project - CSAH 8 to 83rd Avenue

Dear Mr. Grube:

The City of Brooklyn Park supports Hennepin County's federal funding application through the Regional Solicitation for the proposed CSAH 81 (Bottineau Boulevard) roadway expansion project between CSAH 8 and 83rd Avenue, which would include the following improvements:

- Roadway reconstruction and expansion
- Addition of trail/sidewalk facilities
- Replace/upgrade traffic signals
- Future integration of the Bottineau Transitway

The city supports the county in its efforts to improve this section of Bottineau Boulevard by providing additional capacity and safety for multiple traffic modes while supporting expanded transit services. Improvements along this corridor will enhance the livability and quality of life for Brooklyn Park and Hennepin County residents.

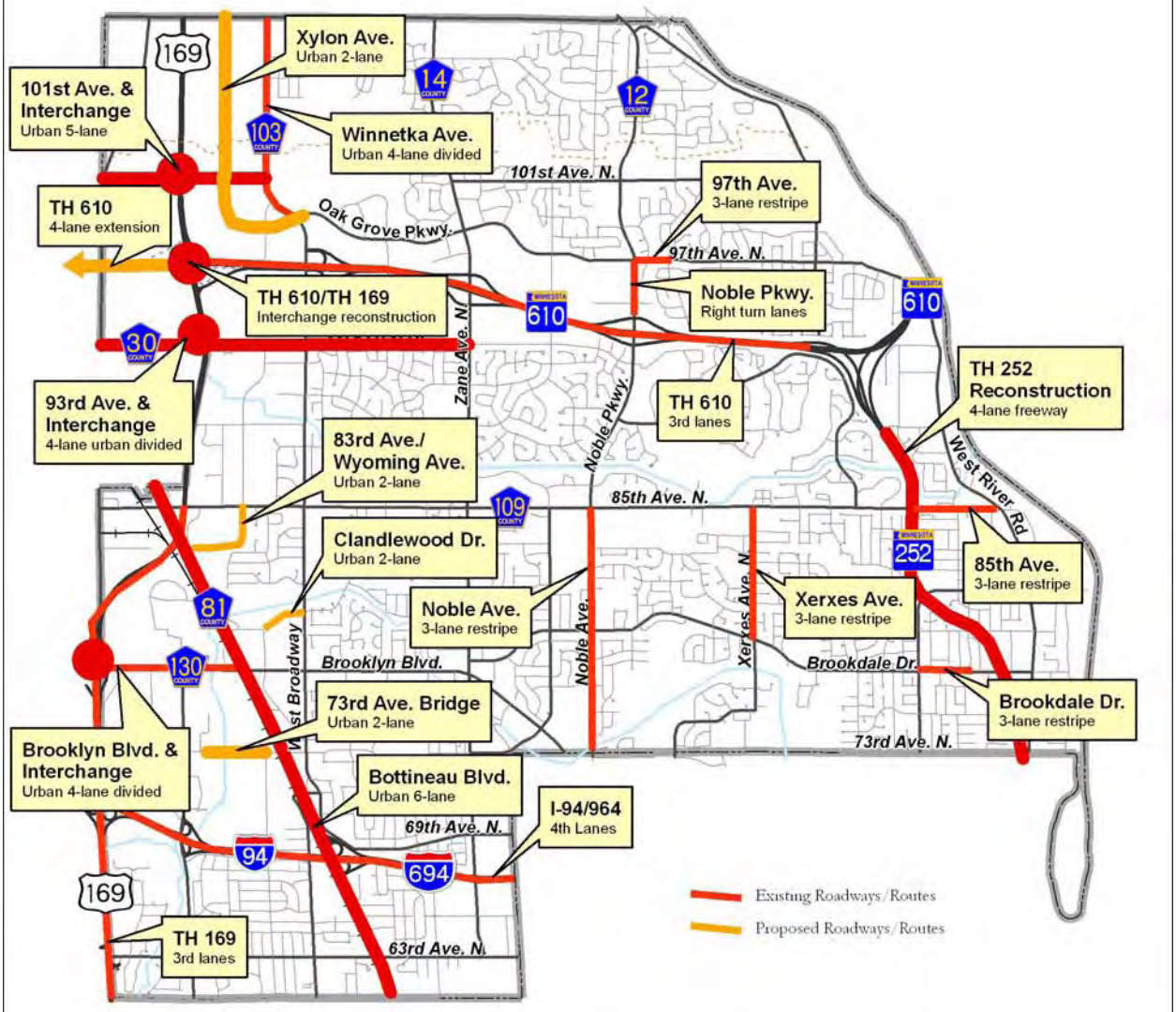
Thank you for making us aware of this application effort and the opportunity to provide support. The city looks forward to working with you on this project.

Sincerely,

Jesse Struve, P.E.
City Engineer

Figure 5.3.14: Planned Roadway Imrovements (by 2030)

November 2007



Sources: MNDOT Transportation System Plan, Hennepin County CIP Provisional Projects, City of Brooklyn Park CIP.

Figure 5.3.14 Recommended Roadway Improvements (2030)

Priority	Roadway	From	To	Recommended Improvement	Comments	Construction Cost
1	109th Ave	Xylon Ave	Brittany Dr.	Upgrade to 3-lane minor arterial	Share road with Champlin	$1,620,00
2	73rd Ave	East of Boone Ave	Winnetka Ave	Connect segment; construct bridge	Would help Brooklyn Blvd. congestion.	$3,500,000
1	79th Ave/ Candlewood Dr	Jolly Ln	West Broadway	Construct new 2-lane Major collector with parking	Construct to match Candlewood Dr.	$1,000,000
3	85th Ave	Dupont Ave	W. River Rd	Re-stripe to 3-lane Major collector	Future closure of 81st Ave at 252 will affect	$30,000
1	93rd Ave	Jefferson Hwy	West Broadway	Construct to 4-lane divided	County roadway to be done with interchange	$800,000
3	93rd Ave	West Broadway	Zane Ave	Upgrade to a 4-lane divided arterial.	County road near capacity in 2030.	$800,000
1	Tessman Pkwy	85th Ave	Founders Pkwy	New 2-lane Minor collector	Dependant upon development	$600,000
1	93rd Ave (CSAH 30)	At TH 169		Construct half-diamond interchange to the south over TH 169.	Based on 2005 Study. State and County Roadways.	$400,000
3	TH 169	CSAH 130		Add northbound auxiliary lane, loop on-ramp, widen bridge, terminate east frontage road	State and County roadways. Based on 1998 corridor study.	$500,000
1	TH 169	CSAH 81/85th Avenue area		Grade-Separate/ construct interchange at 85th Avenue	To start in 2009. State and County roadways.	$400,000 (City share)
1	West Broadway	Candlewood Dr	93rd Ave	Reconstruct as urban 4-lane divided	County Roadway. In County and City CIPs	$3,280,000
2	101st Ave	Jefferson Hwy	Winnetka Ave	Upgrade to 4-lane Major urban collector;	State Roadway (TH169) involved. Assumes at-grade access.	$2,200,000
3	85th Ave	Jefferson Hwy	CSAH 81	Upgrade to 4-lane divided	County roadway. Not in County CIP.	$500,000
2	West Broadway	62nd Ave	CSAH 81	Reconstruct as an urban 3-lane section without parking	County roadway. Not in County CIP.	$600,000
1	Zane Ave/ Brooklyn Blvd	Intersection		Add Additional Turn Lanes	Share with Hennepin County.	$1,750,000
2	CSAH 81	S. City Limit	N. City Limit	Upgrade to 6-lane urban roadway with transitway	Hennepin County roadway	$7,700,000
1	W River Rd	99th Ave	Noble Pkwy	Reconstruct to urban 2-lane road	In City CIP for 2008	$2,200,000
2	Xylon Ave	West Broadway/Oak Grove Pkwy	109th Ave	Construct 2-lane Major urban collector	Alignment south of 101st Ave dependent on Target development	$2,200,000
1	TH 610	TH 169	I-94 (Maple Grove)	Construct 4-lane freeway	In MnDOT TSP for 2015-2023	$180,000,000 (State)
1	TH 610	TH 169		Reconstruct interchange	Eliminate signals in TSP for 2024-2030	$500,000
1	TH 252	I-94 (Brooklyn Center)	TH 610	Reconstruct to 4-lane freeway	State roadway. In TSP for 2024-2030	$130,000,000 (State)
3	CSAH 130	TH 169	CSAH 81	Reconstruct to 4-lane divided	County roadway, not in County or City CIP.	$1,000,000
3	TH 610	TH 252	TH 169	Add 3rd lane in each direction	State roadway add-on issue	$20,000,000 (State)

Figure 5.3.14 Recommended Roadway Improvements (2030)						
Priority	Roadway	From	To	Recommended Improvement	Comments	Construction Cost
3	I-94	E. City limit	W. City limit	Add 4th lane in each direction.	State roadway. Just added 3rd lane.	$300,000,000 (State)
1	109th Ave	Xylon Ave	TH 169	Reconstruct to 4-lane divided	With Champlin. Affects TH 169 intersection.	$500,000
3	TH 169	S. City limit	CSAH 109	Add 3rd lane in each direction	Requires interchange revisions	$50,000,000 (State)
2	Noble Ave	S. City Limit	85th Ave	Restripe to 3- or 4-lane and remove parking	Need to work with Brooklyn Center and Hennepin County	$70,000
3	Xerxes Ave	Brookdale Dr	85th Ave	Restripe to 3-lane roadway and remove parking	Minimal parking use	$40,000
3	Brookdale Dr	Humboldt Ave	Colfax Ave	Resrtipe to 3-lane roadway and remove parking	Traffic expected to increase in future with TH 252/81st Ave closure	$40,000
3	Noble Pkwy	TH 610	97th Ave	Add northbound right turn lane at 97th Ave	Heavy movement affects northbound turn traffic. County roadway.	$50,000
2	97th Ave	Noble Pkwy	Fallgold Pkwy	Restripe to provide dual left turn lanes westbound to southbound	Split phase signal. Work with County.	$20,000
1	West Broadway/ Winnetka Ave.	TH 610	109th Ave	Reconstruct to 4-lane divided urban with right turn lanes	County roadway. May be impacted by Target development.	$3,300,000
1	83rd Ave/ Wyoming Ave	CSAH 81	85th Ave	Construct new 2-lane Major collector	Needed with triangle project	$1,000,000
2	TH 169	101st Ave		Construct full diamond interchange	MnDOT has indicated that they will not fund	$15,000,000
Total cost of capacity and system needs (does not include costs for TH 169, TH 252, TH 610, and I-94).						$51,700,000

5.3.15 Jurisdictional Transfers

West Broadway (CSAH 8). West Broadway from the southern City limits to Bottineau Boulevard is a two-lane rural section roadway surrounded by an established residential neighborhood south of I-94 and business uses north of I-94. Pedestrian facilities are limited to two blocks along the south end of the roadway. The county identified this roadway as a possible turn-back to the City due to the proximity to parallel County Road 81 (Bottineau Boulevard).

68th/69th/Lakeland Avenues (CSAH 130). This roadway is predominately a two-lane rural section roadway. A four-lane urban section roadway ties into West Broadway near the intersection with 71st Avenue. Traffic is expected to remain constant along this roadway over the next twenty years with about 6,500 vehicles per day. The county identified this roadway as a possible turn-back to the City due to its low volume of traffic.

109th Avenue. This roadway is shared between the cities of Brooklyn Park, Champlin, and Maple Grove and is classified as a B-minor arterial. Its traffic volumes currently and projected would warrant a County Road designation.

5.3.16 Special Study Areas

The following roadways have been identified as needing reconstruction or reconfiguration, yet specific details about the exact needs must be further studied.

Bottineau Boulevard. County Road 81 is currently being studied by Hennepin County and Metro Transit for use as a transit corridor, either by Bus Rapid Transit (BRT) or Light Rail Transit (LRT). Additionally, the County is in the process of reconstructing the roadway through Robbinsdale. The Crystal segment is anticipated in 2008 or 2009 for reconstruction. The Brooklyn Park portions of Bottineau Boulevard would be constructed after that, as funding becomes available. The implementation of one of the transit technologies could have some impact on the design of the roadway. Reconstruction in Brooklyn Park would include widening of the roadway, correction of dangerous grades, and pedestrian and landscaping enhancements.

Trunk Highway 252 Freeway. The current design of Highway 252 as an expressway is not adequate for traffic in the peak hours. Conversion of the road into a grade-separated freeway would alleviate traffic delays as well as enhance safety for both motorists and pedestrians trying to cross the highway. Upgrade of this roadway will also provide a better connection between northern Brooklyn Park (and Anoka County) and downtown Minneapolis and will reduce traffic on paralleling roadways such as West River Road and Humboldt Avenue. Locations and designs of interchanges will require additional study.

93rd Avenue west of Regent Avenue. 93rd Avenue west of Regent Avenue is currently a two-lane rural roadway. As development occurs in the area, upgrading to an urban design, either two- or four-lane will be necessary. A partial interchange with Highway 169 is desired, but is limited due to the proximity to Highway 610 and the St. Vincent de Paul Cemetery.

Target Area Improvements. The Target area at the northeast corner of Highways 169 and 610 will require several upgrades to the existing arterial and collector roadway system in the area. Specific upgrades will not be known until additional study is conducted. Additional overpasses, underpasses, freeway exits, ramp widths, and roadway widening is anticipated. The City will work with MNDOT, Hennepin County, and MetroTransit for these improvements.

101st Avenue Interchange. Creating an interchange on Highway 169 at 101st Avenue will be critical to development in the area. The exact designs of the interchange and to 101st Avenue are not known at this time. Development of the Target area and areas west of Highway 169 will drive those needs and the designs.

3.4.3 C.S.A.H. 81 (Bottineau Boulevard) Corridor

Background

2003: *Master Redevelopment Policy and Framework Plan* was adopted by City Council on June 12, 2003. The Plan was drafted by City Council, Task Force Members and City Staff. Two of the following four intersections, discussed below, were called out in the Plan.

2004: Analysis was conducted by The Design Center for the American Urban Landscape (DCAUL) regarding the corridor (County Road 81 from Minneapolis to Osseo) land use patterns. The findings are documented in the report titled *Northwest Corridor Planning & Design Framework*.

2007: A meeting was held with Public Officials and citizens to discuss the Bottineau Boulevard corridor on February 28, 2007. In general, stakeholders would like to see a cleaner, warmer appearance along the corridor. Other comments received at the meeting are represented in the following analysis.

Analysis

The following four intersections were identified as special areas along the Bottineau Boulevard corridor that are in transition or may be re-development opportunities in the future. Each intersection is discussed below with reference to the background studies and plans mentioned above.

Bottineau Boulevard & 85th Avenue & 169

This intersection includes 3 arterial roadways. Currently the majority of adjacent properties are guided C – Commercial and I – Industrial. Proposed changes to the land use include all C designated properties modified to CC – Community Commercial. The high-traffic and high-visibility of the intersection lends itself to the community commercial uses such as big-box retail and auto-oriented uses. Two properties southwest of the intersection are proposed to change from I to BP – Business Park. This is because the current use of the properties is more consistent with the BP land use definition.

Bottineau Boulevard & Brooklyn Boulevard

The intersection of Bottineau Boulevard and Brooklyn Boulevard is an existing transit and commercial node. The Starlite Transit Center is located southeast of the intersection and fuels the successful retail businesses and services in the area. Proposed land use changes include a modification to the properties east of Bottineau Blvd., adjacent to the intersection of West Broadway and Brooklyn Boulevard, from C-Commercial to NC – Neighborhood Commercial. The modification is intended to identify the area as dense commercial activity supportive of pedestrian, bike and mass-transit modes of transportation.

The existing Anchor Block site southwest of the intersection was discussed at the public meeting. The proposed land use change from I-Industrial to MX – Mixed Use is intended to allow creative design if the opportunity for re-development occurs. This intersection has been highlighted as a gateway to the City. Further discussion of gateways can be found in Chapter 7 Public Facilities.

Bottineau Boulevard & West Broadway

This intersection was called out as a priority in the *Master Redevelopment Policy and Framework Plan* adopted in 2003. The Plan did not specifically address a priority statement, however the intersection was 1 of 4 major commercial areas mentioned (pg 5). No land use changes are proposed. This intersection has been discussed regarding road re-configuration to better meet the needs of the adjacent properties. Further analysis can be found in Chapter 5 Transportation.

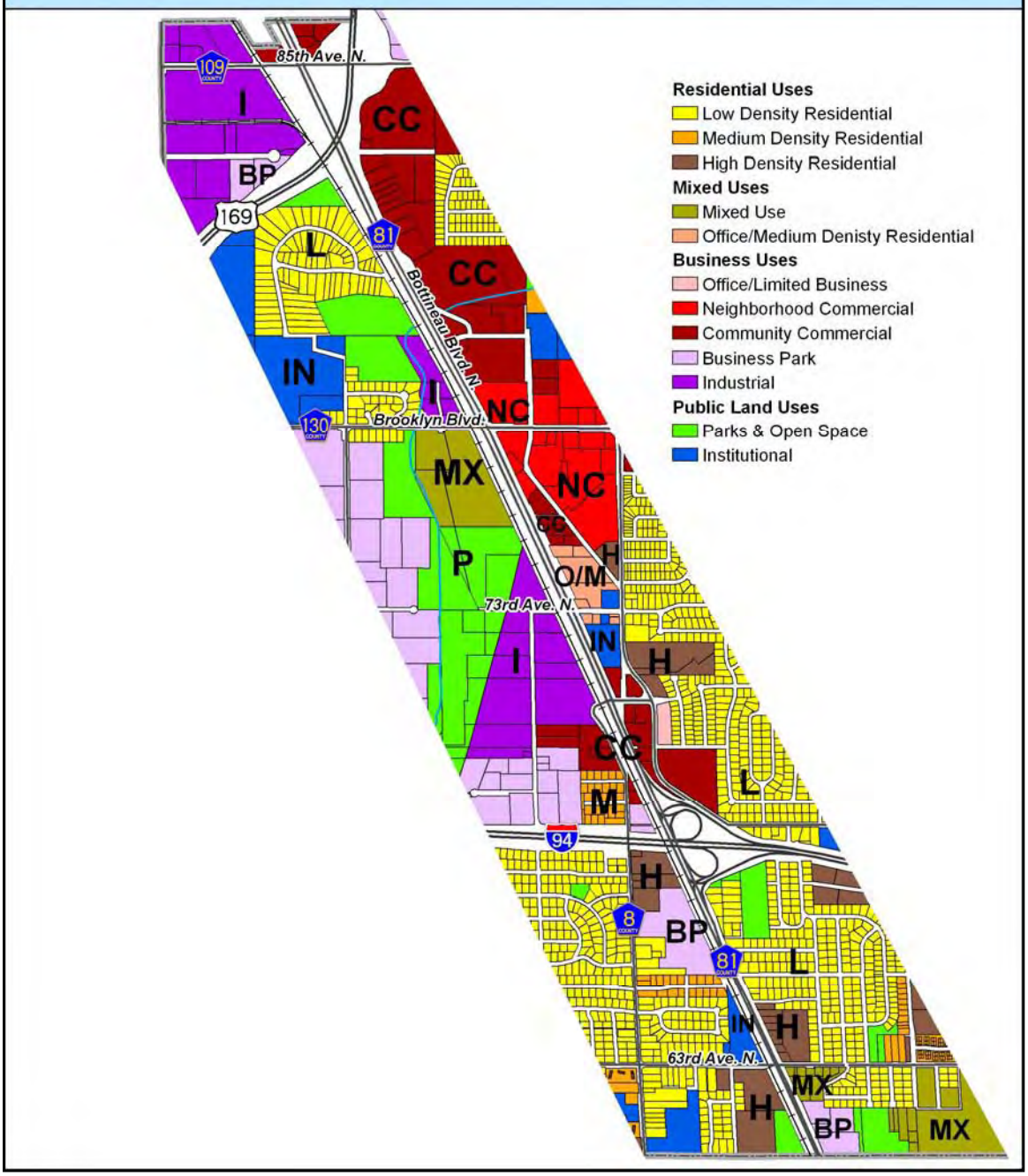
Bottineau Boulevard & 63rd

This intersection was called out as a priority in the *Master Redevelopment Policy and Framework Plan* adopted in 2003. The Plan did not specifically address a priority statement, however the intersection was 1 of 4 major commercial areas mentioned (pg 5). This intersection was also highlighted in the *Northwest Corridor Planning & Design Framework*. The Framework included a scenario that included a Park-and-Ride lot, which was constructed in 2006 at the northwest corner of the intersection.

Bottineau Boulevard is expected to be re-constructed in the next 10 years. The re-construction will result in the removal of several properties along the east side of Bottineau and 63rd. This issue was discussed at the community meeting and the consensus was that higher density housing would be appropriate northeast of the intersection. The proposed land use change from C-Commercial to H-High Density Residential is consistent with the community recommendations. The southeast corner of the intersection is proposed to change from C-Commercial to MX – Mixed Use. The change is meant to allow land use flexibility in preparation of the Bottineau Boulevard re-construction.

Figure 3.4.3: Bottineau Boulevard Cooridor

February 2008



HENNEPIN COUNTY
TRANSPORTATION PLANNING
DIVISION

AREA 2 ZONE 4
CSAH 81 N. OF CSAH 130
1-5-1

Site: 716

Weekly Volume, per Channel

N.B.

Interval Start	Mon 5/13/2013	Tue 5/14/2013	Wed 5/15/2013	Thu 5/16/2013	Fri 5/17/2013	Sat 5/18/2013	Sun 5/19/2013	Mon - Fri Average	Weekly Average
12:00 AM	-	91	74	-	-	-	-	82.5	82.5
1:00 AM	-	42	46	-	-	-	-	44.0	44.0
2:00 AM	-	40	42	-	-	-	-	41.0	41.0
3:00 AM	-	38	56	-	-	-	-	47.0	47.0
4:00 AM	-	91	92	-	-	-	-	91.5	91.5
5:00 AM	-	252	253	-	-	-	-	252.5	252.5
6:00 AM	-	478	504	-	-	-	-	491.0	491.0
7:00 AM	-	654	608	-	-	-	-	631.0	631.0
8:00 AM	-	582	570	-	-	-	-	576.0	576.0
9:00 AM	-	664	687	-	-	-	-	675.5	675.5
10:00 AM	-	735	728	-	-	-	-	731.5	731.5
11:00 AM	-	802	773	-	-	-	-	787.5	787.5
12:00 PM	760	842	-	-	-	-	-	801.0	801.0
1:00 PM	945	910	-	-	-	-	-	927.5	927.5
2:00 PM	996	1030	-	-	-	-	-	1013.0	1013.0
3:00 PM	1176	1198	-	-	-	-	-	1187.0	1187.0
4:00 PM	1476	1440	-	-	-	-	-	1458.0	1458.0
5:00 PM	1390	1302	-	-	-	-	-	1346.0	1346.0
6:00 PM	786	897	-	-	-	-	-	841.5	841.5
7:00 PM	556	580	-	-	-	-	-	568.0	568.0
8:00 PM	460	454	-	-	-	-	-	457.0	457.0
9:00 PM	374	371	-	-	-	-	-	372.5	372.5
10:00 PM	233	224	-	-	-	-	-	228.5	228.5
11:00 PM	124	139	-	-	-	-	-	131.5	131.5
Totals	9276	13856	4433	0	0	0	0	13782.5	13782.5

Peak Hours

12:00 AM - 12:00 PM	-	11:00 AM	11:00 AM	-	-	-	-	11:00 AM	11:00 AM
Volume	-	802	773	-	-	-	-	787.5	787.5
12:00 PM - 12:00 AM	4:00 PM	4:00 PM	-	-	-	-	-	4:00 PM	4:00 PM
Volume	1476	1440	-	-	-	-	-	1458.0	1458.0

= 11 hr
20,400

+14.7 %

13782
12470
26252 / 1.122 = 23397

+14.7
VHP Y.
6-4-2013

13782
12470
26252 ÷ 1.122 = 23397

HENNEPIN COUNTY
TRANSPORTATION PLANNING
DIVISION

AREA 2 ZONE 4
CSAH 81 N. OF CSAH 130
1-5-1

Site: 716

Weekly Volume, per Channel

S.B.

Interval Start	Mon 5/13/2013	Tue 5/14/2013	Wed 5/15/2013	Thu 5/16/2013	Fri 5/17/2013	Sat 5/18/2013	Sun 5/19/2013	Mon - Fri Average	Weekly Average
12:00 AM	-	74	74	-	-	-	-	74.0	74.0
1:00 AM	-	44	44	-	-	-	-	44.0	44.0
2:00 AM	-	43	38	-	-	-	-	40.5	40.5
3:00 AM	-	44	44	-	-	-	-	44.0	44.0
4:00 AM	-	66	66	-	-	-	-	66.0	66.0
5:00 AM	-	248	284	-	-	-	-	266.0	266.0
6:00 AM	-	816	738	-	-	-	-	777.0	777.0
7:00 AM	-	1515	1624	-	-	-	-	1569.5	1569.5
8:00 AM	-	950	965	-	-	-	-	957.5	957.5
9:00 AM	-	674	640	-	-	-	-	657.0	657.0
10:00 AM	-	580	628	-	-	-	-	604.0	604.0
11:00 AM	-	690	717	-	-	-	-	703.5	703.5
12:00 PM	721	732	-	-	-	-	-	726.5	726.5
1:00 PM	666	739	-	-	-	-	-	702.5	702.5
2:00 PM	772	799	-	-	-	-	-	785.5	785.5
3:00 PM	810	806	-	-	-	-	-	808.0	808.0
4:00 PM	811	796	-	-	-	-	-	803.5	803.5
5:00 PM	753	706	-	-	-	-	-	729.5	729.5
6:00 PM	608	586	-	-	-	-	-	597.0	597.0
7:00 PM	524	474	-	-	-	-	-	499.0	499.0
8:00 PM	358	418	-	-	-	-	-	388.0	388.0
9:00 PM	297	308	-	-	-	-	-	302.5	302.5
10:00 PM	181	202	-	-	-	-	-	191.5	191.5
11:00 PM	126	142	-	-	-	-	-	134.0	134.0
Totals	6627	12452	5862	0	0	0	0	12470.5	12470.5
				Peak Hours					
12:00 AM - 12:00 PM	-	7:00 AM	7:00 AM	-	-	-	-	7:00 AM	7:00 AM
Volume	-	1515	1624	-	-	-	-	1569.5	1569.5
12:00 PM - 12:00 AM	4:00 PM	3:00 PM	-	-	-	-	-	3:00 PM	3:00 PM
Volume	811	806	-	-	-	-	-	808.0	808.0

Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

AM-MID DAY-PM Turning Movement Study
CSAH 81 & CSAH 130 / 152
Tuesday, April 8th 2014
6 AM - 9 AM, 11 AM - 1 PM, 3 PM - 6 PM

File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 1

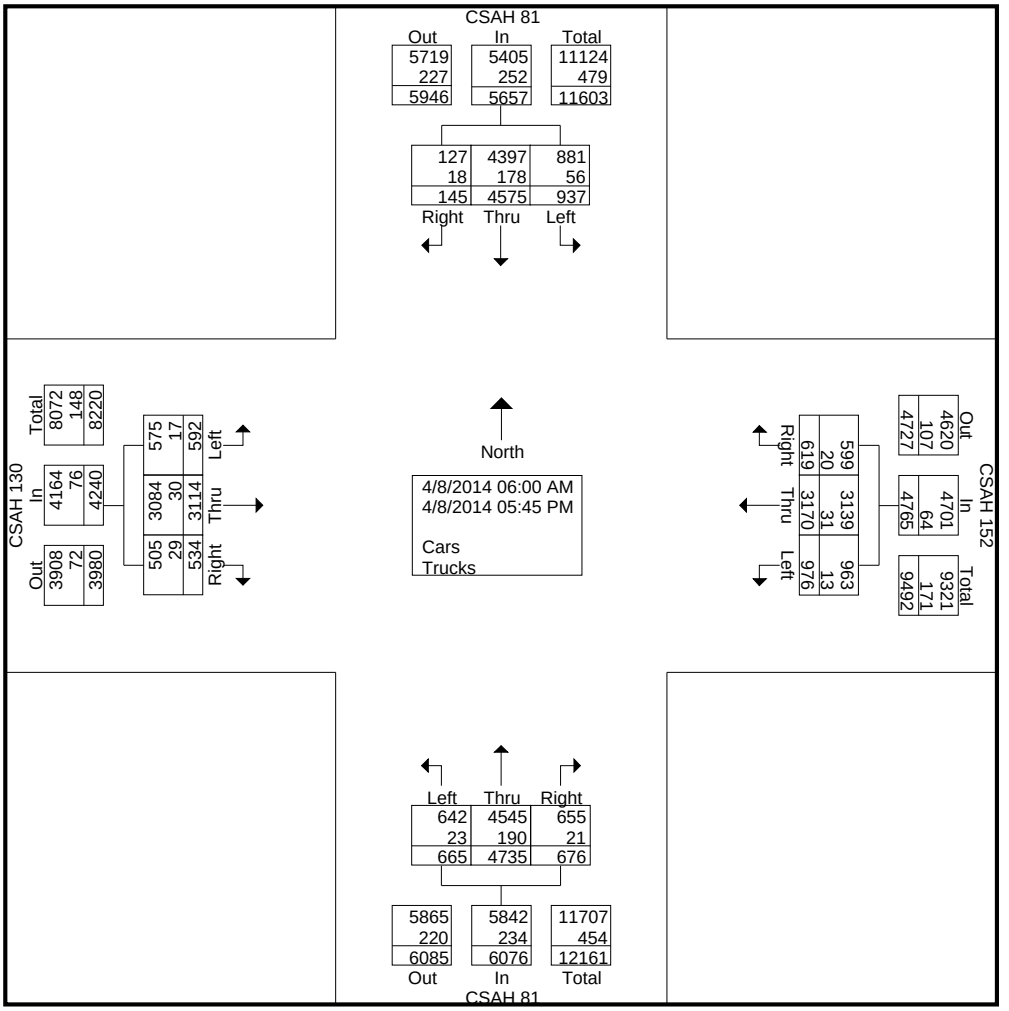
Groups Printed- Cars - Trucks

	CSAH 81 Southbound				CSAH 152 Westbound				CSAH 81 Northbound				CSAH 130 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
06:00 AM	1	111	13	125	4	50	12	66	7	53	8	68	6	22	7	35	294
06:15 AM	7	125	20	152	4	69	21	94	6	76	8	90	8	22	2	32	368
06:30 AM	7	171	12	190	18	102	16	136	11	87	25	123	6	30	5	41	490
06:45 AM	26	205	20	251	9	92	15	116	22	120	38	180	12	25	3	40	587
Total	41	612	65	718	35	313	64	412	46	336	79	461	32	99	17	148	1739
07:00 AM	4	248	28	280	12	98	15	125	12	110	11	133	17	45	3	65	603
07:15 AM	13	237	26	276	16	110	19	145	15	127	13	155	12	37	8	57	633
07:30 AM	18	275	31	324	10	131	24	165	17	121	24	162	18	57	7	82	733
07:45 AM	11	221	25	257	12	133	28	173	18	120	17	155	23	71	7	101	686
Total	46	981	110	1137	50	472	86	608	62	478	65	605	70	210	25	305	2655
08:00 AM	15	192	27	234	4	67	20	91	24	92	17	133	22	61	10	93	551
08:15 AM	7	146	20	173	5	90	17	112	12	119	21	152	14	47	10	71	508
08:30 AM	16	128	21	165	11	97	19	127	24	89	20	133	12	55	11	78	503
08:45 AM	3	125	35	163	6	104	19	129	13	96	22	131	10	77	9	96	519
Total	41	591	103	735	26	358	75	459	73	396	80	549	58	240	40	338	2081
BREAK******																	
11:00 AM	3	88	29	120	19	74	28	121	32	103	15	150	11	108	21	140	531
11:15 AM	2	69	30	101	18	81	38	137	24	111	13	148	13	108	18	139	525
11:30 AM	5	104	35	144	14	107	25	146	23	99	20	142	18	141	16	175	607
11:45 AM	1	94	29	124	27	129	41	197	23	93	15	131	21	127	22	170	622
Total	11	355	123	489	78	391	132	601	102	406	63	571	63	484	77	624	2285
12:00 PM	0	98	32	130	33	123	41	197	17	115	21	153	29	159	28	216	696
12:15 PM	0	75	24	99	24	130	37	191	27	114	19	160	19	127	9	155	605
12:30 PM	0	97	35	132	15	137	31	183	19	113	24	156	13	139	28	180	651
12:45 PM	3	118	51	172	16	117	41	174	19	101	33	153	13	97	19	129	628
Total	3	388	142	533	88	507	150	745	82	443	97	622	74	522	84	680	2580
BREAK******																	
03:00 PM	0	131	28	159	24	69	33	126	28	149	26	203	25	122	27	174	662
03:15 PM	0	143	34	177	31	102	39	172	23	202	16	241	25	116	29	170	760
03:30 PM	0	135	38	173	25	98	45	168	26	154	10	190	30	127	32	189	720
03:45 PM	0	113	36	149	18	93	47	158	21	223	25	269	21	127	34	182	758
Total	0	522	136	658	98	362	164	624	98	728	77	903	101	492	122	715	2900
04:00 PM	0	165	23	188	26	85	32	143	26	194	22	242	20	149	32	201	774
04:15 PM	0	135	39	174	30	94	50	174	28	229	21	278	19	106	26	151	777
04:30 PM	0	161	35	196	30	98	30	158	26	256	25	307	27	141	40	208	869
04:45 PM	0	122	30	152	34	107	41	182	19	252	29	300	9	153	28	190	824
Total	0	583	127	710	120	384	153	657	99	931	97	1127	75	549	126	750	3244
05:00 PM	0	138	25	163	33	84	47	164	25	303	30	358	13	131	31	175	860
05:15 PM	3	152	42	197	42	118	19	179	28	258	22	308	11	144	39	194	878
05:30 PM	0	160	43	203	16	82	51	149	29	245	19	293	20	114	21	155	800
05:45 PM	0	93	21	114	33	99	35	167	32	211	36	279	17	129	10	156	716
Total	3	543	131	677	124	383	152	659	114	1017	107	1238	61	518	101	680	3254
Grand Total	145	4575	937	5657	619	3170	976	4765	676	4735	665	6076	534	3114	592	4240	20738
Apprch %	2.6	80.9	16.6		13	66.5	20.5		11.1	77.9	10.9		12.6	73.4	14		
Total %	0.7	22.1	4.5	27.3	3	15.3	4.7	23	3.3	22.8	3.2	29.3	2.6	15	2.9	20.4	
Cars	127	4397	881	5405	599	3139	963	4701	655	4545	642	5842	505	3084	575	4164	20112
% Cars	87.6	96.1	94	95.5	96.8	99	98.7	98.7	96.9	96	96.5	96.1	94.6	99	97.1	98.2	97
Trucks	18	178	56	252	20	31	13	64	21	190	23	234	29	30	17	76	626
% Trucks	12.4	3.9	6	4.5	3.2	1	1.3	1.3	3.1	4	3.5	3.9	5.4	1	2.9	1.8	3

Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

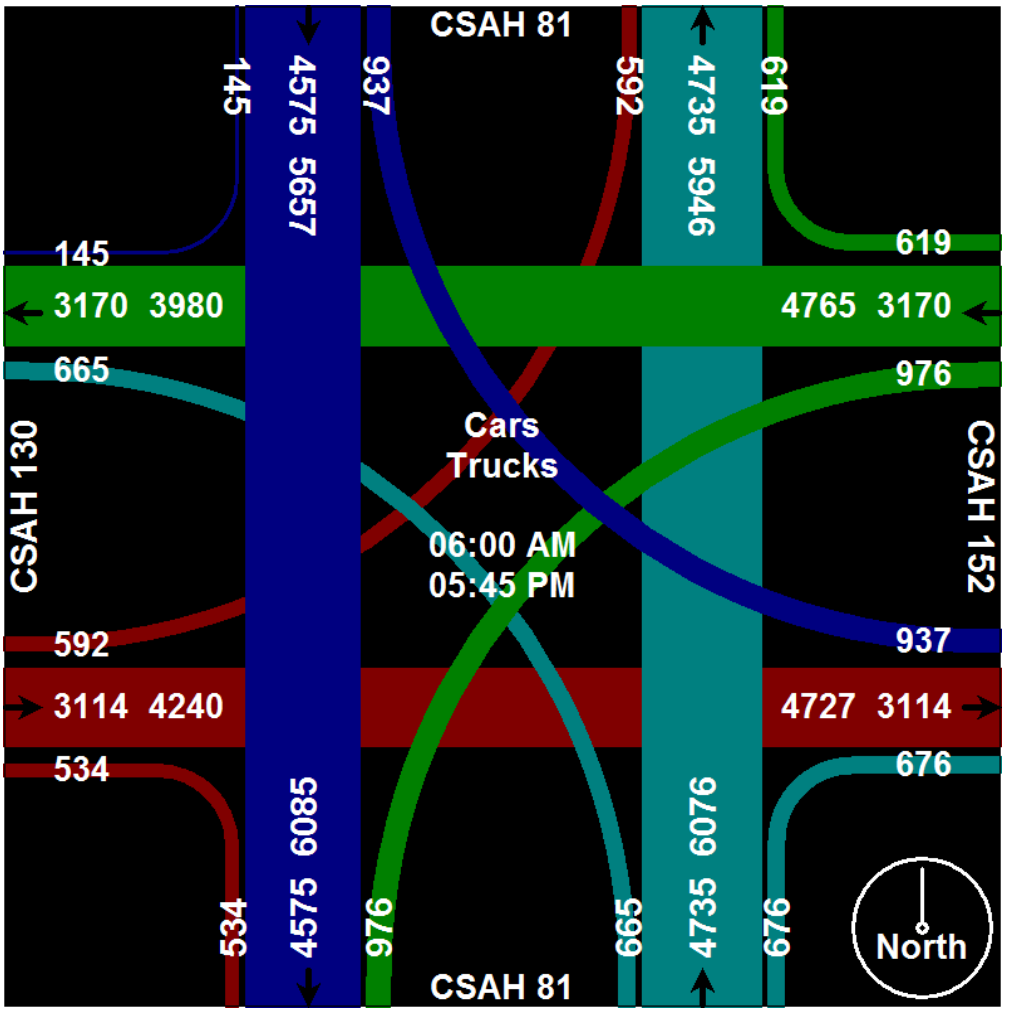
File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 2



Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 3

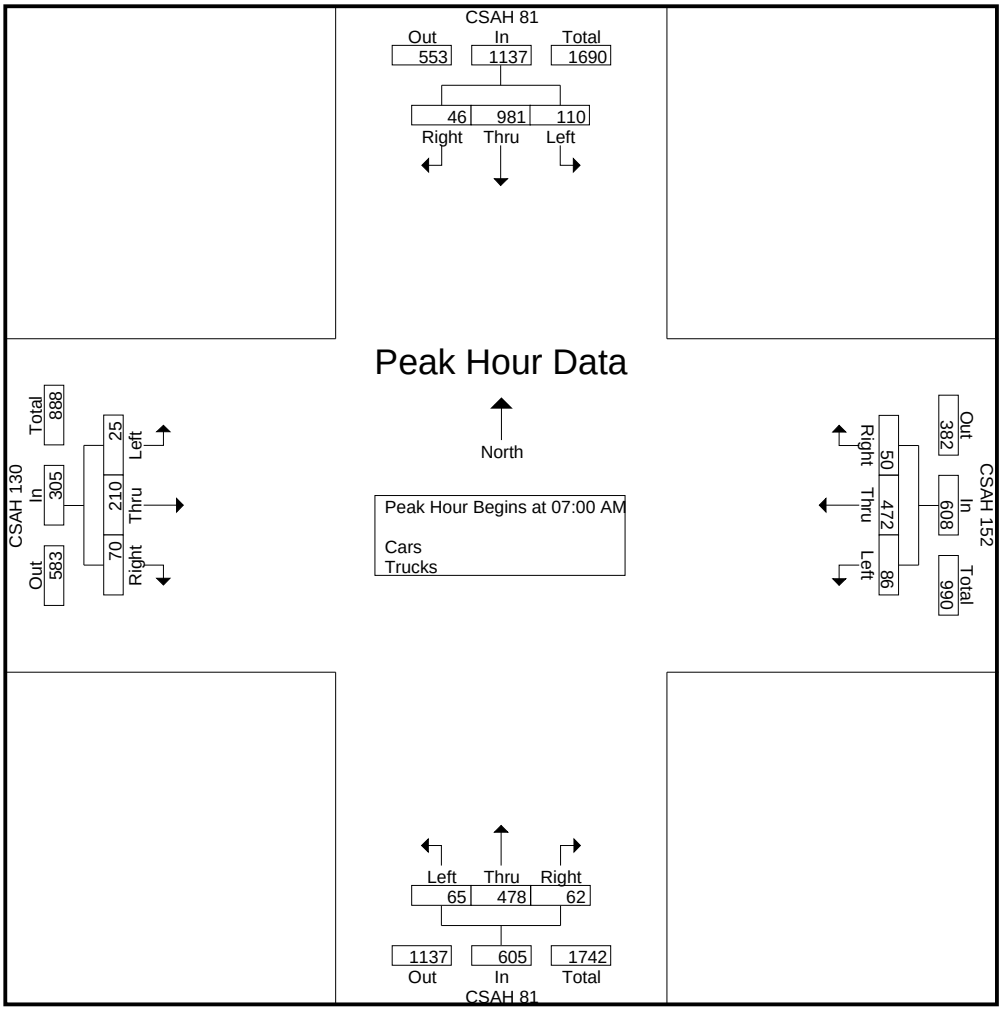


Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 4

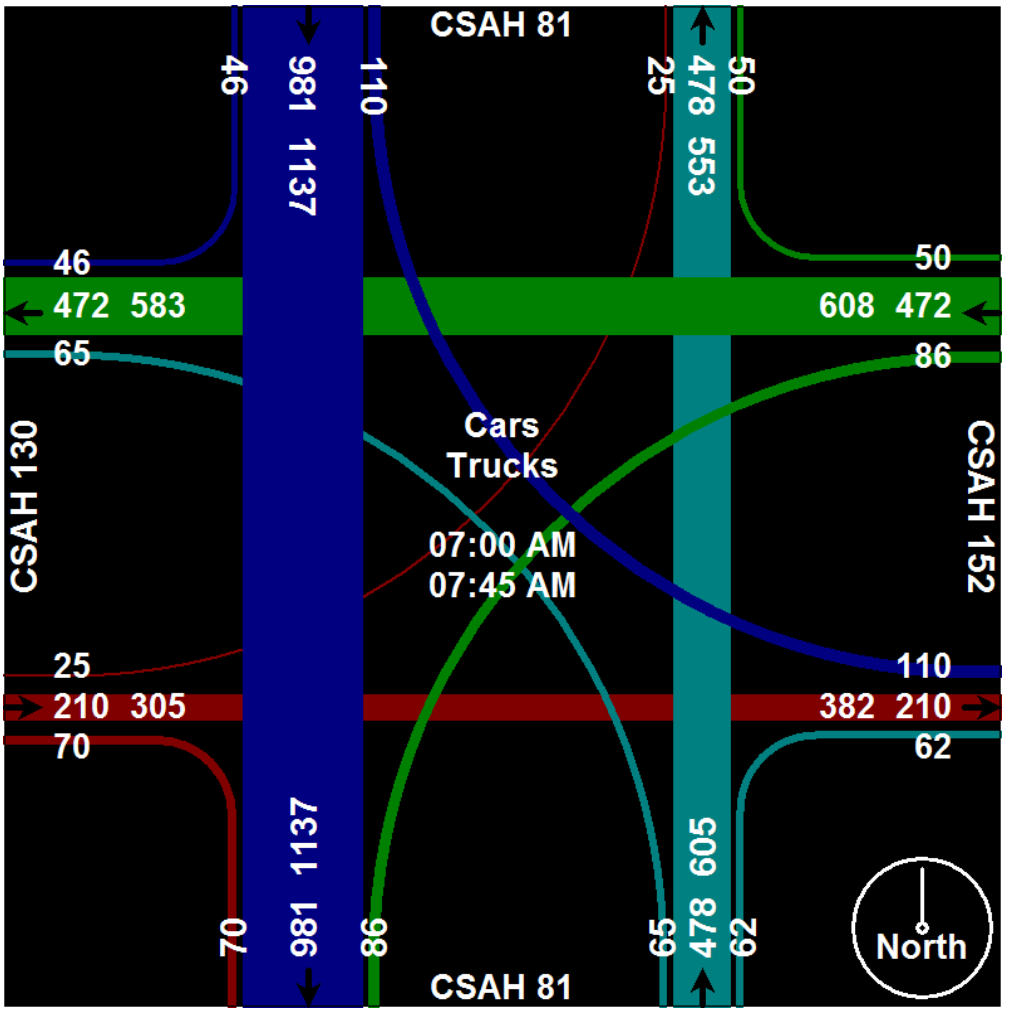
	CSAH 81 Southbound				CSAH 152 Westbound				CSAH 81 Northbound				CSAH 130 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	4	248	28	280	12	98	15	125	12	110	11	133	17	45	3	65	603
07:15 AM	13	237	26	276	**16**	110	19	145	15	**127**	13	155	12	37	**8**	57	633
07:30 AM	**18**	**275**	**31**	**324**	10	131	24	165	17	121	**24**	**162**	18	57	7	82	**733**
07:45 AM	11	221	25	257	12	**133**	**28**	**173**	**18**	120	17	155	**23**	**71**	7	**101**	686
Total Volume	46	981	110	1137	50	472	86	608	62	478	65	605	70	210	25	305	2655
% App. Total	4	86.3	9.7		8.2	77.6	14.1		10.2	79	10.7		23	68.9	8.2		
PHF	.639	.892	.887	.877	.781	.887	.768	.879	.861	.941	.677	.934	.761	.739	.781	.755	.906



Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 5

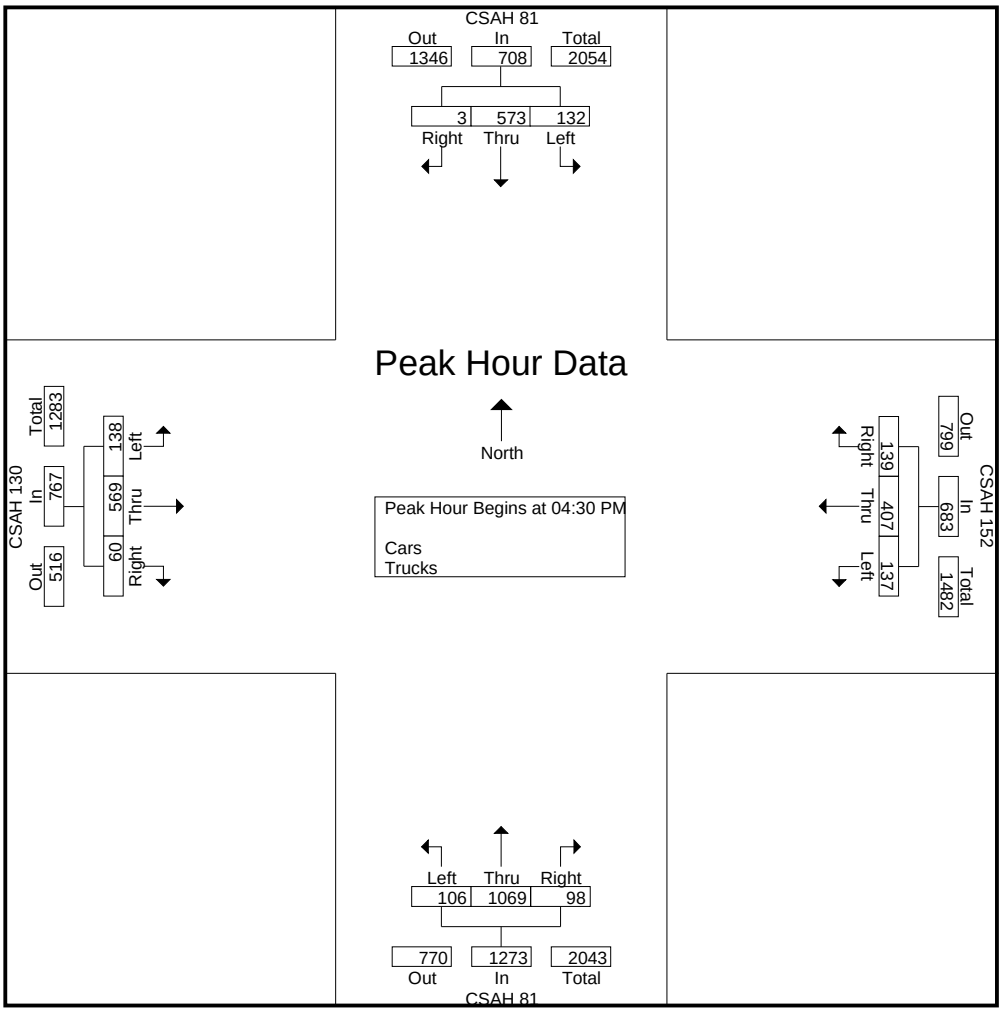


Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 6

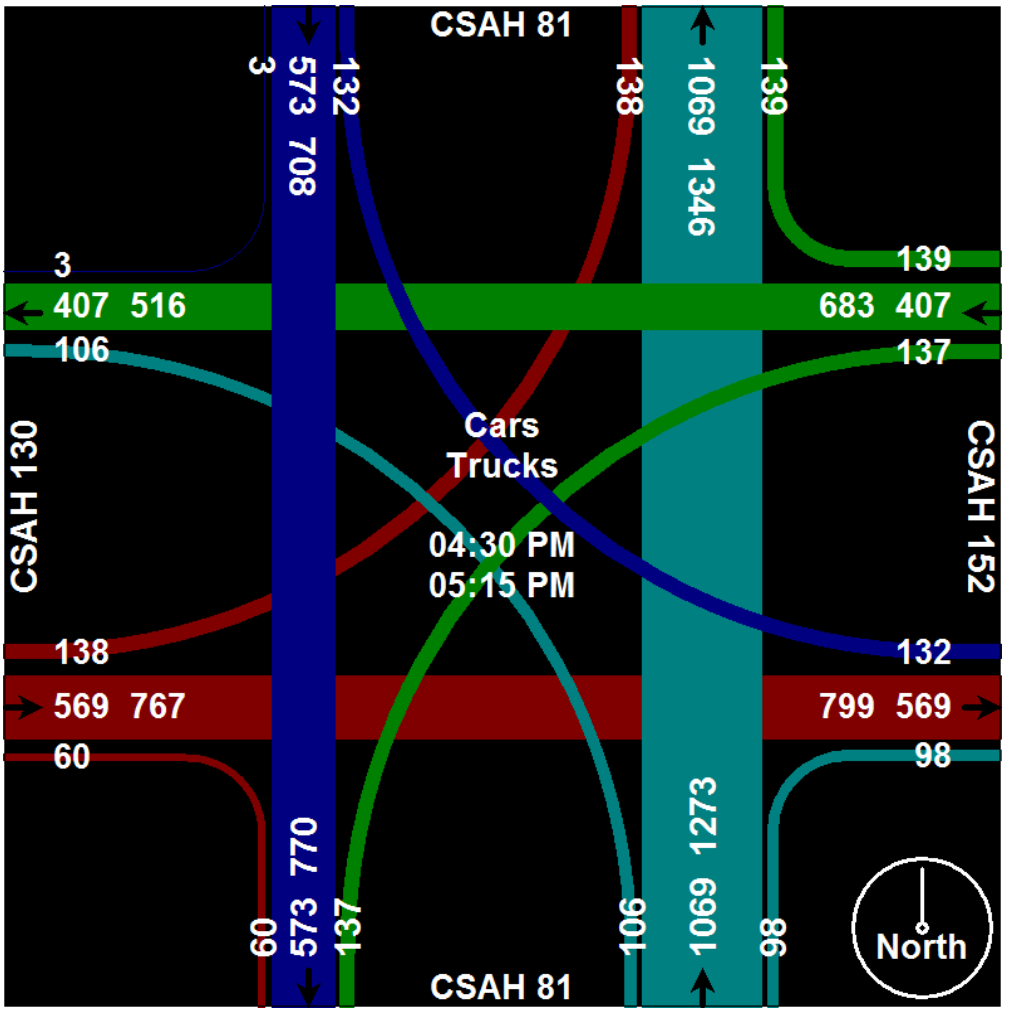
	CSAH 81 Southbound				CSAH 152 Westbound				CSAH 81 Northbound				CSAH 130 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	**161**	35	196	30	98	30	158	26	256	25	307	**27**	141	**40**	**208**	869
04:45 PM	0	122	30	152	34	107	41	**182**	19	252	29	300	9	**153**	28	190	824
05:00 PM	0	138	25	163	33	84	**47**	164	25	**303**	**30**	**358**	13	131	31	175	860
05:15 PM	**3**	152	**42**	**197**	**42**	**118**	19	179	**28**	258	22	308	11	144	39	194	**878**
Total Volume	3	573	132	708	139	407	137	683	98	1069	106	1273	60	569	138	767	3431
% App. Total	0.4	80.9	18.6		20.4	59.6	20.1		7.7	84	8.3		7.8	74.2	18		
PHF	.250	.890	.786	.898	.827	.862	.729	.938	.875	.882	.883	.889	.556	.930	.863	.922	.977



Hennepin County

Department of Public Works
Transportation Planning Division
Traffic Movement Study

File Name : 506
Site Code : 506
Start Date : 4/8/2014
Page No : 7



HENNEPIN COUNTY
TRANSPORTATION PLANNING DIVISION

CLASS COUNT DATA
CSAH 81 S. OF T.H. 169

Site: 03
Monday, 10/20/2014 10:00 AM -
Wednesday, 10/22/2014 10:00 AM

Classification Grand Totals

Hourly Averages

N.B.

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Tailgating
12:00 AM	72.0	4.0	45.5	8.5	3.5	6.0	1.5	0.0	1.5	1.0	0.5	0.0	0.0	0.0	0.0
1:00 AM	29.5	2.0	18.5	4.5	0.5	1.0	1.5	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0
2:00 AM	32.5	1.0	18.5	5.0	2.5	0.5	2.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0	0.0
3:00 AM	40.0	2.0	25.0	8.5	2.0	0.5	0.5	0.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0
4:00 AM	84.5	7.0	51.0	15.5	2.5	2.5	2.5	0.0	2.0	0.5	1.0	0.0	0.0	0.0	0.0
5:00 AM	223.0	9.0	147.0	33.5	14.0	9.5	6.0	0.0	2.5	1.5	0.0	0.0	0.0	0.0	0.0
6:00 AM	440.5	18.0	239.0	76.5	45.0	37.5	11.0	0.5	9.5	1.5	1.0	0.5	0.0	0.5	0.0
7:00 AM	550.0	25.0	301.5	99.0	44.0	42.0	15.5	0.0	14.0	4.5	1.0	3.0	0.0	0.5	0.0
8:00 AM	490.5	15.5	259.0	86.5	41.5	46.0	19.0	0.5	16.5	3.5	2.0	0.5	0.0	0.0	0.0
9:00 AM	573.5	20.0	285.5	106.5	55.5	71.5	18.0	0.0	12.5	2.5	1.5	0.0	0.0	0.0	0.0
10:00 AM	573.5	13.0	311.5	107.0	36.5	68.5	12.0	0.5	17.0	4.5	1.5	1.5	0.0	0.0	0.0
11:00 AM	659.5	19.0	365.5	135.5	27.0	81.5	10.0	0.0	14.0	5.0	0.5	1.5	0.0	0.0	0.0
12:00 PM	654.5	19.5	379.5	137.5	36.5	45.5	17.0	0.0	14.0	2.5	1.0	1.0	0.0	0.5	0.0
1:00 PM	759.5	13.5	411.5	174.5	74.0	56.0	7.5	0.0	15.0	2.5	2.0	3.0	0.0	0.0	0.0
2:00 PM	878.0	16.0	496.5	189.0	65.0	60.5	11.0	0.5	29.5	3.0	1.5	4.5	0.0	1.0	0.0
3:00 PM	1036.0	22.5	626.0	211.0	72.5	57.0	12.5	0.0	24.5	4.0	1.0	4.5	0.0	0.5	0.0
4:00 PM	1249.0	27.0	714.5	259.5	117.0	53.0	19.5	0.0	38.5	6.0	2.0	8.5	0.0	3.0	0.5
5:00 PM	1266.5	33.0	747.0	198.5	142.5	68.0	18.5	1.5	40.0	3.5	0.5	11.0	0.0	2.5	0.0
6:00 PM	802.5	35.5	483.5	120.5	68.0	56.5	15.5	1.0	13.0	3.5	0.5	4.0	0.0	1.0	0.0
7:00 PM	502.5	18.0	346.0	66.0	17.0	31.5	14.0	0.0	4.5	3.5	1.5	0.5	0.0	0.0	0.0
8:00 PM	398.0	18.5	269.0	55.5	17.5	25.0	6.0	0.0	5.0	0.0	0.5	1.0	0.0	0.0	0.0
9:00 PM	315.0	16.5	206.0	44.0	11.5	25.0	7.0	0.0	3.5	1.0	0.0	0.5	0.0	0.0	0.0
10:00 PM	198.0	13.5	136.5	22.0	5.0	8.5	6.5	0.0	1.5	2.5	1.5	0.0	0.5	0.0	0.0
11:00 PM	115.5	7.0	88.0	8.0	2.5	4.5	4.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Daily Average	11944.0	376.0	6971.5	2172.5	903.5	858.0	238.5	5.0	282.5	58.5	22.0	45.5	0.5	9.5	0.5

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Tailgating
N.B.	23888	752	13943	4345	1807	1716	477	10	565	117	44	91	1	19	1
		3.1 %	58.4 %	18.2 %	7.6 %	7.2 %	2.0 %	0.0 %	2.4 %	0.5 %	0.2 %	0.4 %	0.0 %	0.1 %	0.0 %

NORTHBOUND ONLY - SUM OF THE DAILY AVERAGE OF CLASSES 4 THROUGH 13 = 2,427

SOUTHBOUND ONLY - SUM OF THE DAILY AVERAGE OF CLASSES 4 THROUGH 13 = 1,563

DAILY TOTAL OF HEAVY COMMERCIAL VEHICLES = *3,990*

HENNEPIN COUNTY
TRANSPORTATION PLANNING DIVISION

VEHICLE CLASS COUNT DATA
CSAH 81 S. OF T.H. 169

Site: 03
Monday, 10/20/2014 10:00 AM -
Wednesday, 10/22/2014 10:00 AM

Classification Grand Totals

Hourly Averages

S.B.

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Tailgating
12:00 AM	47.0	0.0	36.5	6.5	0.5	1.0	0.5	0.0	1.0	0.5	0.0	0.5	0.0	0.0	0.0
1:00 AM	47.0	0.0	39.5	5.5	0.0	0.5	0.0	0.0	0.5	1.0	0.0	0.0	0.0	0.0	0.0
2:00 AM	49.0	0.0	37.5	8.5	0.0	2.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0
3:00 AM	58.5	0.0	40.0	12.5	0.5	1.5	0.5	0.0	1.5	2.0	0.0	0.0	0.0	0.0	0.0
4:00 AM	90.5	0.0	50.5	25.5	3.0	9.0	0.0	0.0	2.0	0.5	0.0	0.0	0.0	0.0	0.0
5:00 AM	257.0	3.0	164.0	57.0	7.0	18.5	0.5	0.0	3.5	3.5	0.0	0.0	0.0	0.0	0.0
6:00 AM	842.0	1.5	525.5	193.5	40.5	50.5	2.5	0.0	17.0	3.5	0.0	6.5	0.5	0.5	0.0
7:00 AM	1487.5	7.5	945.5	293.5	81.0	83.5	3.5	1.0	50.5	6.0	0.5	9.0	1.0	5.0	0.0
8:00 AM	1069.0	3.0	625.0	244.0	55.5	96.0	3.0	0.5	28.0	6.0	0.0	6.5	0.5	1.0	0.0
9:00 AM	642.5	3.0	330.0	162.5	28.0	89.0	3.5	0.0	17.0	4.5	0.0	5.0	0.0	0.0	0.0
10:00 AM	544.0	0.5	323.0	132.0	17.5	40.0	3.0	0.5	18.5	6.5	0.0	2.0	0.0	0.5	0.0
11:00 AM	574.0	1.5	337.5	160.5	14.0	39.5	3.5	1.0	11.0	4.5	0.0	1.0	0.0	0.0	0.0
12:00 PM	618.5	0.5	360.5	161.0	22.0	53.0	2.0	0.5	12.0	6.0	0.5	0.5	0.0	0.0	0.0
1:00 PM	637.5	0.5	388.0	163.5	22.0	43.0	0.5	0.5	14.0	4.0	0.5	1.0	0.0	0.0	0.0
2:00 PM	670.0	4.0	400.5	168.5	26.5	42.0	1.5	0.5	19.0	4.5	0.5	2.5	0.0	0.0	0.0
3:00 PM	703.5	0.5	427.0	195.5	19.5	37.5	1.5	1.5	14.0	3.0	0.0	3.5	0.0	0.0	0.0
4:00 PM	688.5	2.5	427.5	160.0	22.5	52.5	1.5	0.5	13.0	5.0	0.0	3.5	0.0	0.0	0.0
5:00 PM	686.0	2.5	466.5	147.0	17.0	31.0	1.5	0.0	16.5	1.5	0.0	2.0	0.0	0.0	0.5
6:00 PM	526.0	0.5	362.0	125.5	9.0	18.5	0.0	0.0	7.5	0.0	0.0	2.5	0.0	0.0	0.5
7:00 PM	387.5	1.5	263.5	96.5	2.0	16.5	1.0	0.0	5.0	1.0	0.0	0.5	0.0	0.0	0.0
8:00 PM	270.0	0.0	196.5	57.5	0.0	11.0	0.5	0.0	4.0	0.5	0.0	0.0	0.0	0.0	0.0
9:00 PM	206.5	1.0	161.5	37.0	1.0	4.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
10:00 PM	158.0	1.0	117.5	29.0	1.5	5.5	1.0	0.0	1.5	0.5	0.0	0.5	0.0	0.0	0.0
11:00 PM	99.0	0.0	78.0	16.0	0.0	4.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Daily Average	11359.0	34.5	7103.5	2658.5	390.5	750.5	32.0	6.5	259.0	65.0	2.0	47.0	2.0	7.0	1.0

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Tailgating
S.B.	22718	69	14207	5317	781	1501	64	13	518	130	4	94	4	14	2
		0.3 %	62.5 %	23.4 %	3.4 %	6.6 %	0.3 %	0.1 %	2.3 %	0.6 %	0.0 %	0.4 %	0.0 %	0.1 %	0.0 %

CSAH 81 (Bottineau Blvd) from 600' north of CSAH 8 to 200' south of 83rd Avenue 2011 -2013 - created on 11-04-2014 by rile1che

Crash data is managed by the Mn/DOT Office of Traffic, Safety, and Operations.

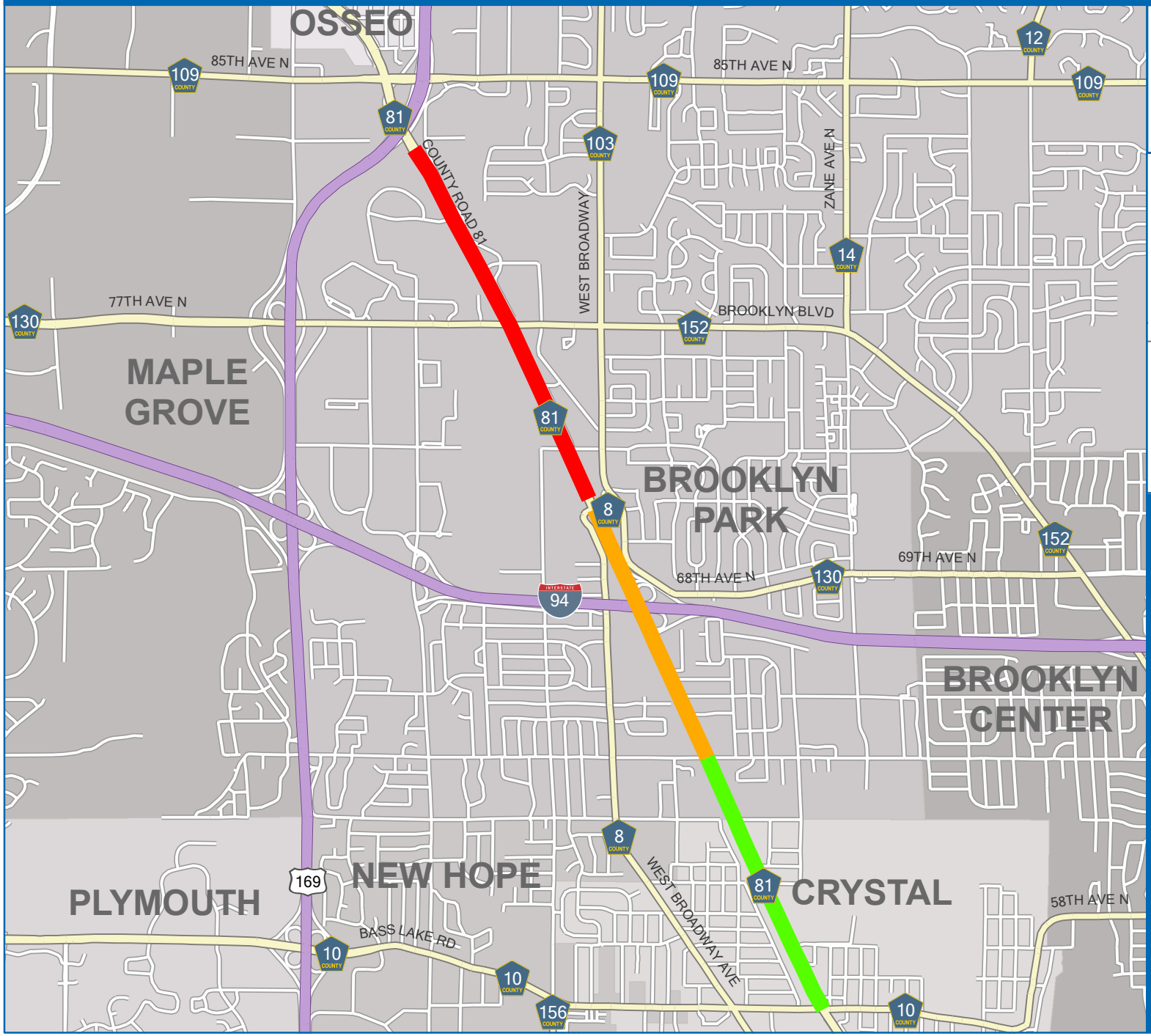
																							PERSON1								PERSON2							
Rd Num	Mile Pt	CO	CITY	DOW	MONTH	DAY	YEAR	TIME	SEV	NUM_KILLED	NUM_VEH	JUNC	SL	TYPE	DIAG	LOC1	TCD	LIT	WTHR1	WTHR2	SURF	CHAR	DESGN	ACC_NUM	VTYPE	DIR	ACT	FAC1	FAC2	PHYS	AGE	SEX	VTYPE	DIR	ACT	FAC1	FAC2	PHYS	AGE	SEX
Segment - North of CSAH 8 to South of 73rd Avenue North																																							
81		27	0465	6-Fri	12	6	2013	1115	N	0	2	1	55	1	1	1	98	1	1	0	5	1	3	133400264	1	5	10	61	0	1	56	M	3	5	1	46	61	1	74	F
Intersections at 73rd Avenue North																																							
81		27	0465	7-Sat	11	19	2011	2215	N	0	2	1	55	2	7	4	98	6	4	0	3	1	3	113260019	1	5	1	61	46	99	23	F	2	5	1	61	18	2	29	M
81		27	0465	6-Fri	3	2	2012	0931	N	0	2	2	55	1	1	1	1	1	1	0	5	1	3	120620129	1	1	1	4	0	1	20	F	1	1	1	1	0	1	30	F
81		27	0465	5-Thu	6	2	2011	1936	N	0	2	7	55	1	3	1	1	3	2	0	1	1	3	111530207	2	1	38	5	15	1	22	M	2	3	6	1	0	1	58	M
81		27	0465	7-Sat	6	18	2011	1620	C	0	2	4	40	1	2	1	1	1	3	0	2	1	7	111700057	3	7	1	1	0	1	63	M	3	1	1	5	2	1	51	F
81		27	0465	6-Fri	12	2	2011	1602	N	0	2	4	30	1	1	1	90	1	1	1	1	1	5	113370015	2	5	5	15	0	1	35	M	7	7	10	1	0	1	67	M
81		27	0465	4-Wed	1	25	2012	1809	A	0	1	4	45	22	90	4	1	4	1	1	1	1	5	120250308	1	1	1	18	0	5	62	F								
81		27	0465	2-Mon	1	23	2012	1424	N	0	2	4	55	1	5	1	1	1	1	0	1	1	3	120310122	1	7	1	1	0	1	34	M	3	1	1	2	5	1	30	M
81		27	0465	3-Tue	6	26	2012	1500	N	0	2	4	55	1	6	1	1	1	1	1	1	1	6	121790026	2	7	5	1	1	1	62	M	2	7	11	8	8	99	900	Z
81		27	0465	2-Mon	7	16	2012	1014	C	0	2	4	55	1	5	1	1	1	1	0	1	1	3	121980050	1	1	1	2	0	1	65	F	1	7	1	1	0	1	20	F
81		27	0465	2-Mon	12	10	2012	1606	N	0	2	4	50	1	1	1	1	1	1	0	5	1	3	130130153	1	8	11	1	0	1	46	M	3	7	1	4	15	1	37	M
81		27	0465	3-Tue	2	12	2013	1211	C	0	2	4	55	1	5	1	1	1	1	0	1	1	3	130430170	31	5	4	2	0	1	55	M	1	1	1	1	0	1	21	M
81		27	0465	5-Thu	2	14	2013	0014	N	0	1	4	55	22	7	4	1	7	4	0	3	1	3	130450028	1	1	1	61	0	1	32	M								
81		27	0465	3-Tue	2	26	2013	1052	C	0	1	1	30	5	5	1	11	1	2	0	1	1	8	130580016	35	3	1	5	0	1	39	M								
81		27	0465	5-Thu	3	28	2013	0955	N	0	2	4	55	1	1	1	1	1	1	1	1	1	3	130870099	1	1	10	4	15	1	30	F	1	1	11	1	1	1	16	F
81		27	0465	2-Mon	4	15	2013	2138	C	0	2	4	55	2	1	1	1	4	1	0	1	1	5	131060011	1	5	1	15	0	1	24	M								
81		27	0465	1-Sun	6	30	2013	1018	N	0	2	4	55	1	5	1	1	1	1	1	1	1	3	131810067	1	7	6	1	1	1	79	M	1	1	1	5	2	1	91	F
81		27	0465	1-Sun	7	14	2013	1400	C	0	3	99	55	1	1	1	1	1	1	0	1	1	3	131950077	4	5	1	1	1	1	16	M	3	5	1	4	0	1	19	M
Segment - North of 73rd Avenue North to South of CSAH 130/152																																							
81		27	0465	7-Sat	3	31	2012	0600	N	0	2	1	55	1	2	1	98	4	2	2	1	1	3	120920023	3	1	1	1	1	1	29	F	4	1	1	7	8	0	900	Z
81		27	0465	5-Thu	3	21	2013	1459	N	0	3	4	55	1	1	1	1	1	1	0	1	1	3	130800161	1	7	1	1	0	1	901	M	1	4	1	1	0	1	68	M
81		27	0465	6-Fri	8	26	2011	1315	N	0	2	1	55	1	2	1	98	1	1	0	1	1	3	112380188	90	1	99	99	0	1	44	M	1	1	99	99	0	1	38	M
81		27	0465	3-Tue	12	6	2011	1214	N	0	2	8	40	1	1	1	90	1	1	0	1	1	5	113400102	1	5	14	15	0	1	18	F	1	5	5	14	0	1	51	F
Intersections at CSAH 130/152																																							
81		27	0465	3-Tue	2	12	2013	0925	N	0	2	7	55	1	1	1	1	1	1	0	1	1	3	130430119	1	8	11	1	0	1	23	F	1	8	0	3	15	99	901	Z
81		27	0465	5-Thu	12	12	2013	0755	N	0	2	4	55	1	1	1	1	1	2	0	5	5	3	133470061	1	1	1	1	0	1	27	F	2	1	0	4	0	1	57	M
81		27	0465	4-Wed	6	29	2011	1340	N	0	2	4	45	1	2	1	1	1	1	0	1	1	5	111800165	1	7	1	1	0	1	75	M	1	7	5	10	0	1	74	M
81		27	0465	6-Fri	12	23	2011	1037	C	0	2	4	50	1	1	1	1	1	2	4	3	1	3	113570143	1	1	1	1	1	1	71	M	3	1	1	4	99	1	52	M
81		27	0465	5-Thu	2	3	2011	1906	C	0	2	7	40	1	3	1	98	4	1	1	1	1	5	110350122	1	1	6	2	8	1	44	M	1	5	1	1	1	1	26	F
81		27	0465	2-Mon	4	18	2011	1439	B	0	2	2	45	1	1	1	98	1	1	1	1	1	8	111100064	1	1	1	1	1	1	24	F	4	4	6	2	2	1	52	M
81		27	0465	4-Wed	11	9	2011	1155	N	0	2	4	40	1	1	1	1	1	1	1	1	1	3	113130101	1	5	57	90	1	1	22	F	2	5	57	4	4	1	46	M
81		27	0465	2-Mon	12	19	2011	1705	N	0	2	4	55	1	1	1	1	4	1	0	1	1	5	113590048	1	1	1	0	0	1	20	F	1	1	1	1	0	1	78	F
81		27	0465	7-Sat	1	14	2012	1844	N	0	2	3	30	1	2	1	1	4	1	0	3	1	5	120150029	1	5	1	1	0	1	26	F	4	3	5	1	0	1	64	M
81		27	0465	3-Tue	1	17	2012	0655	N	0	2	4	40	1	1	1	1	2	4	2	3	1	7	120170117	3	5	1	4	16	1	20	F	2	5	1	1	1	1	59	M
81		27	0465	4-Wed	3	14	2012	1442	C	0	2	4	45	1	5	1	1	1	1	0	1	1	5	120760039	4	7	1	1	0	1	45	F	4	1	1	1	0	1	34	F
81		27	0465	7-Sat	4	14	2012	1357	N	0	2	4	55	1	1	1	1	1	1	0	1	1	5	121050111	1	1	1	15	0	1	61	M	3	1	1	1	0	1	38	F
81		27	0465	2-Mon	4	23	2012	1234	N	0	2	5	50	1	1	1	1	1	1	1	1	1	5	121140114	1	1	1	1	1	1	50	F	1	1	1	4	1	1	55	F
81		27	0465	4-Wed	8	1	2012	1558	C	0	3	4	55	1	1	1	1	1	1	0	1	1	3	122160072	1	5	1	1	0	1	50	M	1	5	1	1	1	1	29	M
81		27	0465	7-Sat	8	4	2012	0857	N	0	2	4	55	1	1	1	1	1	2	0	1	1	3	122170065	3	8	11	1	0	1	35	M	1	8	0	4	0	1	40	M
81		27	0465	2-Mon	10	15	2012	0642	N	0	2	4	30	1	1	1	1	1	1	1	1	1	5	122950063	1	7	1	1	0	1	27	F	3	7	0	0	0	0	900	Z
81		27	0465	6-Fri	12	28	2012	0623	N	0	2	4	45	1	98	1	1	4	4	0	3	1	3	123630043	3	5	14	1	0	1	59	F	1	5	6	8	61	1	44	F
81		27	0465	6-Fri	4	19	2013	1012	C	0	2	4	55	1	5	1	1	1	2	4	4	1	3	131090140	1	7	1	1	1	1	20	M	1	5	1	5	15	1	41	M
81		27	0465	4-Wed	6	5	2013	1600	N	0	2	1	55	1	1	1	98	1	1	1	1	1	5	131570113	1	1	1	1	1	1	23	M	1	1	1	4	15	1	52	M
81		27	0465	6-Fri	7	19	2013	1615	N	0	2	4	55	1	1	1	1	1	1	0	1	5	3	132020087	1	1	5	1	0	1	37	F	7	1	5	4	0	1	36	M
81		27	0465	4-Wed	8	28	2013	2131	C	0	2	4	50	1	1	1	1	4	1	1	1	1	3	132410017	3	5	1	1	1	1	19	F	1	5	1	1	1	1	38	F
81		27	0465	4-Wed	11	27	2013	1325	B	0	4	4	55	1	1	1	1	1	1	0	1	1	3	133310143	4	5	1	1	0	1	52	F	2	5	1	1	0	1	64	M
81		27	0465	7-Sat	11	23	2013	2344	N	0	2	4	50	1	98	1	1	4	1	0	1	1	5	133360015	1	7	1	2	0	1	26	M	2	1	1	1	0	1	61	M
81		27	0465	2-Mon	12	9	2013	1415	N	0	2	4	55	10	1	1	1	1	1	0	5	1	3	133450127	1	5	1	9	46	1	39	F	8	5	11	1	0	1	32	M
81		27	0465	4-Wed	12	11	2013	0827	N	0	2	4	45	1	1	1	1	2	4	4	5	1	3	133460048	1	7	1	4	61	99	34	F	1	7	1	1	1	99	902	Z
81		27	0465	2-Mon	2	13	2012	1325	C	0	2	4	35	1	1	1	5	1	1	2	1	1	3	120440057	1	1	1	15	4	1	46	F	4	1	1	1	1	1	34	M
81		27	0465	7-Sat	3	16	2013	0833	N	0	2	4	45	1	1	1	1	1	2	0	5	1	3	130750244	3	7	11	1	0	1	30	F	1	7	1	46	0	1	27	M
81		27	0465	2-Mon	6	4	2012	1522	C	0	3	1	55	1	1	1	1	1	1	0	1	1	3	121570101	4	5	1	5	15	1	47	F	1	5	1	99	0	1	24	M
Segment - North of CSAH 130 to South of 79th Avenue North																																							
81		27	0465	6-Fri	10	12	2012	0612	N	0	2	1	45	1	1	1	98	4	1	0	1	1	5	122860016	2	5	1	4	0	1	28	M	1	5	1	1	0	1	67	M
81		27	0465	3-Tue	3	20	2012	1436	C	0	1	1	50	26	7	2	98	1	2	0	1	1	3	120800102	1	5	1	90	0	7	68	M								
81		27	0465	3-Tue	10	11	2011	1553	N	0	2	4	45	1	5	1	1	1	1	0	1	1	5	112840186	1	5	38	5	2	1	20	F	1	3	1	1	0	1	52	M
Intersections at 79th Avenue Norht - Right																																							
81		27	0465	6-Fri	5	3	2013	1230	C	0	2	1	55	1	1	1	98	1	5	0	2	1	3	131230108	31	1	11	1	0	1	48	M	1	1	1	15	0	1	59	F
81		27	0465	3-Tue	8	27	2013	0912	B	0	2	1	55	1	1	1	1	1	1	99	1	1	3	132390132	11	1	10	1	1	1	58	M	1	1	1	4	15	1	33	M
81		27	0465	5-Thu	8	25	2011	1228	N	0	1	1	50	34	90	1	98	1	1	1	1	1	3	112380071	2	5	1	99	99	1	62	M								
81		27	0465	3-Tue	2	28	2012	1731	N	0	2	2	55	1	1	1	1	4	3	5	2	1	3	120590192	1	1	1	15	0	1	26	F	3	1	10	1	0	1	46	M
81		27	0465	2-Mon	4	23	2012	1617	C	0	3	1	55	1	1	1	1	1	1	0	1	1	3	121150205	4	1	11	1	0	1	38	M	3	1	1	15	3	5	54	M
81		27	0465	2-Mon	1	21	2013	1142	A	0	2	7	55	1	5	1	1	1	1	0	1	1	5	130210085	3	3	6	1	0	99	57	F	2	1	1	5	15	1	41	M
81		27	0465	4-Wed	10	30	2013	1344	N	0	2	4	55	1	3	1	1	1	2	2	2	1	5	133030158	1	3	6	1	1	1	22	M	2	1	1	2	2	1	52	M
Segment - North of 79th Avenue to South of Greenhaven Drive																																							
81		27	0465	2-Mon	12	17	2012	0839	N	0	2	4	55	1	1	1	1	1	2	0	5	1	3	123520060	1	1	1	1	0	1	33	F	2	1	1	4	61	1	44	M
Intersections at Greenhaven Drive																																							
81		27	0465	5-Thu	3	21	2013	0641	N	0	2	4	45	1	1	1	1	2	1	0	1	1	3	130810029	1	5	1	15	4	1	22	F	3	5	11	1	0	1	59	M
81		27	0465	3-Tue	7	23	2013	0817	N	0	2	4	55	1	2	1	1	1	1	0	1	1	3	132040044	1	5	6	2	0	1	20	M	3	5	1	1	0	1	54	M
81		27	0465	5-Thu	8	1	2013	0912	C	0	2	4	50	1	98	1	1	1	1	0	1	1	90	132140062	2	1	1	5	0	1	19	M	1	5	6	1	0	1	44	M
81		27	0465	5-Thu	11	14	2013	0654	N	0	2	4	55	1	1	1	1	4	1	0	1	1	3	133180021	1	1	1	5	0	1	46	F	2	1	1	1	0	1	62	M
81																								65																

Project Location Map - CSAH 81 Expansion

From 200' North of County Rd 8 (71st Ave N) to 200' South of 83rd Ave N

▶ Transportation

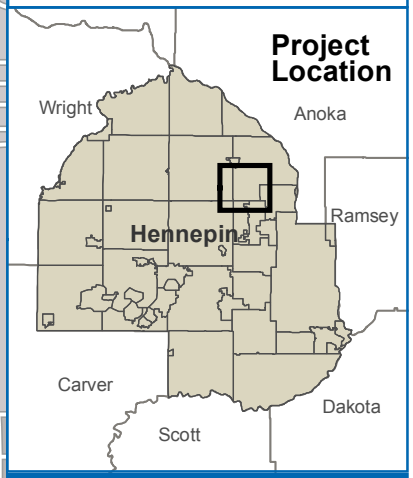
Hennepin County Public Works



Future CSAH 81 Expansion

Completed CSAH 81 Expansion

Current CSAH 81 Expansion



Produced by Hennepin County Public Works Transportation Department.

This map has been created for informational purposes only and is not considered a legally recorded map or document. Hennepin County makes no warranty, representation, or guarantee as to the content, accuracy, timeliness, or completeness of any of the information provided herein.

Published: 11/20/2014

Hennepin County Public Works

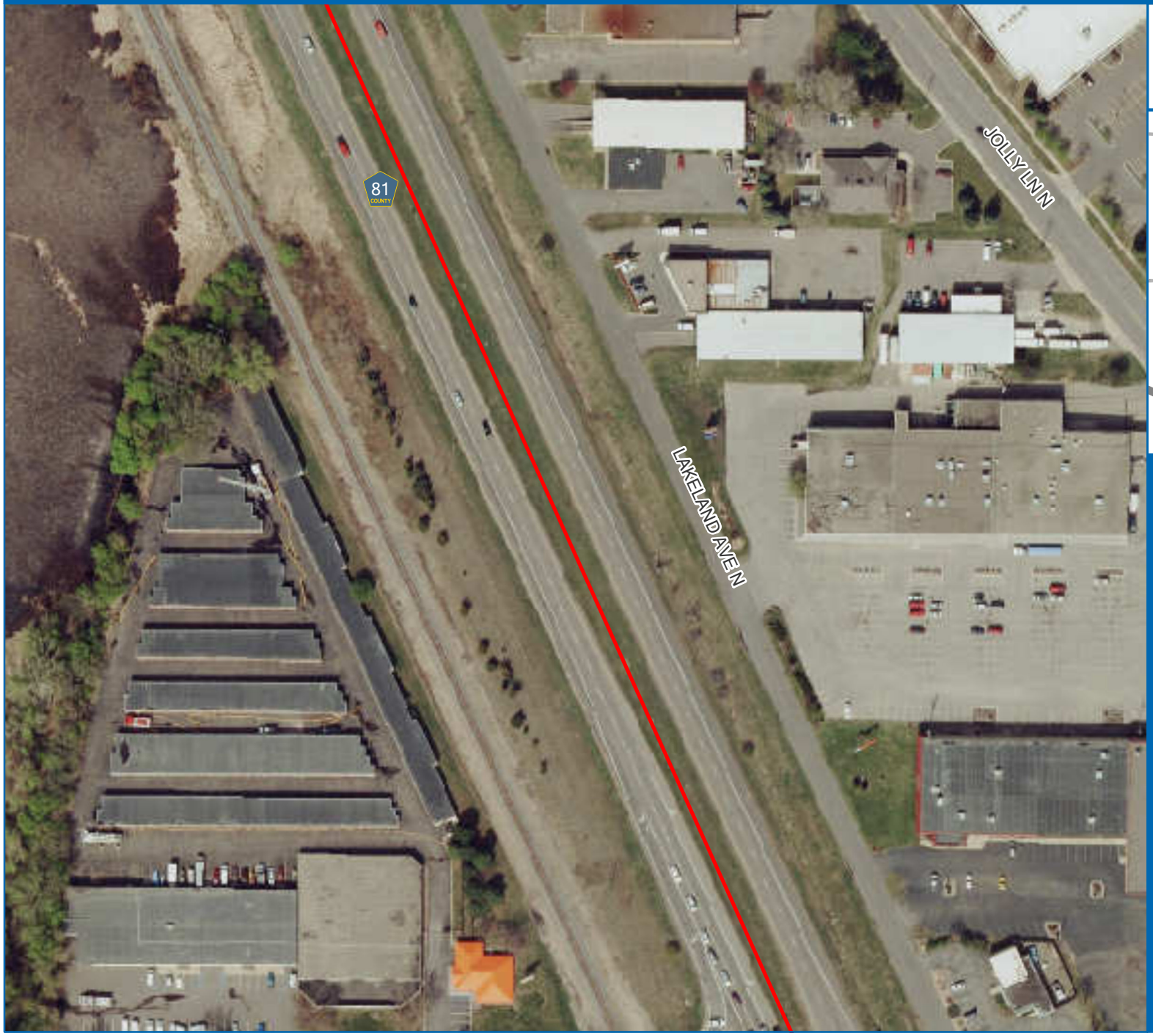
0 2,000 4,000 Feet

Aerial Maps - CSAH 81 Expansion

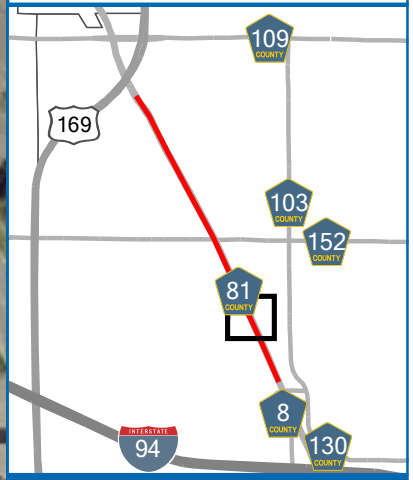
From 200' North of County Rd 8 (71st Ave N) to 200' South of 83rd Ave S

▶ Transportation

Hennepin County Public Works



Project Location



Produced by Hennepin County Public Works Transportation Department.

This map has been created for informational purposes only and is not considered a legally recorded map or document. Hennepin County makes no warranty, representation, or guarantee as to the content, accuracy, timeliness, or completeness of any of the information provided herein.

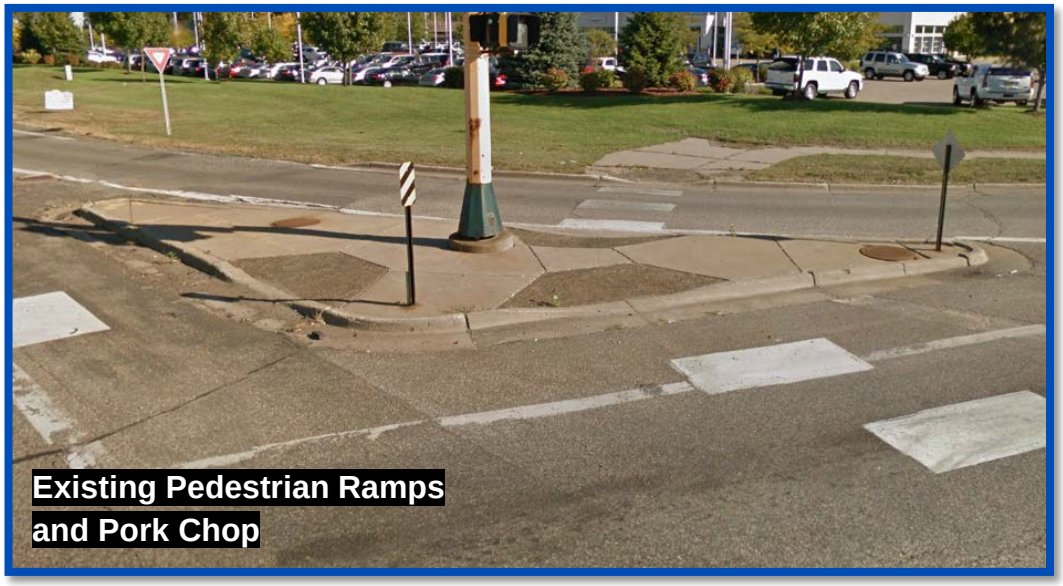
Published: 11/25/2014

Hennepin

Hennepin County
Public Works

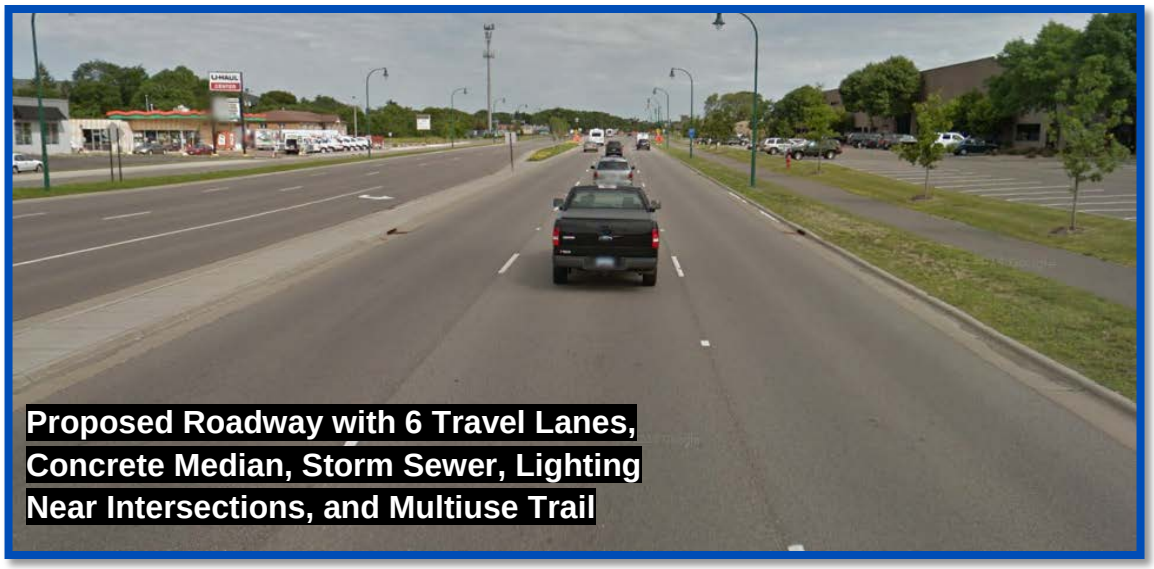
0 75 150
Feet

Existing Traffic Signal Mast Arm



Existing Pedestrian Ramps and Pork Chop

Existing Median and Traffic Signal Pole



Proposed Roadway with 6 Travel Lanes, Concrete Median, Storm Sewer, Lighting Near Intersections, and Multiuse Trail

Proposed Pedestrian Accessibility Improvements at Intersections

Proposed Traffic Signal Mast Arm, Pedestrian Ramps, and Pork Chop

Level 1 LAYOUT APPROVAL

Programmed Letting Date ____________

Prepared By SRF CONSULTING GROUP, Inc. ____________ 20

Reviewed By Hennepin County Engineer ____________ 20

Recommended for Approval Hennepin County Transportation Design Engineer ____________ 20

Approved By Brooklyn Park City Engineer ____________ 20

PRELIMINARY LAYOUT

LAYOUT NO. 1 SECTION NO. ____ COPY NO. ____

CSAH 81 VICINITY OF ____ HENNEPIN COUNTY

FROM 66TH AVE. N.

TO TH 169

PROJECT LENGTH 2.4 MILES

SECTION 1 SCALE HORIZ. 1"= 100 FEET

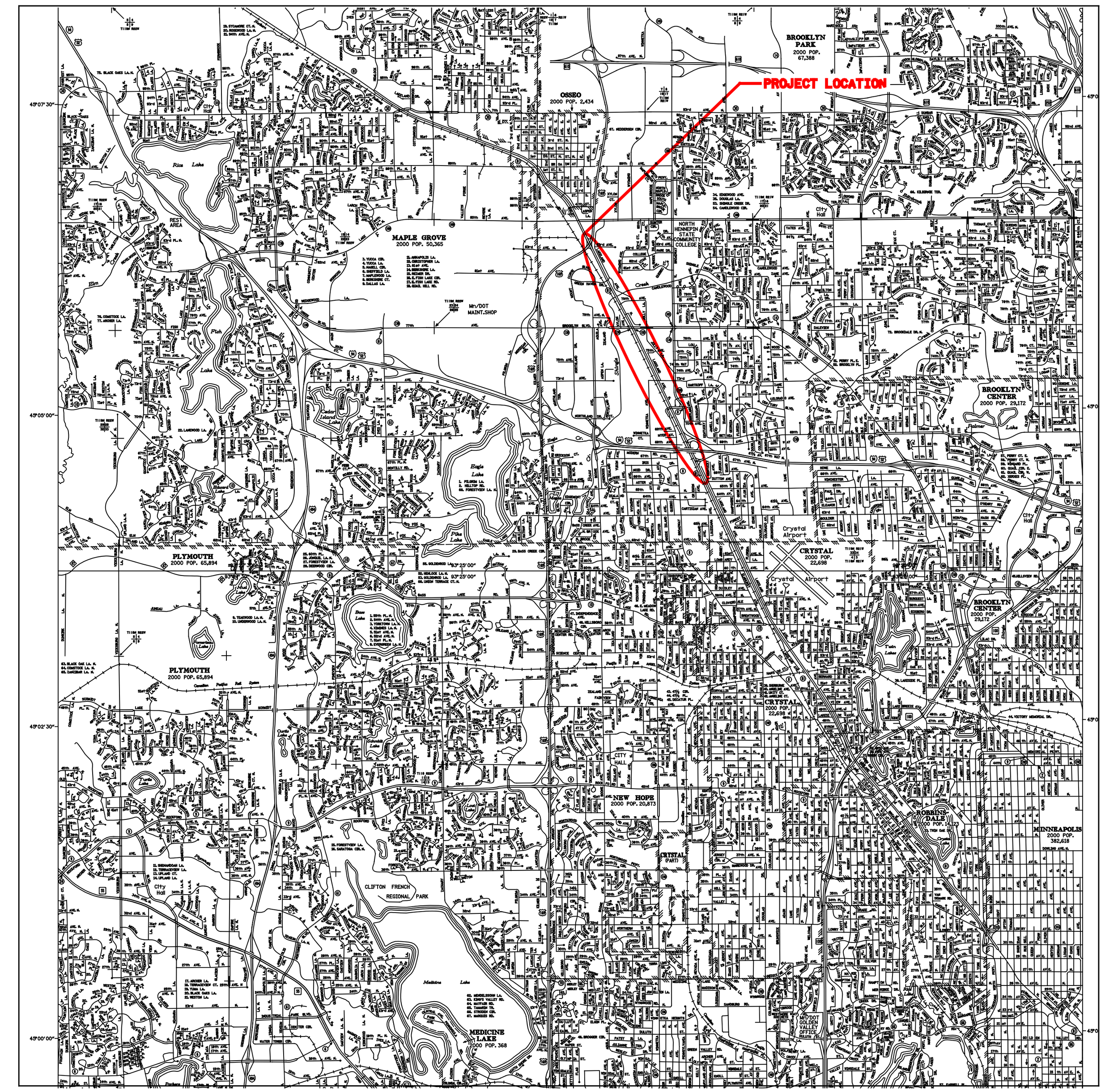
PREPARED: March 2006 DESIGN SPEED: 45 MPH

THE ALIGNMENT AND GRADES SHOWN ON THIS MAP ARE TENTATIVE AND SUBJECT TO CHANGE WITHOUT NOTICE.

STAFF APPROVAL DATE ____

THE TRAFFIC VOLUMES SHOWN ARE ESTIMATED 2025 A.D.T.

DRAWING FILE: H:\Civil\008\4416\6 Lane V8\LAYOUT\4416V8-0203.lyt DATE PLOTTED: 8/14/2007



LAYOUT HISTORY

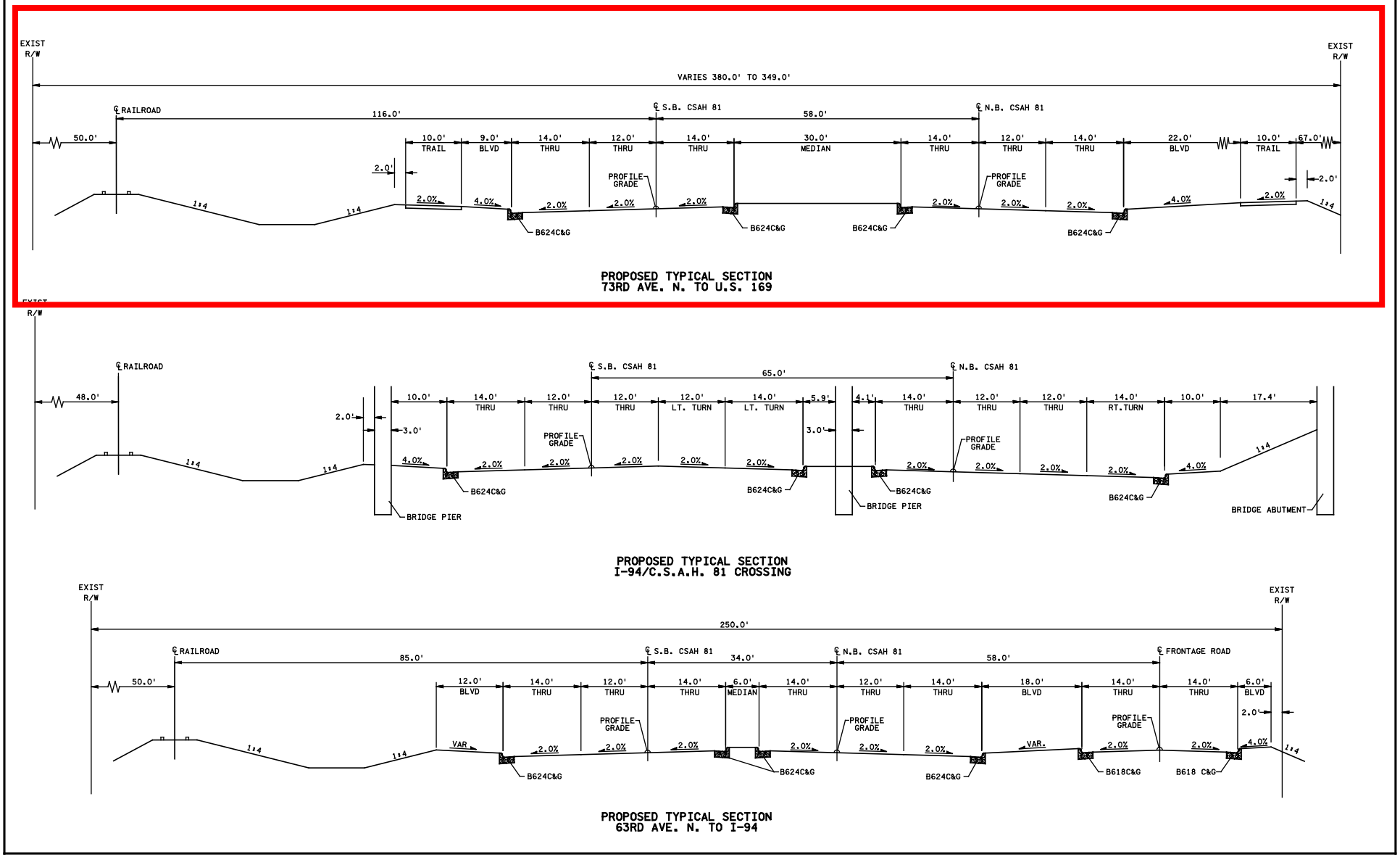
DATE	DESCRIPTION
January 6, 2003	DRAFT Preliminary Layout (TH 100 to Bass Lake Road (CSAH 10))
November 8, 2006	[1] Layout revised per staff input and input recieved at City of Brooklyn Park neighborhood meetings.

PRELIMINARY
SUBJECT TO CHANGE
8/14/2007
SRF CONSULTING GROUP, INC.

Hennepin

HENNEPIN 81 COUNTY

Proposed Typical Section for the CSAH 81 (Bottineau Boulevard) Expansion Project



PROPOSED TYPICAL SECTIONS

COUNTY STATE AID HIGHWAY 81 (BOTTINEAU BOULEVARD) ROADWAY RECONSTRUCTION
S.P. 27-681-27
Hennepin County

Figure 6B

h:\civil\008\44\6\6 lane v8\graphics\500scale\44l6v8_PTYP2.dgn

Figure 3.3.1: 2000 Land Use Plan

As amended by the Northern Area Master Plan Update (2005)
February 2008

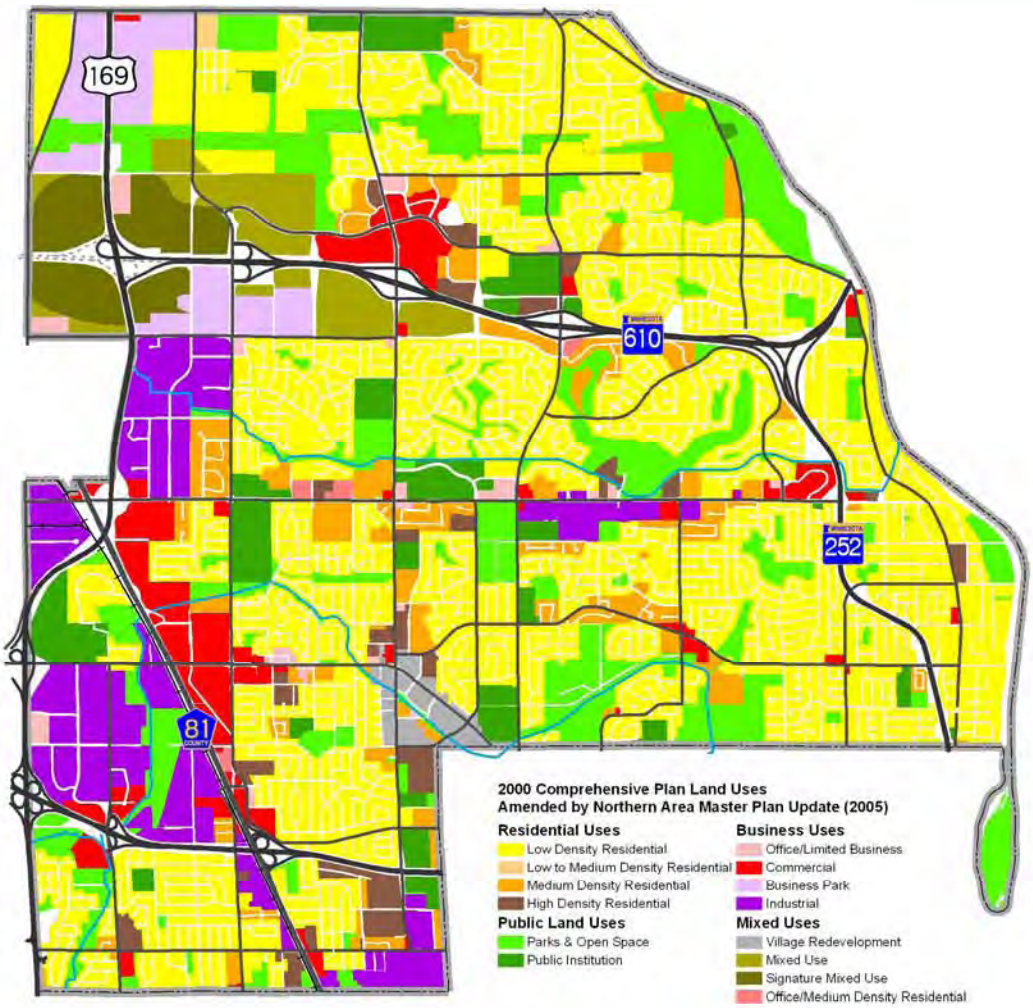
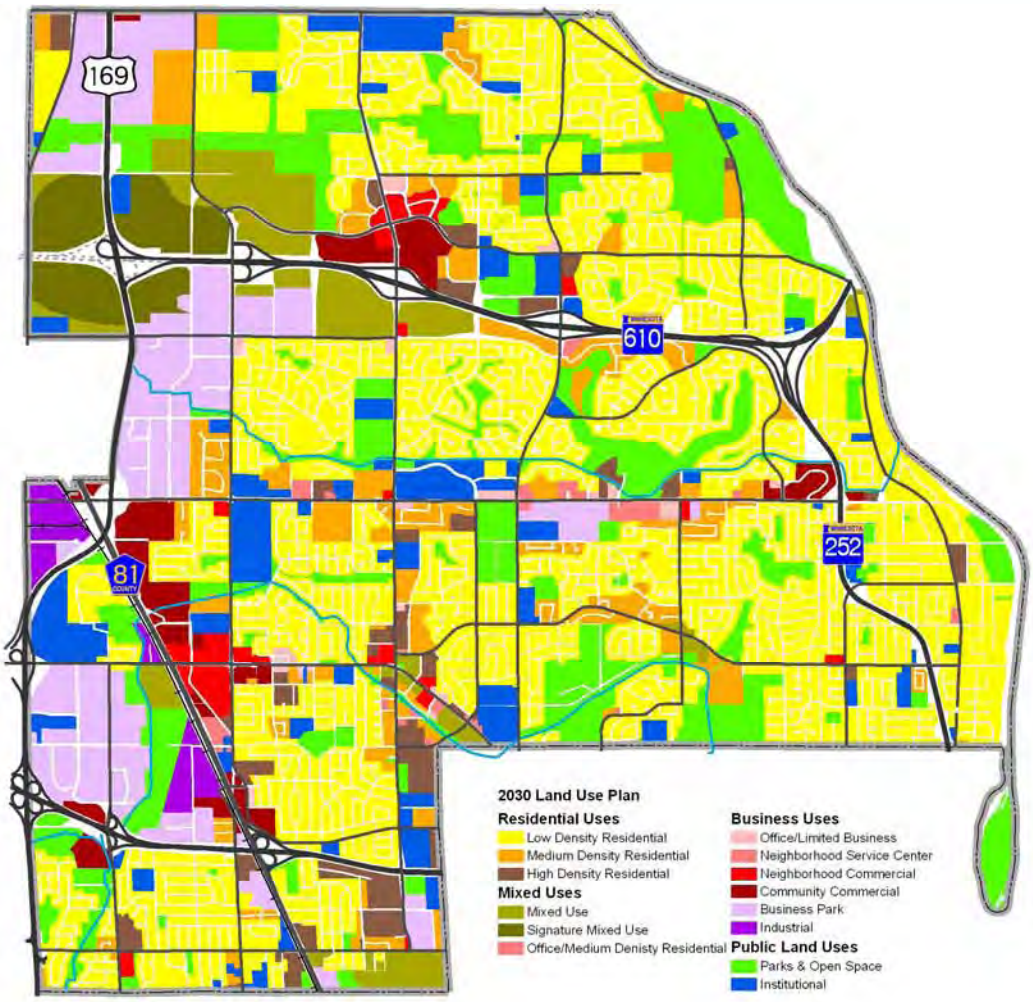


Figure 3.3.2: 2030 Land Use Plan

February 2008



Land Use Definitions

The following definitions are meant to clarify the intent of the land use designations and provide a general vision of uses allowed in each designation. Actual allowable uses are conveyed through the City's Zoning Ordinance.

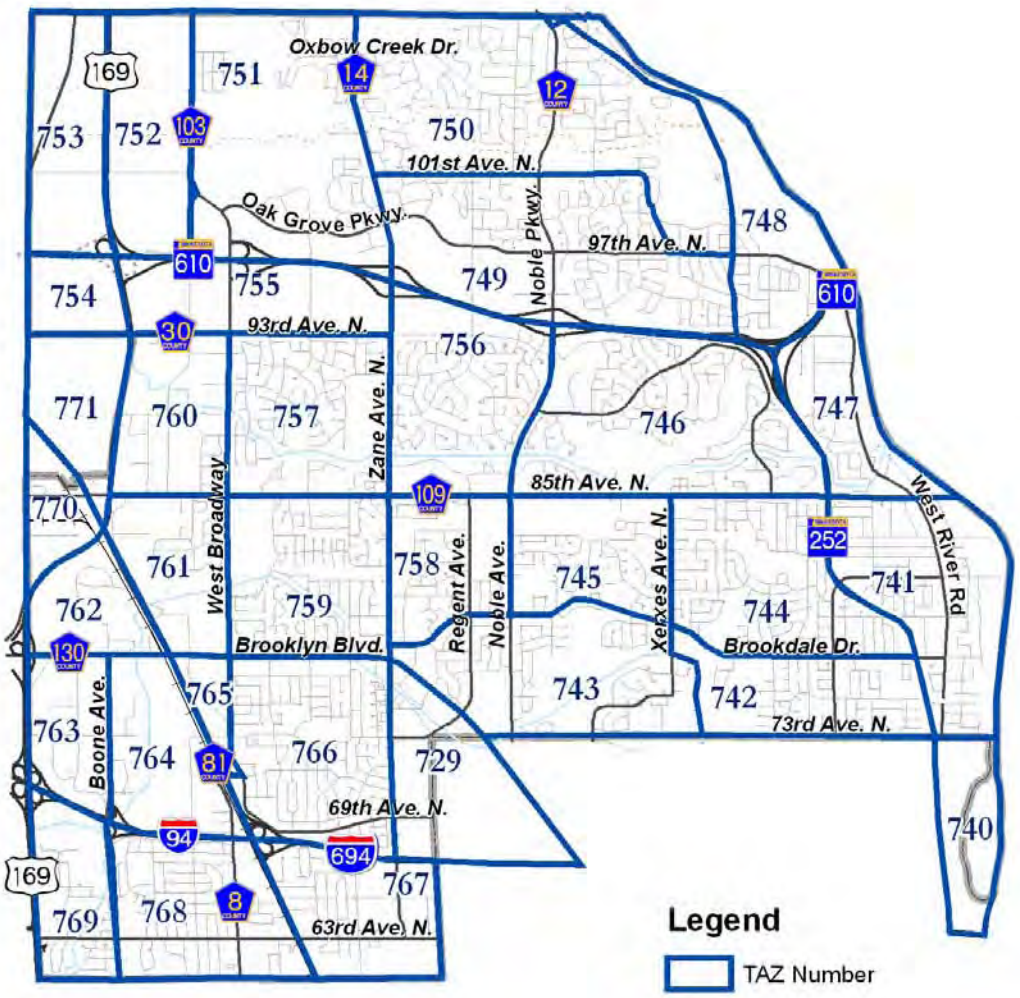
Low Density - Developments in areas designated as low density may not exceed 3 units per acre

Medium Density - Developments in areas designated as medium density must be more than 3 units per acre and may not exceed 9 units per acre

High Density - Developments in areas designated as high density must be more than 9 units per acre and may not exceed 25 units per acre

Figure 5.3.13: Traffic Analysis Zones

March 2007



3.2.4 Development Staging

Brooklyn Park has managed to avoid much semi-rural sprawl that might otherwise have occurred through its program of growth management and development staging. This section provides a general depiction of the historic development stages in the City and the plan for future growth.

Historic Development Staging

The following history of development staging in figure 3.2.4 shows the gradual development of the City since the 1940's. The Village of Brooklyn Park was established in 1954. Early settlement in Brooklyn Park dates back to the early 1800's. For example, the townsite of Harrisburg was platted in 1856, which included the area on the map, along the river labeled as developed between 1940 and 1960. Only one building from the original Harrisburg is still standing at 8900 West River Road. The house was reportedly used to house log boom workers between 1850-1880 (Brooklyn Park Historical Study).

Figure 3.2.4: Historic Development Staging

December 2007

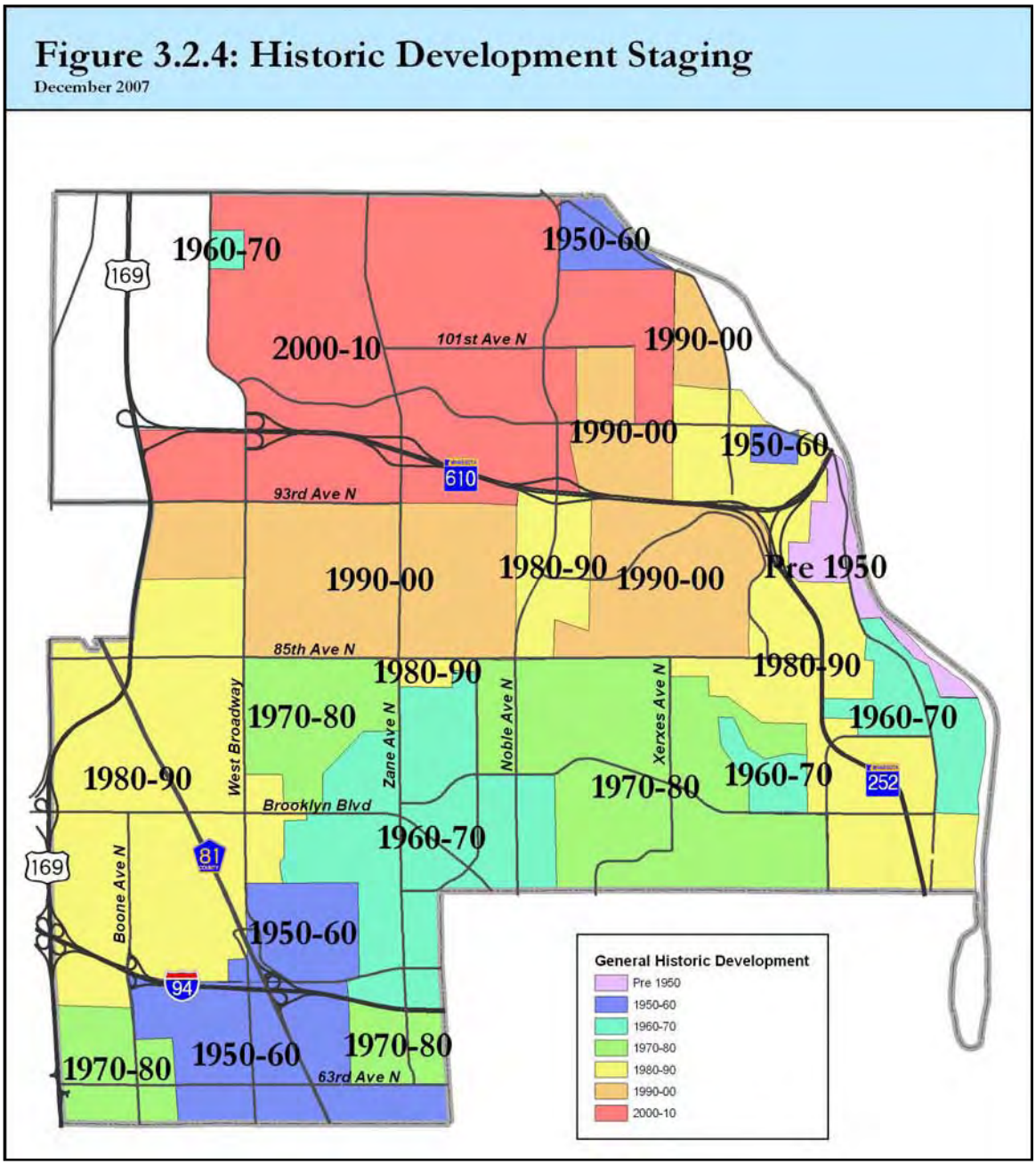


Figure 5.5.1: Existing Sidewalk & Trail Network

December 2008

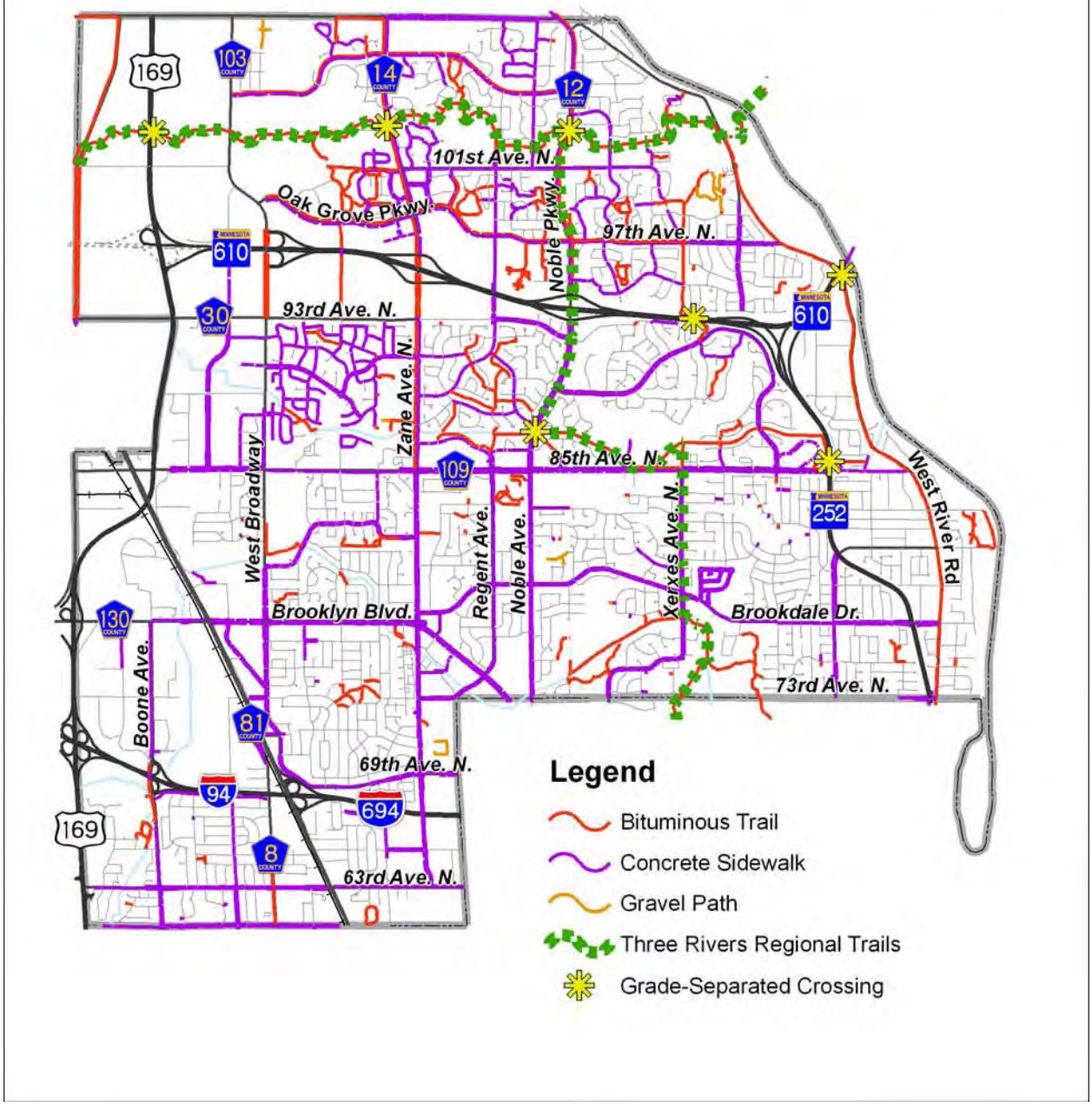
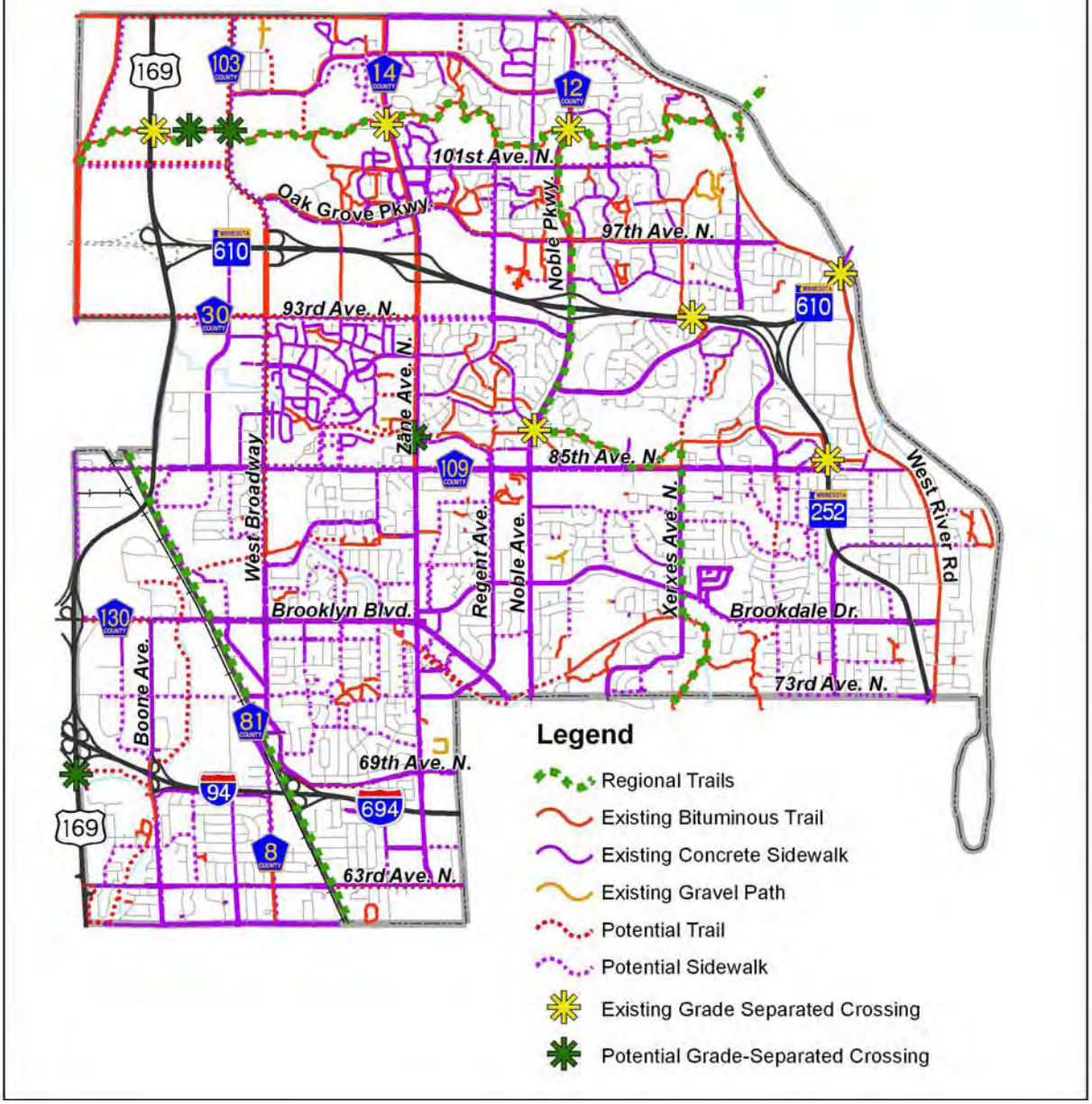


Figure 5.5.6: Potential Sidewalk & Trail Network

December 2008



5.5.7 Goals

The following goals relate to constructing and improving the pedestrian network in Brooklyn Park.

Connect all parks and schools with a sidewalk and trail net. It should be possible to travel by foot between all parks and schools in a safe dedicated off-street route.

Figure 5.4.1A: Bus Route Network

February 2008

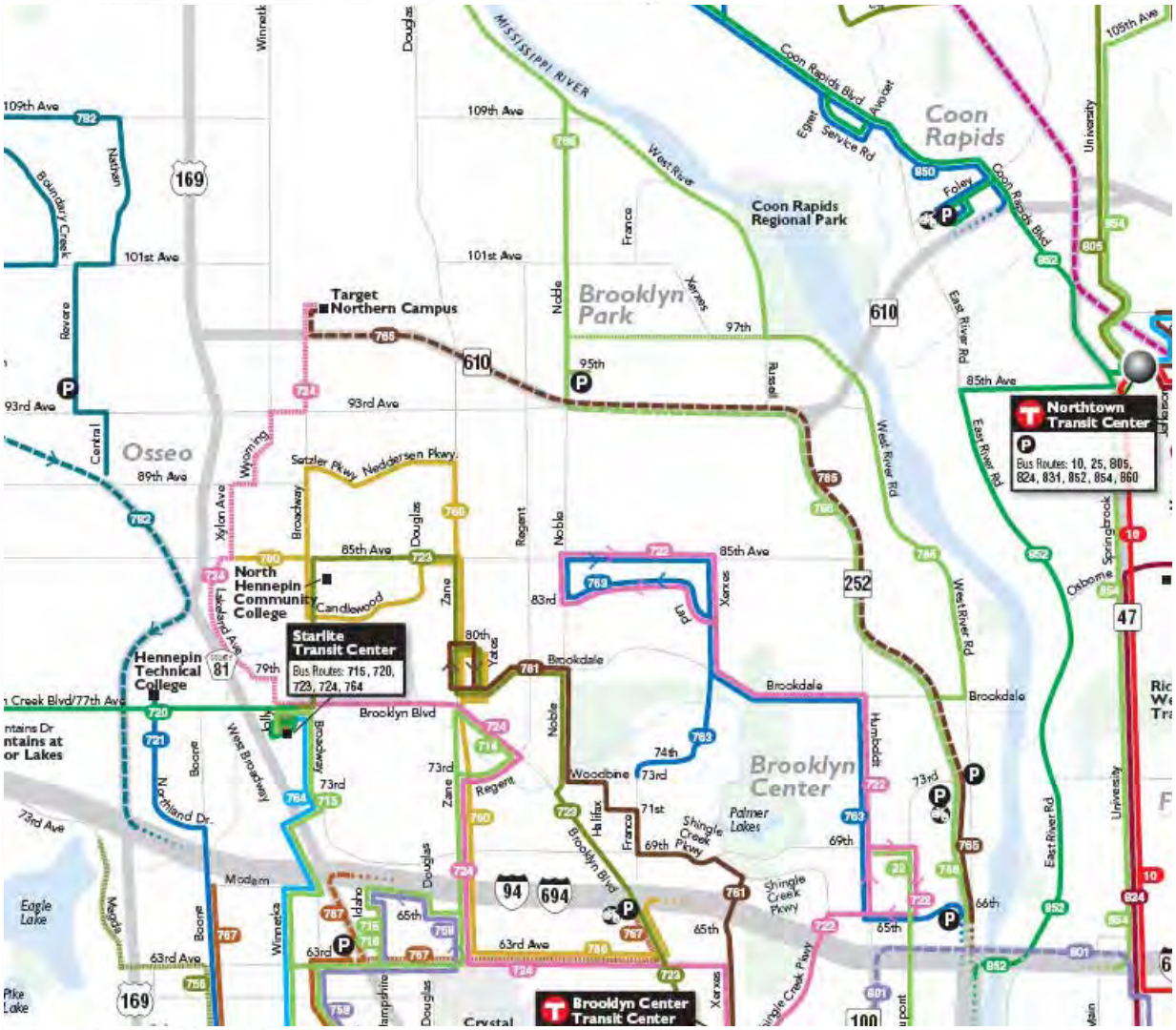
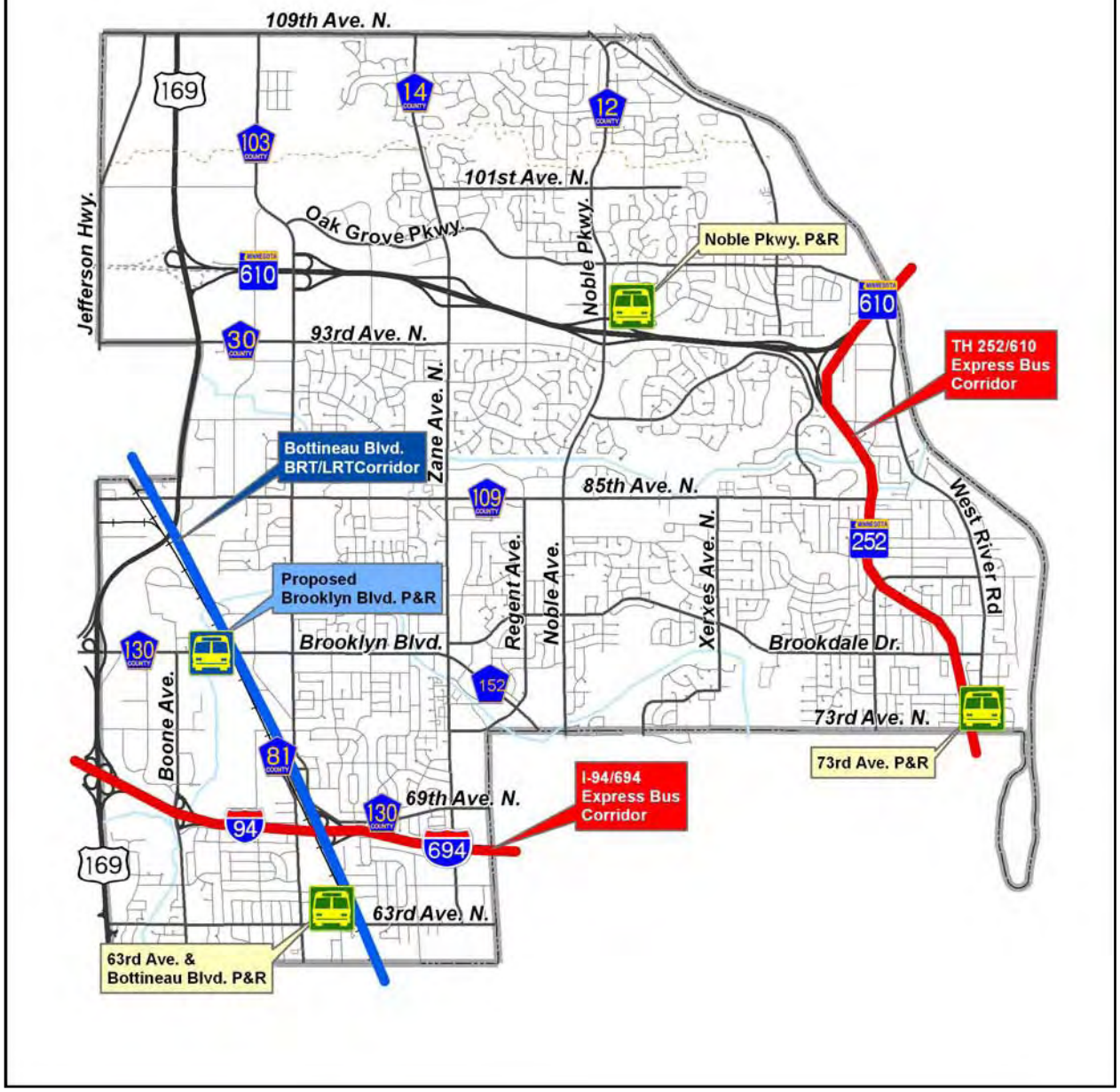


Figure from Metro Transit

Park & Ride Facilities. Brooklyn Park is currently served by three park and ride facilities. The newest facility, the 63rd Avenue and Bottineau Boulevard Park and Ride, opened in March 2007. This park and ride was designed to replace some of the use from the 85th Avenue Park and Ride, which closed in late 2006 in anticipation of the Highway 169 "Triangle" reconstruction project. Additionally, a park and ride

Figure 5.4.1B: Transit Facilities & Transit Corridors

December 2007



5.4.2 Planned Changes

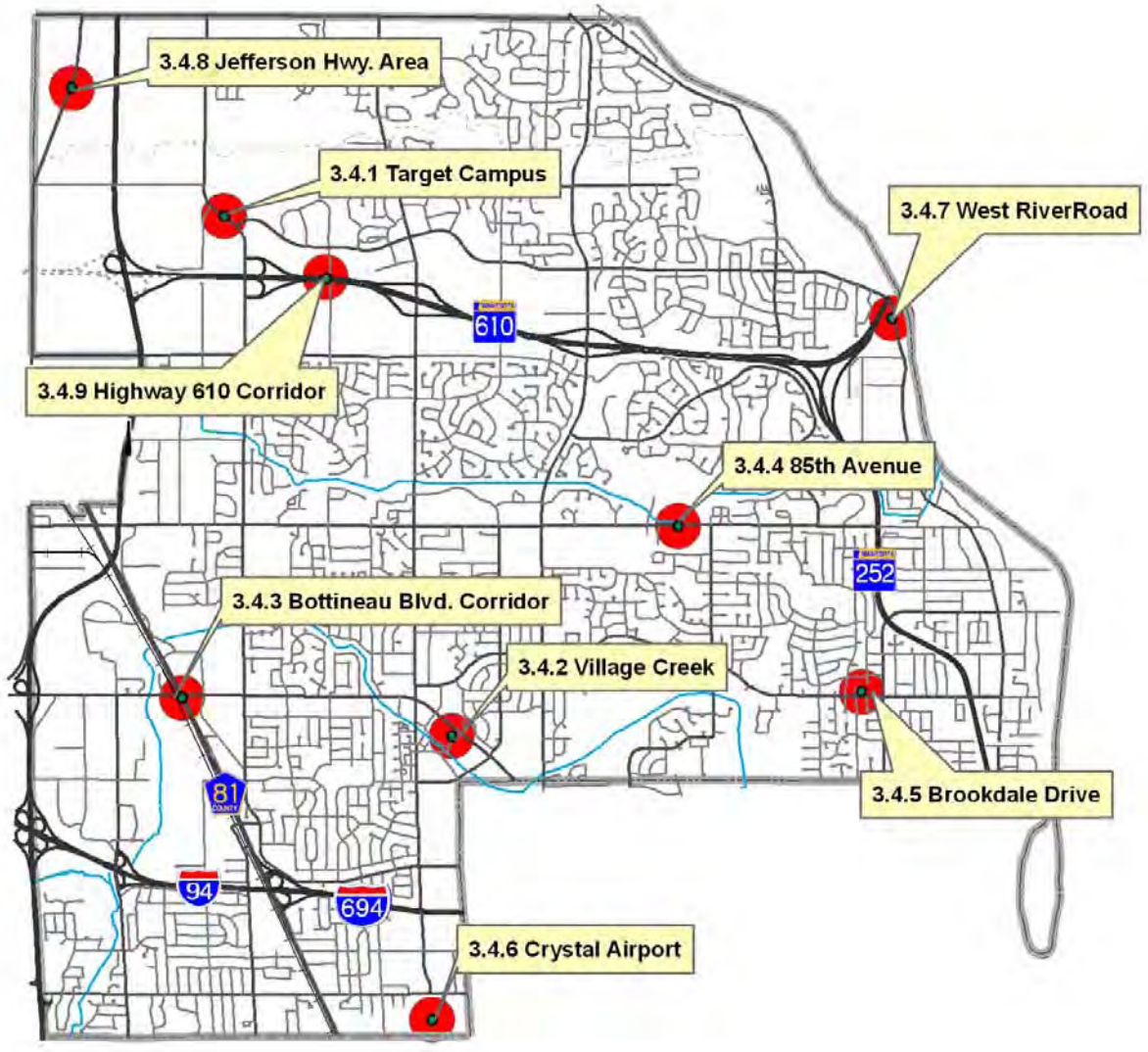
Northwest Metro Restructuring Study. As mentioned earlier, in December 2006, the Metropolitan Council approved changes to the bus service in the northwestern portion of the Twin Cities. Many of these changes have been implemented with additional changes coming after the relocation of the Starlite Transit Center. Many

3.4 SPECIAL ISSUE AREAS

This section is meant to pay special attention to certain areas in the City that have undergone land use studies or are recommended areas of consideration for a future land use study. The following section is also intended to coordinate and combine existing studies and plans into the Comprehensive Plan to create a thorough and complete resource to guide future development in the special areas. The following Figure 3.4 illustrates the general location of the 8 special issue areas.

Figure 3.4: Special Issue Areas

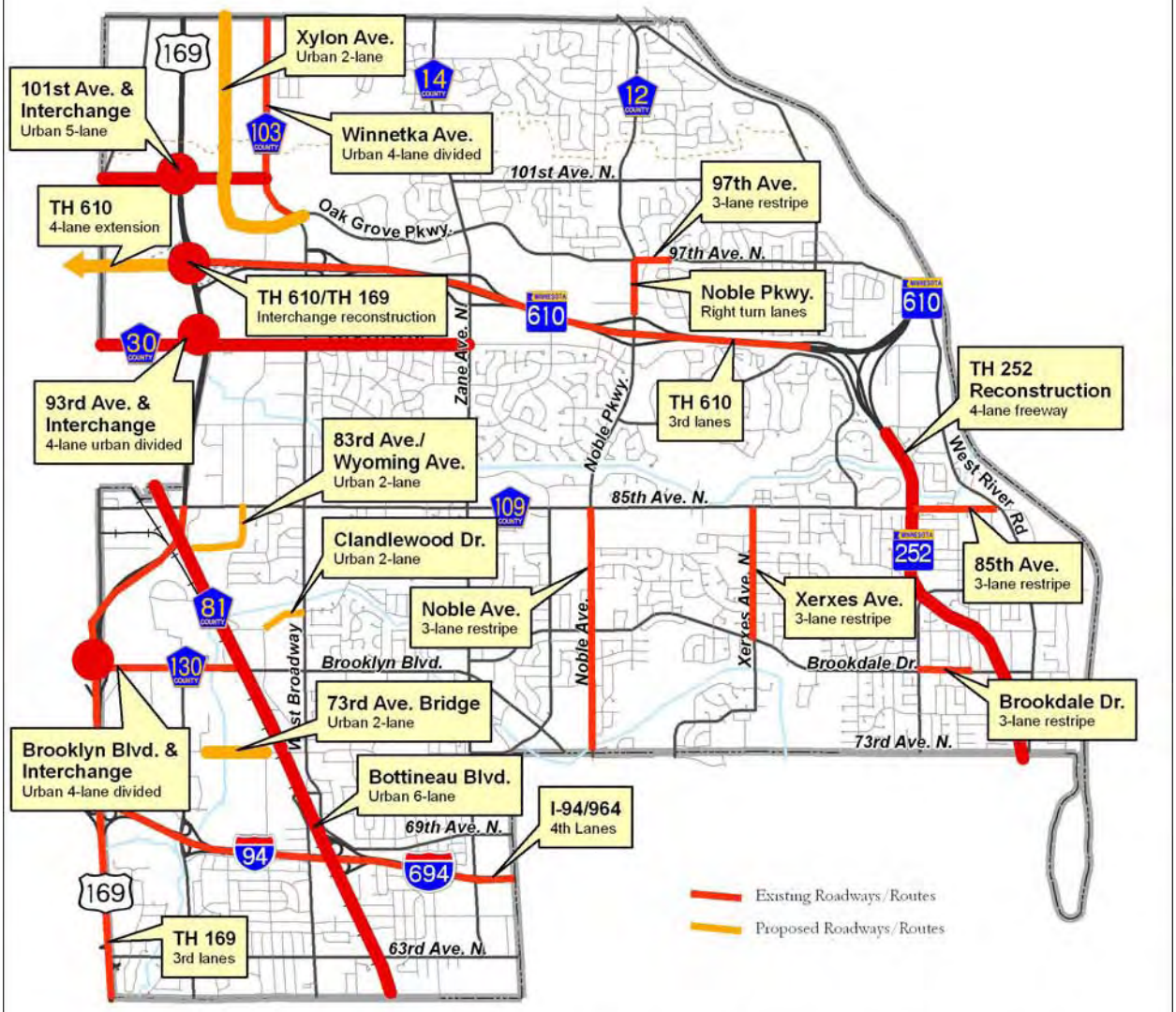
April 2008



Planned Improvements along CSAH 81

Figure 5.3.14: Planned Roadway Imrovements (by 2030)

November 2007



Sources: MNDOT Transportation System Plan, Hennepin County CIP Provisional Projects, City of Brooklyn Park CIP.

Figure 5.3.14 Recommended Roadway Improvements (2030)

Priority	Roadway	From	To	Recommended Improvement	Comments	Construction Cost
1	109th Ave	Xylon Ave	Brittany Dr.	Upgrade to 3-lane minor arterial	Share road with Champlin	$1,620,00
2	73rd Ave	East of Boone Ave	Winnetka Ave	Connect segment; construct bridge	Would help Brooklyn Blvd. congestion.	$3,500,000
1	79th Ave/ Candlewood Dr	Jolly Ln	West Broadway	Construct new 2-lane Major collector with parking	Construct to match Candlewood Dr.	$1,000,000
3	85th Ave	Dupont Ave	W. River Rd	Re-stripe to 3-lane Major collector	Future closure of 81st Ave at 252 will affect	$30,000
1	93rd Ave	Jefferson Hwy	West Broadway	Construct to 4-lane divided	County roadway to be done with interchange	$800,000
3	93rd Ave	West Broadway	Zane Ave	Upgrade to a 4-lane divided arterial.	County road near capacity in 2030.	$800,000
1	Tessman Pkwy	85th Ave	Founders Pkwy	New 2-lane Minor collector	Dependant upon development	$600,000
1	93rd Ave (CSAH 30)	At TH 169		Construct half-diamond interchange to the south over TH 169.	Based on 2005 Study. State and County Roadways.	$400,000
3	TH 169	CSAH 130		Add northbound auxiliary lane, loop on-ramp, widen bridge, terminate east frontage road	State and County roadways. Based on 1998 corridor study.	$500,000
1	TH 169	CSAH 81/85th Avenue area		Grade-Separate/ construct interchange at 85th Avenue	To start in 2009. State and County roadways.	$400,000 (City share)
1	West Broadway	Candlewood Dr	93rd Ave	Reconstruct as urban 4-lane divided	County Roadway. In County and City CIPs	$3,280,000
2	101st Ave	Jefferson Hwy	Winnetka Ave	Upgrade to 4-lane Major urban collector;	State Roadway (TH169) involved. Assumes at-grade access.	$2,200,000
3	85th Ave	Jefferson Hwy	CSAH 81	Upgrade to 4-lane divided	County roadway. Not in County CIP.	$500,000
2	West Broadway	62nd Ave	CSAH 81	Reconstruct as an urban 3-lane section without parking	County roadway. Not in County CIP.	$600,000
1	Zane Ave/ Brooklyn Blvd	Intersection		Add Additional Turn Lanes	Share with Hennepin County.	$1,750,000
2	CSAH 81	S. City Limit	N. City Limit	Upgrade to 6-lane urban roadway with transitway	Hennepin County roadway	$7,700,000
1	W River Rd	99th Ave	Noble Pkwy	Reconstruct to urban 2-lane road	In City CIP for 2008	$2,200,000
2	Xylon Ave	West Broadway/Oak Grove Pkwy	109th Ave	Construct 2-lane Major urban collector	Alignment south of 101st Ave dependent on Target development	$2,200,000
1	TH 610	TH 169	I-94 (Maple Grove)	Construct 4-lane freeway	In MnDOT TSP for 2015-2023	$180,000,000 (State)
1	TH 610	TH 169		Reconstruct interchange	Eliminate signals in TSP for 2024-2030	$500,000
1	TH 252	I-94 (Brooklyn Center)	TH 610	Reconstruct to 4-lane freeway	State roadway. In TSP for 2024-2030	$130,000,000 (State)
3	CSAH 130	TH 169	CSAH 81	Reconstruct to 4-lane divided	County roadway, not in County or City CIP.	$1,000,000
3	TH 610	TH 252	TH 169	Add 3rd lane in each direction	State roadway add-on issue	$20,000,000 (State)

Figure 5.3.14 Recommended Roadway Improvements (2030)						
Priority	Roadway	From	To	Recommended Improvement	Comments	Construction Cost
3	I-94	E. City limit	W. City limit	Add 4th lane in each direction.	State roadway. Just added 3rd lane.	$300,000,000 (State)
1	109th Ave	Xylon Ave	TH 169	Reconstruct to 4-lane divided	With Champlin. Affects TH 169 intersection.	$500,000
3	TH 169	S. City limit	CSAH 109	Add 3rd lane in each direction	Requires interchange revisions	$50,000,000 (State)
2	Noble Ave	S. City Limit	85th Ave	Restripe to 3- or 4-lane and remove parking	Need to work with Brooklyn Center and Hennepin County	$70,000
3	Xerxes Ave	Brookdale Dr	85th Ave	Restripe to 3-lane roadway and remove parking	Minimal parking use	$40,000
3	Brookdale Dr	Humboldt Ave	Colfax Ave	Resrtipe to 3-lane roadway and remove parking	Traffic expected to increase in future with TH 252/81st Ave closure	$40,000
3	Noble Pkwy	TH 610	97th Ave	Add northbound right turn lane at 97th Ave	Heavy movement affects northbound turn traffic. County roadway.	$50,000
2	97th Ave	Noble Pkwy	Fallgold Pkwy	Restripe to provide dual left turn lanes westbound to southbound	Split phase signal. Work with County.	$20,000
1	West Broadway/ Winnetka Ave.	TH 610	109th Ave	Reconstruct to 4-lane divided urban with right turn lanes	County roadway. May be impacted by Target development.	$3,300,000
1	83rd Ave/ Wyoming Ave	CSAH 81	85th Ave	Construct new 2-lane Major collector	Needed with triangle project	$1,000,000
2	TH 169	101st Ave		Construct full diamond interchange	MnDOT has indicated that they will not fund	$15,000,000
Total cost of capacity and system needs (does not include costs for TH 169, TH 252, TH 610, and I-94).						$51,700,000

5.3.15 Jurisdictional Transfers

West Broadway (CSAH 8). West Broadway from the southern City limits to Bottineau Boulevard is a two-lane rural section roadway surrounded by an established residential neighborhood south of I-94 and business uses north of I-94. Pedestrian facilities are limited to two blocks along the south end of the roadway. The county identified this roadway as a possible turn-back to the City due to the proximity to parallel County Road 81 (Bottineau Boulevard).

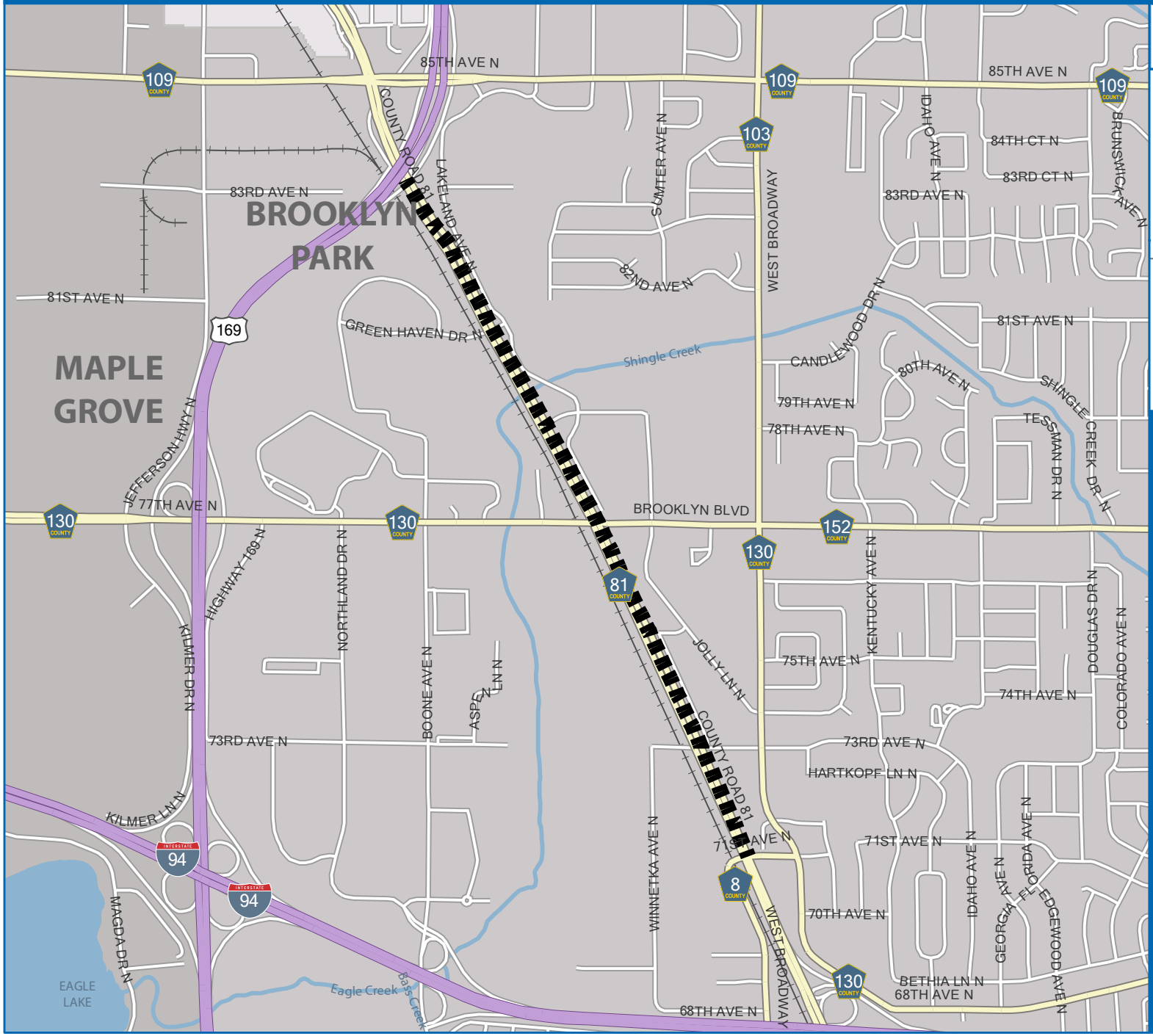
68th/69th/Lakeland Avenues (CSAH 130). This roadway is predominately a two-lane rural section roadway. A four-lane urban section roadway ties into West Broadway near the intersection with 71st Avenue. Traffic is expected to remain constant along this roadway over the next twenty years with about 6,500 vehicles per day. The county identified this roadway as a possible turn-back to the City due to its low volume of traffic.

Project Location

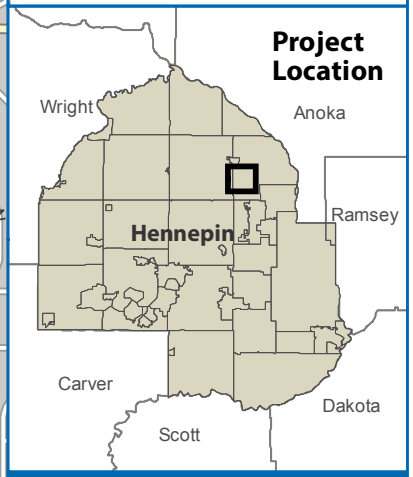
Project Number: 2092200 | CSAH 81 | Brooklyn Park

▶ Transportation

Hennepin County Public Works



Provisional Project Location



Produced by Hennepin County Public Works Transportation Department.

This map has been created for informational purposes only and is not considered a legally recorded map or document. Hennepin County makes no warranty, representation, or guarantee as to the content, accuracy, timeliness, or completeness of any of the information provided herein.

Published: 9/27/2013

Hennepin County
Public Works

0 0.175 0.35
Miles

HENNEPIN COUNTY
MINNESOTA

2014 CAPITAL BUDGET
AND 2014-2018 CAPITAL IMPROVEMENT PLAN

Major Program: Public Works
Department: Transportation
Building:

Project Name: CSAH 81 - Reconstruct Road from CSAH 8 to TH 169
Project Number: 2092200
Funding Start: 2017 **Funding Complete:** 2017

Description & Location

The project consists of reconstructing CSAH 81 as a multi-lane roadway from CSAH 8 to TH 169 in Brooklyn Park.

Purpose & Justification:

The purpose of the project is to improve the condition of the pavement and increase capacity. The existing four-lane roadway is deficient in structure, drainage, and traffic capacity. This project will also support opportunities for multi-modal infrastructure development.

Project's Effect On Annual Operating Budget

The project will reconstruct a multi-lane roadway. The project's effect on lane-miles to be maintained depends on the final plan and whether the road is expanded.

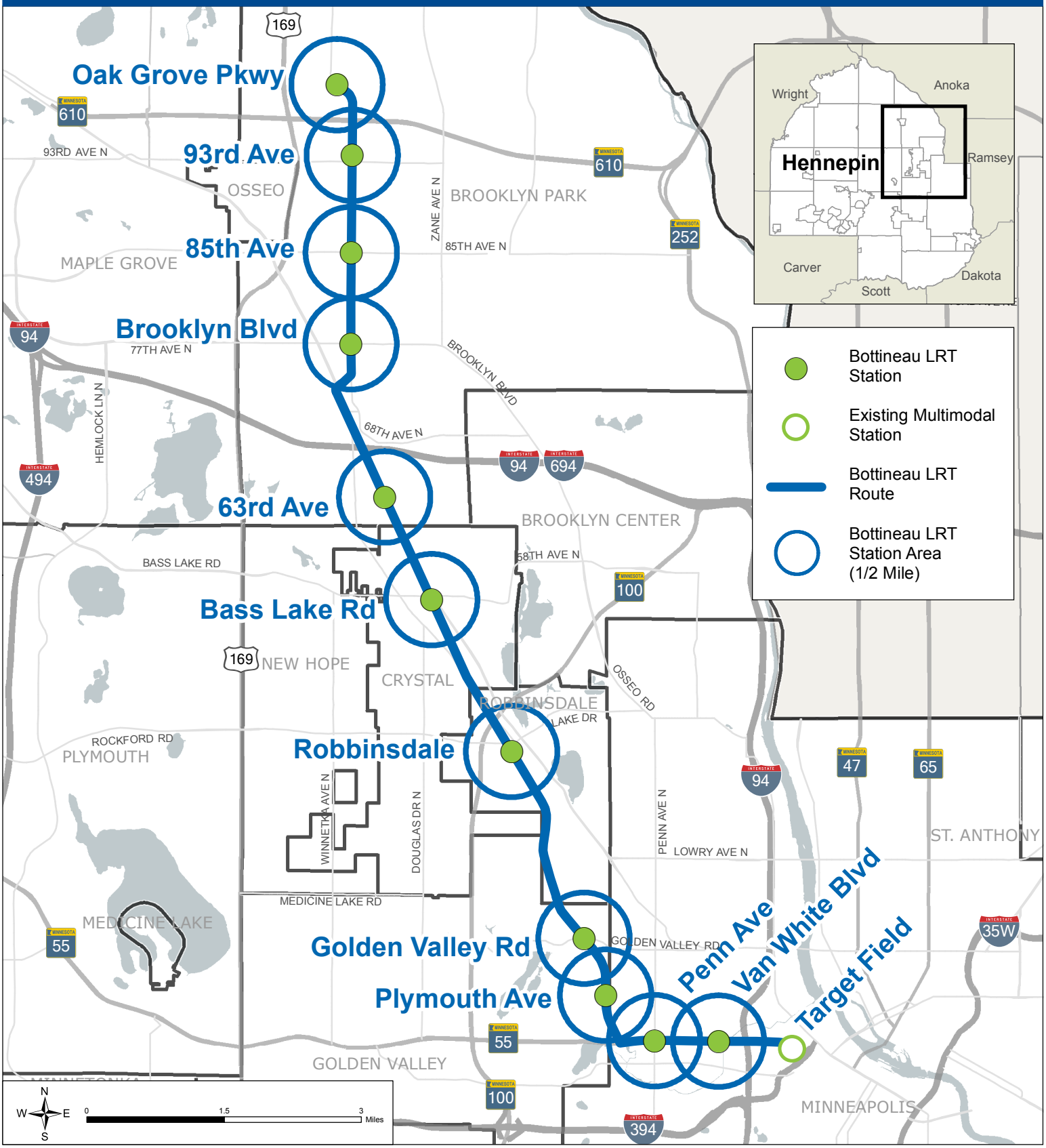
Notes

This is a provisional project which may be included in the funded program subject to the availability of federal aid or other revenues.

Cost Breakdown	Total
Land Acquisition	
Construction	$21,697,000
Consulting	
Furnishings/Equipment	
Contingency	
TOTAL	$21,697,000

Funding Source	Previous Appropriations	2014 Estimate	2015 Estimate	2016 Estimate	2017 Estimate	2018 Estimate	Beyond 2018 Estimate	TOTAL
Property tax								
Bonding								
Federal								
State								
Enterprise income								
Other								
TOTAL								

Bottineau LRT
Blue Line Extension



Publication date: 10/14/2014

Data source: Hennepin County

This map (i) is furnished "AS IS" with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this map.

Hennepin County Public Works

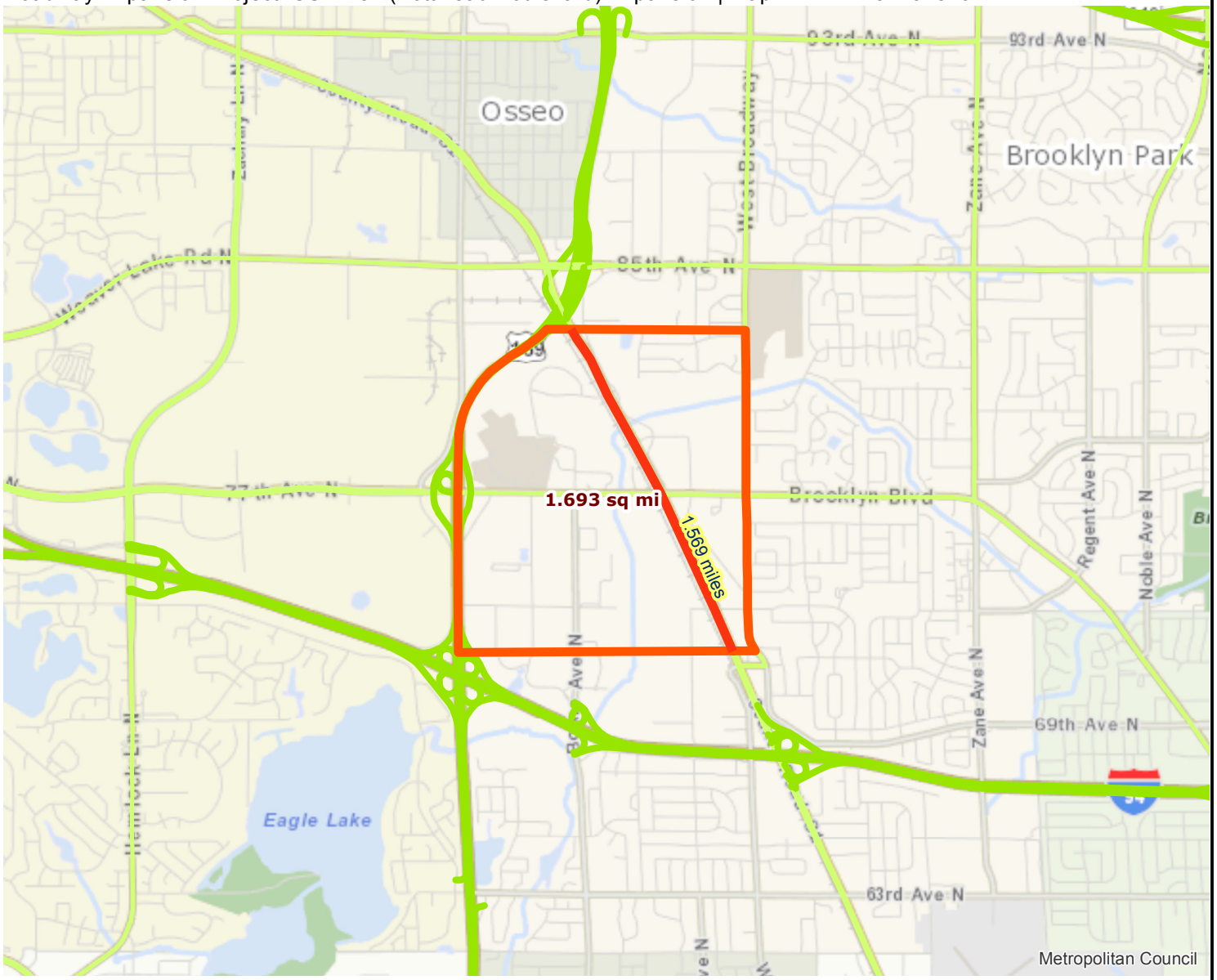
Roadway Area Definition

Roadway Expansion Project: CSAH 81 (Bottineau Boulevard) Expansion | Map ID: 1414432101876

Results

Project Length: 1.569 miles

Project Area: 1.693 sq mi



Project
Project Area
Principal Arterials
Minor Arterials
Principal Planned Arterial
Minor Planned Arterial

0 0.425 0.85 1.7 2.55 3.4 Miles

Created: 10/27/2014
LandscapeRSA1

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

Regional Economy

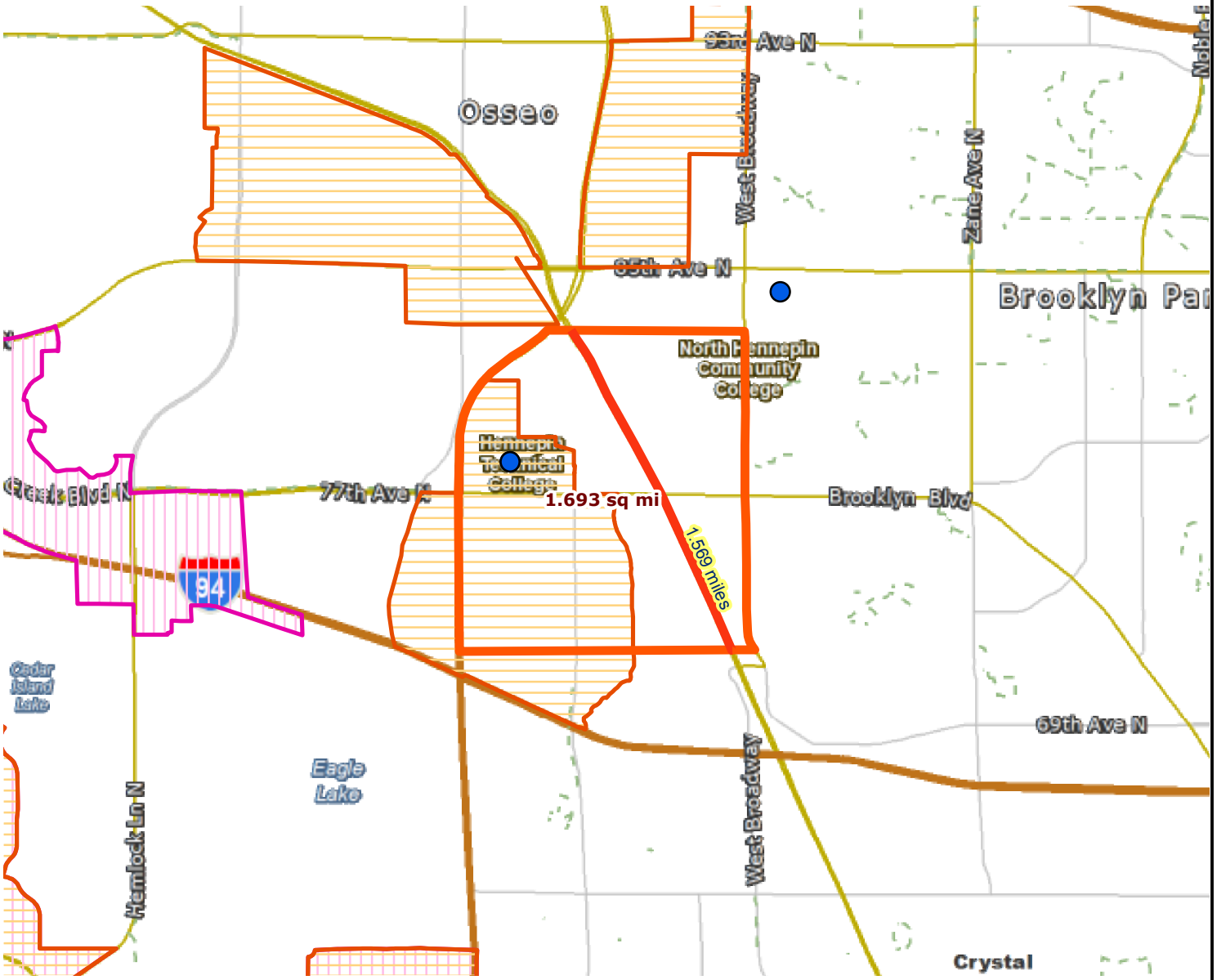
Roadway Expansion Project: CSAH 81 (Bottineau Boulevard) Expansion | Map ID: 1414432101876

Results

Project **NOT IN** area of Job Concentration.

Project **NOT IN** to area of Manufacturing and Distribution.

Project **NOT CONNECTED** to area of Education Institutions.



Project
Project Area
PostSecondary Education Centers
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.425 0.85 1.7 2.55 3.4 Miles

Created: 10/27/2014
LandscapeRSA5

For complete disclaimer of accuracy, please visit http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

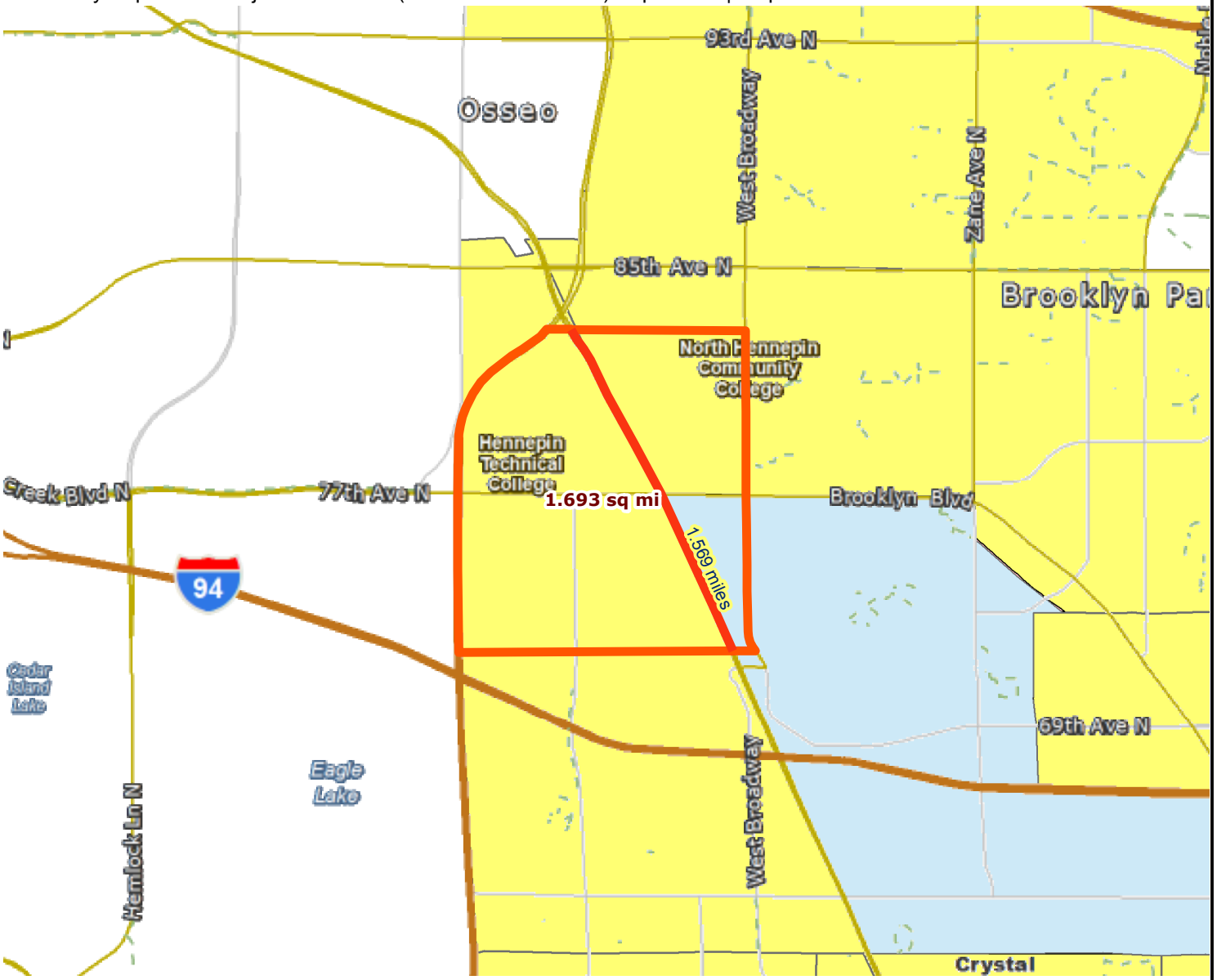
METROPOLITAN COUNCIL

Socio-Economic Conditions

Roadway Expansion Project: CSAH 81 (Bottineau Boulevard) Expansion | Map ID: 1414432101876

Results

Project **IN** a racially concentrated area of poverty.



Project
Project Area
Racially concentrated area of poverty
Concentrated area of poverty
Above reg'l avg conc of race/poverty

0 0.425 0.85 1.7 2.55 3.4 Miles

Created: 10/27/2014
LandscapeRSA2

For complete disclaimer of accuracy, please visit http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

27: Hwy 81 & Brooklyn Blvd (Zone 25)

Direction	All
Volume (vph)	3431
Total Delay / Veh (s/v)	38
CO Emissions (kg)	7.49
NOx Emissions (kg)	1.46
VOC Emissions (kg)	1.74

27: Hwy 81 & Brooklyn Blvd (Zone 25)

Direction	All
Volume (vph)	3431
Total Delay / Veh (s/v)	31
CO Emissions (kg)	7.07
NOx Emissions (kg)	1.37
VOC Emissions (kg)	1.64

27: Hwy 81 & Brooklyn Blvd (Zone 25)

Direction	All
Volume (vph)	3431
Total Delay / Veh (s/v)	38
CO Emissions (kg)	7.49
NOx Emissions (kg)	1.46
VOC Emissions (kg)	1.74

27: Hwy 81 & Brooklyn Blvd (Zone 25)

Direction	All
Volume (vph)	3431
Total Delay / Veh (s/v)	31
CO Emissions (kg)	7.07
NOx Emissions (kg)	1.37
VOC Emissions (kg)	1.64

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 81	From 200' North of CSAH 8 (71st Avenue) to 200' South of 8rd Avenue North - Intersections Only	008+00.105	009+00.610	Hennepin County	1/1/2011	12/31/2013

Description of Proposed Work

Provide signal coordination (15% reducation of all intersection crashes; CMF ID: 1402)
Improve visibility of traffic signal heads (7% reduction of all intersection crashes; CMF ID: 1430)
Applied dual safety improvement crash reduction formula

		Accident Diagram Codes	1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**									
	Personal Injury (PI)	**A**				1				1	**2**
		B	3								**3**
		C	9	1	1	3	2			1	**17**
	Property Damage	**PD**	21	3	2	2	1			4	**33**
% Change in Crashes *Use Crash Modification Factors Clearinghouse	Fatal	**F**									
	PI	**A**				-21%				-21%	
		B	-21%								
		C	-21%	-21%	-21%	-21%	-21%			-21%	
	Property Damage	**PD**	-21%	-21%	-21%	-21%	-21%			-21%	
Change in Crashes = No. of crashes **x** % change in crashes	Fatal	**F**									
	PI	**A**				**-0.21**				**-0.21**	**-0.42**
		B	**-0.63**								**-0.63**
		C	**-1.89**	**-0.21**	**-0.21**	**-0.63**	**-0.42**			**-0.21**	**-3.57**
	Property Damage	**PD**	**-4.41**	**-0.63**	**-0.42**	**-0.42**	**-0.21**			**-0.84**	**-6.93**

Year (Safety Improvement Construction) **2019**

Project Cost (exclude Right of Way)	**$ 16,800,000**
Right of Way Costs (optional)	**$ -**
Traffic Growth Factor	**2.2%**
Capital Recovery	
1. Discount Rate	**4.5%**
2. Project Service Life (n)	**20**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			**$ 1,100,000**	
A	**-0.42**	**-0.14**	**$ 550,000**	**$ 77,000**
B	**-0.63**	**-0.21**	**$ 160,000**	**$ 33,600**
C	**-3.57**	**-1.19**	**$ 81,000**	**$ 96,390**
PD	**-6.93**	**-2.31**	**$ 7,400**	**$ 17,094**
Total				**$ 224,084**

B/C= 0.22

Using present worth values,

B= $ 3,657,546

C= $ 16,800,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **September 2014**

Amortizing…

Year	Crash Benefits	Present Worth Benefits	Present Worth Costs
2019	$ 224,084	$ 224,084	$ 16,800,000
2020	$ 229,014	$ 219,152	
2021	$ 234,052	$ 214,329	
2022	$ 239,201	$ 209,611	
2023	$ 244,464	$ 204,998	
2024	$ 249,842	$ 200,486	
2025	$ 255,338	$ 196,073	
2026	$ 260,956	$ 191,758	
2027	$ 266,697	$ 187,537	
2028	$ 272,564	$ 183,410	
2029	$ 278,561	$ 179,373	
2030	$ 284,689	$ 175,425	
2031	$ 290,952	$ 171,564	
2032	$ 297,353	$ 167,788	
2033	$ 303,895	$ 164,095	
2034	$ 310,581	$ 160,483	
2035	$ 317,413	$ 156,951	
2036	$ 324,396	$ 153,497	
2037	$ 331,533	$ 150,118	
2038	$ 338,827	$ 146,814	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
	Totals =	**$ 3,657,546 (B)**	**$ 16,800,000 (C)**

year (n)= 1, 2, 3,….
discount rate (i) = 7%

$$\text{Crash Benefits (@ year n)} = (\text{Crash Benefits})_{n-1} \times (1 + \text{Traffic Growth Factor})$$

$$\text{Present Worth Benefits (@ year n)} = (\text{Crash Benefits})_{n} \times 1/(1 + \text{Discount Rate})^{n}$$

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 81	From 200' North of CSAH 8 (71st Avenue) to 200' South of 8rd Avenue North - Segments Only	008+00.105	009+00.610	Hennepin County	1/1/2011	12/31/2013

Description of Proposed Work: Install curb and gutter (11% reduction of all crashes; CMF ID: 2375)
Install raised median (20% reduction of all crashes; CMF ID: 1013)
Applied dual safety improvement crash reduction formula

			Accident Diagram Codes: 1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**									
	Personal Injury (PI)	**A**									
		B									
		C					1				**1**
	Property Damage	**PD**	5	2		1	1				**9**
% Change in Crashes *Use Crash Modification Factors Clearinghouse	Fatal	**F**									
	PI	**A**									
		B									
		C					-29%				
	Property Damage	**PD**	-29%	-29%		-29%	-29%				
Change in Crashes = No. of crashes **x** % change in crashes	Fatal	**F**									
	PI	**A**									
		B									
		C					**-0.29**				**-0.29**
	Property Damage	**PD**	**-1.45**	**-0.58**		**-0.29**	**-0.29**				**-2.61**

Year (Safety Improvement Construction)	**2019**
Project Cost (exclude Right of Way)	**$ 16,800,000**
Right of Way Costs (optional)	**$ -**
Traffic Growth Factor	**2.2%**
Capital Recovery	
1. Discount Rate	**4.5%**
2. Project Service Life (n)	**20**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			**$ 1,100,000**	
A			**$ 550,000**	
B			**$ 160,000**	
C	**-0.29**	**-0.10**	**$ 81,000**	**$ 7,830**
PD	**-2.61**	**-0.87**	**$ 7,400**	**$ 6,438**
Total				**$ 14,268**

B/C= 0.01

Using present worth values,

B= $ 232,885

C= $ 16,800,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **September 2014**

Amortizing…

Year	Crash Benefits	Present Worth Benefits	Present Worth Costs
2019	$ 14,268	$ 14,268	$ 16,800,000
2020	$ 14,582	$ 13,954	
2021	$ 14,903	$ 13,647	
2022	$ 15,231	$ 13,346	
2023	$ 15,566	$ 13,053	
2024	$ 15,908	$ 12,765	
2025	$ 16,258	$ 12,484	
2026	$ 16,616	$ 12,210	
2027	$ 16,981	$ 11,941	
2028	$ 17,355	$ 11,678	
2029	$ 17,737	$ 11,421	
2030	$ 18,127	$ 11,170	
2031	$ 18,526	$ 10,924	
2032	$ 18,933	$ 10,683	
2033	$ 19,350	$ 10,448	
2034	$ 19,775	$ 10,218	
2035	$ 20,211	$ 9,993	
2036	$ 20,655	$ 9,774	
2037	$ 21,110	$ 9,558	
2038	$ 21,574	$ 9,348	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
Totals =		**$ 232,885 (B)**	**$ 16,800,000 (C)**

year (n)= 1, 2, 3,….
discount rate (i) = 7%

$$\text{Crash Benefits (@ year n)} = (\text{Crash Benefits})_{n-1} \times (1 + \text{Traffic Growth Factor})$$

$$\text{Present Worth Benefits (@ year n)} = (\text{Crash Benefits})_{n} \times 1/(1 + \text{Discount Rate})^{n}$$

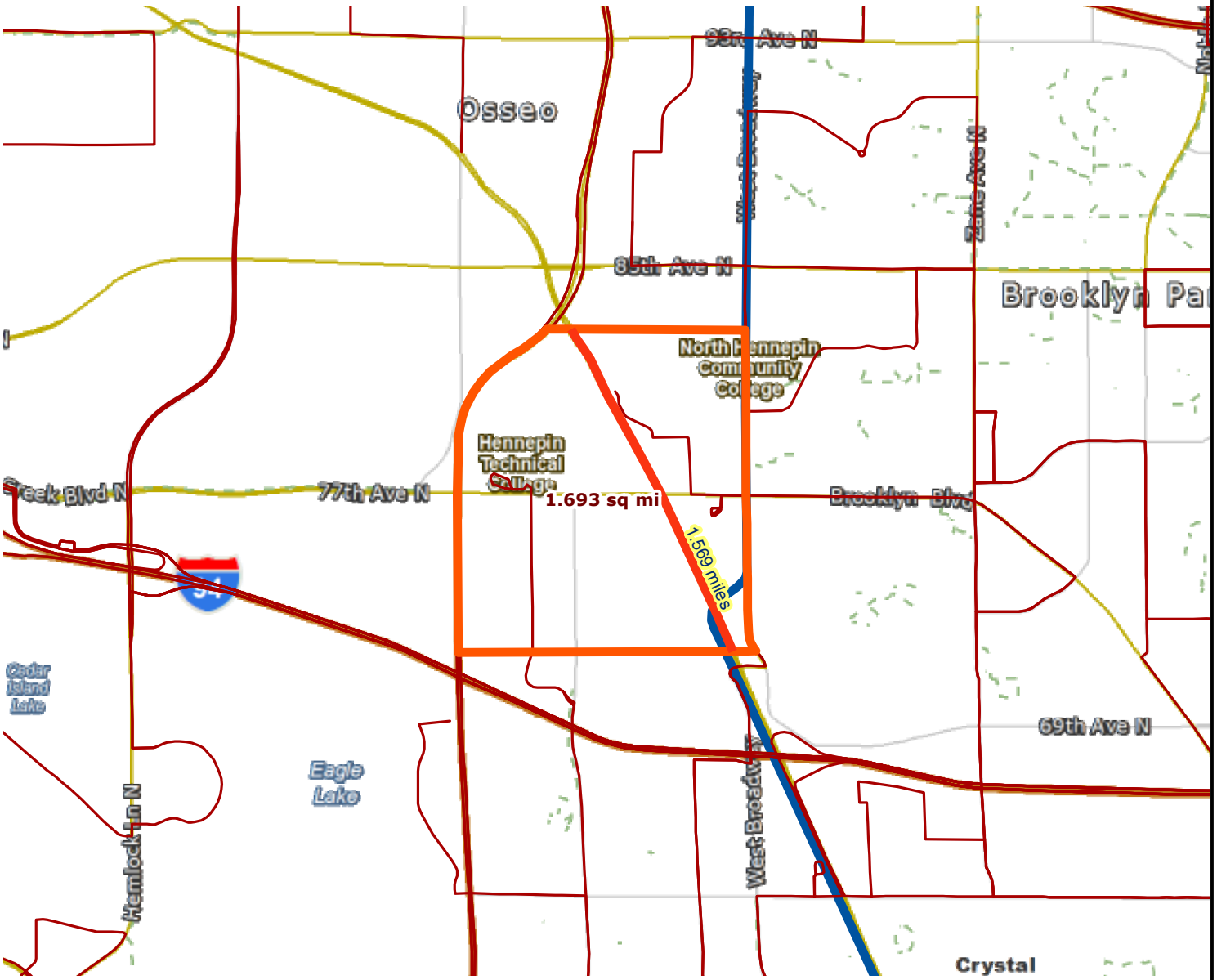
Transit Connections

Roadway Expansion Project: CSAH 81 (Bottineau Boulevard) Expansion | Map ID: 1414432101876

Results

Transit with a Direct Connection to project:
565 687 705 764
*Blue Line Extension

**indicates Planned Alignments*



Project
Project Area
Transit Routes
Planned Alignments
Light Rail, Blue Line Extension

0 0.425 0.85 1.7 2.55 3.4 Miles

Created: 10/27/2014
LandscapeRSA3

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

ENVIRONMENTAL ASSESSMENT
AND
PROGRAMMATIC SECTION 4(f) EVALUATION
for

State Project: SP 27-681-27 (Segment One - County Project 0118)
State Project: SP 27-681-29 (Segment Two - County Project 0119)
State Project: SP 27-002-92 (Railroad Safety Improvements in Segment One)
State Project: SP 27-090-08 (Pedestrian Safety Enhancements in Segment One)
Minnesota Project: *[Not Yet Assigned]*

HENNEPIN COUNTY STATE AID HIGHWAY 81 (BOTTINEAU BOULEVARD) CORRIDOR ROADWAY RECONSTRUCTION

From Trunk Highway 100 to CSAH 30 in
Cities: Robbinsdale, Crystal, Brooklyn Park, Osseo and Maple Grove, in County: Hennepin of Minnesota

Township:	Range:	Section(s):
T 29 N	R 24 W	6
T 118 N	R 21 W	4, 5, 9
T 119 N	R 21 W	18, 19, 29, 30, 32
T 119 N	R 22 W	11, 12, 13, 14

Submitted pursuant to 42 U.S.C. 4332
by the
U.S. Department of Transportation
Federal Highway Administration and
Hennepin County
for

Reconstruction of a 7.5-mile segment of County State Aid Highway 81 (CSAH 81), also known as Bottineau Boulevard, ultimately to a six-lane facility.

Contacts:

FHWA: Tim Anderson
Project Development Engineer
Galtier Plaza
380 Jackson Street, Suite 500
St. Paul, MN 55101-2909
Phone: 651-291-6114

Hennepin County: Craig Twinem
Design Division Engineer
Hennepin County
1600 Prairie Drive
Medina, MN 55340
Phone: 612-596-0360

Recommended:

James N. Grube
Director, Transportation Department and County Engineer

2/24/09
Date

Reviewed and Recommended:

for District State Aid Engineer — Date: 2/27/09

Approved:

for State Aid Engineer
State Aid for Local Transportation — Date: 3/13/09

Approved as per 23 CFR Part 771.119(c):

for Division Administrator, Federal Highway Administrator — Date: 4/20/09

TABLE OF CONTENTS

Page

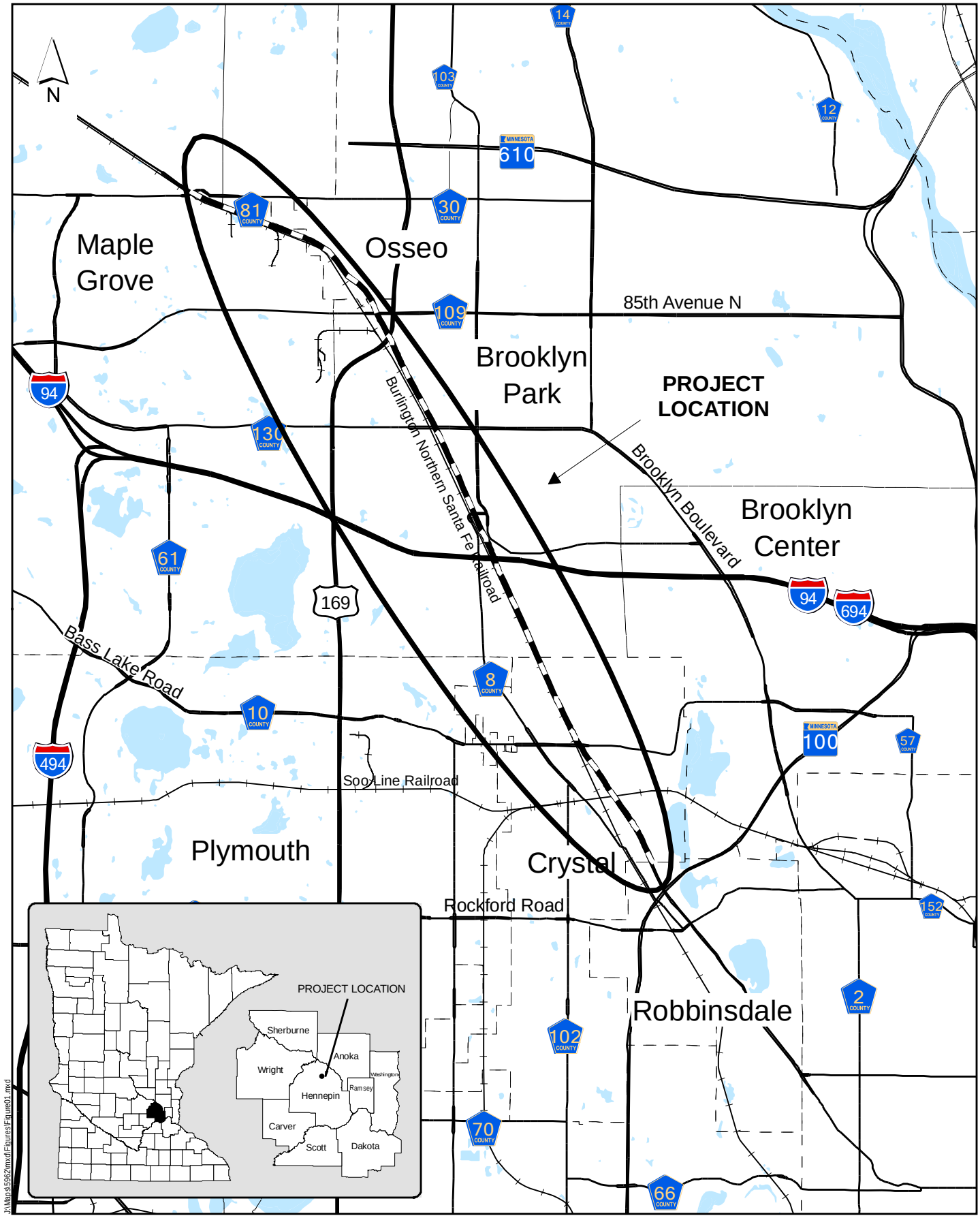
APPENDICES

APPENDIX A – FIGURES

H:\Projects\5962\EP\Reports\EA\EA Final\CSAH 81 Final EA draft 2-16-09.doc

LIST OF TABLES

Page



J:\Mend\45962\mxd\Figures\Figure01.mxd

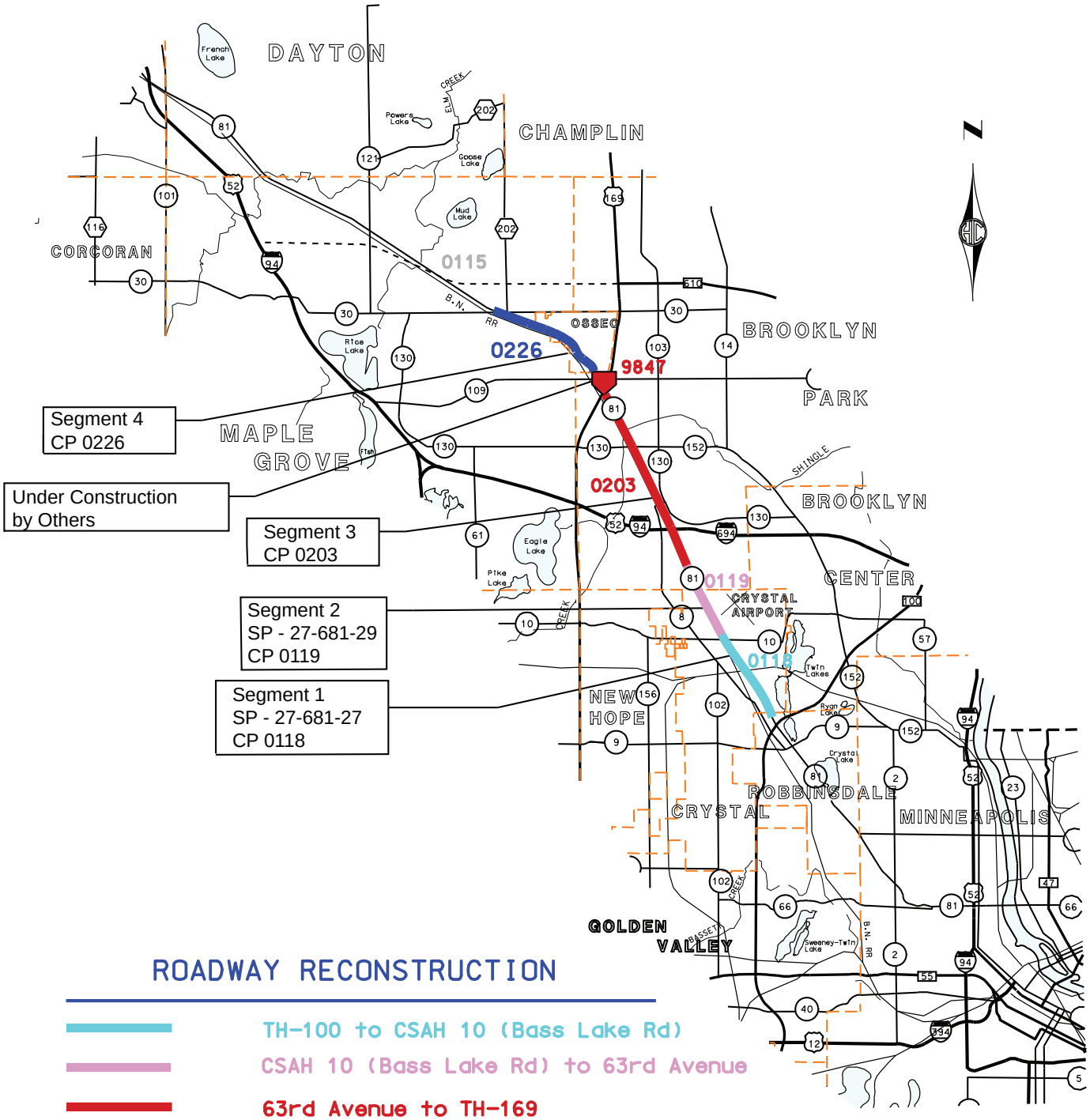
AREA LOCATION

Figure 1

COUNTY STATE AID HIGHWAY 81 (BOTTINEAU BOULEVARD)
ROADWAY RECONSTRUCTION

Hennepin County, Minnesota

Bottineau Boulevard
Project Development Summary



grapics/5962/figures/

Project Location

COUNTY STATE AID HIGHWAY 81 (Bottineau Boulevard)
ROADWAY CONSTRUCTION
Hennepin County, Minnesota

Figure 2

I. REPORT PURPOSE

This Environmental Assessment (EA) provides background information including:

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

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. 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.

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

II. HIGHWAY SECTION DESCRIPTION

Highway Section Termini
From: Trunk Highway 100 in Robbinsdale
To: CSAH 30 in Maple Grove
Length: 7.5 miles

Within the study area (see Figures 3A to 3D in Appendix A), County State Aid Highway (CSAH) 81 is a four-lane divided roadway with at-grade signalized intersections. The corridor has an "urban" curb and gutter design south of Wilshire Boulevard, using limited storm sewer appurtenances to convey stormwater. North of Wilshire Boulevard, the corridor has a "rural" design, using shoulders and ditches for stormwater conveyance. Access along the corridor consists of at-grade intersections with local and county roadways and interchanges with freeway facilities at Trunk Highway (TH) 100 and Interstate-94 (I-94). Adjacent land uses include residential, commercial, and industrial uses. CSAH 81 is classified as an "A" Minor Arterial Augmenter between 41st Avenue North in Robbinsdale/Crystal and I-94 in Brooklyn Park. It is an "A" Minor Arterial Expander between I-94 in Brooklyn Park and CSAH 30 in Maple Grove. The roadway's status as an "A" Minor Arterial facility within the Twin Cities metropolitan area indicates that it should provide a high level of mobility and have limited access to facilitate the through movement of vehicular traffic. It also indicates that CSAH 81 is eligible to receive federal funding for proposed roadway improvements.

Currently, CSAH 81 crosses over the Canadian Pacific (CP) Railroad between Corvallis Avenue and Wilshire Boulevard on a bridge (Bridge 5200) which is classified as structurally deficient. The sufficiency rating of the existing bridge is 47.5.

The Burlington Northern Santa Fe (BNSF) railroad parallels the CSAH 81 corridor from CSAH 10/Bass Lake Road to the northern project terminus. There are a number of crossings of the BNSF railway and cross streets in the CSAH 81 corridor. Coordination is occurring with the Minnesota Department of Transportation (Mn/DOT) Office of Freight and Commercial Vehicles for review of these crossings.

The Crystal Airport, located at approximately 60th Avenue North on the east side of CSAH 81, operates as a reliever airport in the Metropolitan Airports Commission (MAC) system. The airport's runway clear zone extends over CSAH 81 and places some constraints on intersection geometry and roadway access points. Coordination is occurring with staff from MAC, Mn/DOT Aeronautics, and the Federal Aviation Administration (FAA) during development of the plans for the CSAH 81 corridor. For a detailed discussion of the Crystal Airport in this EA refer to Section VI.S.

III. PROJECT PURPOSE AND NEED

A. Purpose/Objectives

The CSAH 81 corridor serves as an important component of the regional transportation system, supporting local and regional economic development and servicing commuters between the rapidly developing northern areas and the southern urbanized areas within Hennepin County. CSAH 81 is an important roadway connecting high capacity facilities (TH 100 and I-94, TH 169 and in the future TH 610) with the surrounding local roadway network. Increasing traffic volumes, growth and development, and congestion along the corridor threaten the ability of CSAH 81 to deliver safe and efficient transportation service to its users.

The purpose of this project is to:

- Improve mobility and capacity within the corridor;
- Improve safety within the corridor;
- Correct structural and roadway design deficiencies within the corridor; and
- Maintain consistency with regional and local plans.

B. Needs/Deficiencies

1. ROADWAY MOBILITY AND CAPACITY

Segments along CSAH 81 are experiencing congestion due to traffic volumes at or near capacity of the roadway. Increasing traffic volumes and congestion along the corridor threaten the ability of CSAH 81 to deliver safe and efficient transportation service to its users. Daily traffic volumes on the portion of CSAH 81 in the project area range from approximately 15,000 - 17,000 near the northern project limits in Maple Grove to more than 30,000 in Brooklyn Park near the I-94/I-694 interchange. Understanding the overall daily and peak hour traffic volumes along this corridor were critical to determining the roadway capacity needs. Due to the length of this project, and the ongoing review of the corridor needs, it was necessary to review a combination of historical (year 2002 and 2004) and "existing" (year 2007 and 2008) traffic data to determine if volumes have changed in this area. Detailed turning movement counts were collected at the key intersections along CSAH 81 in the year 2002. Construction along CSAH 81 in the City of Robbinsdale impacted traffic counts on the south end of

the corridor in year 2006 or later. Therefore, a comparison of the annual average daily traffic (AADTs) counts from year 2002, 2004 and 2007 was conducted to determine the validity of the year 2002 detailed turning movement count data. Table 1 presents this comparison and indicates that the fluctuation in the daily values is insignificant, thus validating use of the year 2002 turning movement counts (herein referred to as "existing") for purposes of this operations analysis.

TABLE 1
ANNUAL AVERAGE DAILY TRAFFIC (AADT) COMPARISON

Location on CSAH 81	Year 2002 Volumes (AADT)	Year 2004 Volumes (AADT)	Year 2007 Volumes (AADT) *
South of TH 100	17,900	21,100	15,900
47th Ave. N. to CSAH 10	25,300	25,700	24,400
CSAH 10 to 63rd Ave. N.	25,600	23,100	24,700
63rd Ave. N. to just south of I-94/I-694	24,700	27,300	26,300
South of I-94/I-694 to N. junction of I-94/I-694	30,800	30,200	33,000
N. junction of I-94/I-694 to W. 73rd Ave.	25,400	24,000	24,400
W. 73rd Ave. to CSAH 130/152	24,100	24,000	24,400
CSAH 130/152 to TH 169	23,700	24,400	21,800
TH 169 to CSAH 109	24,400	22,800	21,800
CSAH 109 to Broadway St.	25,100	24,400	22,800
Broadway St. to Zachary Ln.	16,700	18,100	17,800
Zachary Ln. to CSAH 30	12,700	15,000	16,700

* Year 2008 AADT volumes were not formally published at the time this document was written.

Capacity and congestion concerns will continue as the corridor experiences growth in traffic volumes and congestion resulting from increased population and employment. When a roadway approaches capacity, it is likely that there will be congested intersections and segments along the corridor. To determine if this was the case on CSAH 81, an operations analysis was conducted for the a.m. and p.m. peak hours at each of the key signalized intersections that impact mobility along the corridor. All intersections were analyzed using the Synchro/SimTraffic simulation software. Capacity analysis results identify a Level of Service (LOS), which indicates the quality of traffic flow through an intersection. Intersections are given a ranking from LOS A through LOS F. LOS A indicates the best traffic operation, with vehicles experiencing minimal delays. LOS A through D are generally considered acceptable by drivers. LOS E indicates that an intersection is operating at, or very near its capacity and that vehicles experience substantial delays. LOS F indicates an intersection where demand exceeds capacity or creates a breakdown in traffic flow. Results of the traffic operations analysis shown in Table 2 indicate that two intersections along CSAH 81 currently operate with substantial delay (LOS E or F) during the p.m. peak hour. This is due to high traffic demand on the mainline, which exceeds capacity and causes substantial queuing.

Two intersections (CSAH 10 [Bass Lake Road] and CSAH 130/CSAH 152 [Brooklyn Boulevard]) currently operate at an unacceptable LOS E or worse during the p.m. peak hour. Three additional intersections (I-94 South Ramp, CSAH 8, and Jefferson Highway North) have p.m. peak hour traffic volumes exceeding 85 percent of the capacity.

TABLE 2
EXISTING PEAK HOUR CAPACITY ANALYSIS LEVEL OF SERVICE RESULTS FOR CSAH 81 INTERSECTIONS

CSAH 81 Intersection	Level of Service (LOS)[1]	
	A.M. Peak	P.M. Peak
51st Ave. N./Corvallis Ave.	B	C
Wilshire Blvd.	C	B
CSAH 10 (Bass Lake Road)	*D*	**E**
63rd Ave. N.	*D*	*D*
I-94 South Ramp	C	*D*
I-94 North Ramp	B	B
CSAH 8 (71st Ave. N./W. Broadway)	*D*	*D*
Winnetka Ave./73rd Ave. N.	B	C
CSAH 130/CSAH 152	*D*	**F**
79th Ave. N.	A	B
Greenhaven Dr. N.	B	C
Jefferson Hwy. N.	*D*	*D*
Zachary Ln. N.	C	C
CSAH 30 (93rd Ave. N.)	B	C

[1] Intersections with poor LOS E or F are shown in bold. Intersections on the border of poor LOS D are shown in italics.

An operations analysis was also completed for forecast year 2030 to determine how well the existing intersections would operate under future traffic volumes without the proposed improvements. All key intersections were analyzed with existing geometrics and traffic control. For purposes of this analysis, it was assumed that signal timing at existing signalized intersections would be updated/optimized before year 2030. Year 2030 No Build level of service results are shown in Table 3. Intersections with poor LOS E or worse are shown in bold. Intersections on the border of poor LOS D are shown in italics.

As expected, under increasing future traffic volumes, about half of the intersections operate at a LOS E or F during the a.m. and p.m. peak hours, or both. Another four intersections are expected to operate at LOS D by year 2030.

2. SAFETY

The Department of Public Safety and Mn/DOT have adopted policies to move towards zero deaths (a goal to eliminate all transportation-related fatalities on all roadways). A number of segments along CSAH 81 currently experience safety concerns. A crash analysis was performed to assess the level of safety at these locations. Hennepin County maintains an extensive database with crash reports and summaries for all crashes that occur on county facilities. Crash data used in the analysis are for the years 2002, 2004, and 2005 (2003 crash data are excluded due to statewide problems with the crash information).

TABLE 3
2030 NO BUILD PEAK HOUR CAPACITY ANALYSIS LEVEL OF SERVICE RESULTS FOR CSAH 81 INTERSECTIONS

Intersection	Level of Service (LOS) [1]	
	A.M. Peak	P.M. Peak
51st Ave. N./Corvallis Ave.	**E**	**E**
Wilshire Blvd.	*D*	*D*
CSAH 10 (Bass Lake Road)	**E**	**F**
63rd Ave. N.	**E**	**F**
I-94 South Ramp	C	**F**
I-94 North Ramp	C	C
CSAH 8 (71st Ave. N./W.Broadway)	**F**	**F**
Winnetka Ave./73rd Ave. N.	*D*	*D*
CSAH 130	**F**	**F**
79th Ave. N.	B	C
Greenhaven Dr. N.	C	**F**
Jefferson Hwy. N.	**F**	**F**
Zachary Ln. N.	*D*	*D*
CSAH 30 (93rd Ave. N.)	*D*	*D*

[1] Intersections with poor LOS E or F are shown in bold. Intersections on the border of poor LOS D are shown in italics.

Table 4 shows the number of crashes, the 3-year crash rate, and the critical crash rate for study area segments and intersections. Actual and critical crash rates were calculated for intersections and segments within the corridor. The critical crash rate is calculated by adjusting the average crash rate for an intersection of similar size within the county system based on the amount of vehicular exposure to the intersection; crash severity does not enter into this calculation**.** When the actual crash rate exceeds the critical crash rate, the segment or intersection could be a hazardous location.

The results of the analysis show that one segment (CSAH 109/85th Avenue North to Central Avenue) in Brooklyn Park and Osseo and one intersection (CSAH 10 and CSAH 81) in Crystal have actual crash rates that exceed the critical crash rate.

Under the No Build condition, safety would diminish as intersections become increasingly congested. The vehicle carrying capacity of the existing CSAH 81 corridor is near its maximum with two main intersections already operating at unacceptable levels and three nearing their capacity. This limits the mobility in the corridor and on perpendicular routes. As intersections become near or over capacity and delays increase substantially, more crashes occur and the number of intersections whose actual crash rate exceeds the critical rate increase. It is not a coincidence that the one hazardous intersection (CSAH 81/CSAH 10) in the corridor (Table 4) is also operating poorly (Table 2). Under year 2030 No Build conditions, six intersections are expected to operate poorly in the a.m. peak hour and eight intersections are expected to operate poorly in the p.m. peak hour. In addition, many of the cross-streets have multiple movements from the same lane, which tends to increase crashes and limit the type of signal phasing.

TABLE 4
CRASH DATA ON CSAH 81 CORRIDOR, 2002, 2004, AND 2005 [(1)(2)]

Segment	Crashes									Actual 3-year Crash Rate	Critical Crash Rate	Actual Rate Exceeds Critical Rate
	Year 2002			Year 2004			Year 2005					
	Total	Fatal	Personal Injury	Total	Fatal	Personal Injury	Total	Fatal	Personal Injury			
N. of TH 100 to S. of 47th Ave.	1	0	0	0	0	0	2	0	0	0.65	1.89	No
N. of 47th Ave. to S. of 51st Ave.	6	0	4	5	0	4	3	0	1	1.16	1.55	No
N. of 51st Ave. to S. of Wilshire	2	0	2	0	0	0	2	0	1	0.38	1.59	No
N. of Wilshire to S. of CSAH 10	1	0	0	0	0	0	2	0	1	0.58	1.85	No
N. of CSAH 10 to S. of 63rd Ave.	6	0	3	2	0	2	5	0	2	0.48	1.32	No
N. of 63rd Ave. to S. of I-94	0	0	0	1	0	1	2	0	2	0.23	1.53	No
I-94/E. Jct. Interchange	6	0	3	3	0	1	2	0	2	3.88	5.42	No
N. of I-94 to S. of CSAH 8	1	0	0	0	0	0	0	0	0	0.17	1.81	No
N. of CSAH 8 to S. of 73rd Ave.	0	0	0	0	0	0	0	0	0	0.00	1.85	No
N. of 73rd to S. of CSAH 130/152	2	0	2	2	0	2	2	0	2	0.48	1.54	No
N. of CSAH 130 to S. of 79th Ave.	0	0	0	0	0	0	0	0	0	0.00	1.87	No
N. of 79th Ave. to S. of Greenhaven	0	0	0	0	0	0	0	0	0	0.00	1.93	No
N. of Greenhaven to S. of TH 169	0	0	0	1	0	0	2	0	1	0.36	1.67	No
N. of TH 169 to S. of CSAH 109	1	0	0	2	0	1	1	0	0	1.08	1.99	No
N. of CSAH 109 to E. of Central	**10**	**0**	**6**	**6**	**0**	**1**	**10**	**0**	**6**	**1.69**	**1.48**	**Yes**
W. of Central Ave. to M.P. 10.81	2	0	0	5	0	2	1	0	0	1.48	1.84	No
M.P. 10.81 to E. of Co. Rd. 202	0	0	0	2	0	0	2	0	1	0.27	1.49	No
W. of Co. Rd. 202 to E. of CSAH 30	0	0	0	0	0	0	0	0	0	0.00	2.02	No
Intersection												
CSAH 81/47th Ave. N.	3	0	0	4	0	0	4	0	0	0.34	0.72	No
51st Ave./Corvallis Ave.	2	0	0	3	0	1	5	0	0	0.30	0.92	No
Wilshire Blvd./Service Rd.	3	0	3	2	0	1	4	0	2	0.32	0.82	No
CSAH 81/CSAH 10	**16**	**0**	**4**	**18**	**0**	**7**	**13**	**0**	**6**	**0.97**	**0.86**	**Yes**
CSAH 81/63rd Ave. N.	8	0	6	5	0	3	7	0	6	0.50	0.89	No
CSAH 81/I-94 E. Jct. South Ramp	1	0	0	5	0	2	5	0	3	0.32	0.98	No
CSAH 81/I-94 E. Jct. North Ramp	4	0	0	2	0	1	3	0	3	0.21	0.95	No
CSAH 81/CSAH 8	10	0	7	6	0	2	9	0	6	0.58	0.88	No
CSAH 81/73rd Ave. N.	6	0	3	2	0	2	2	0	2	0.35	0.81	No
CSAH 81/CSAH 130/152	14	0	10	11	0	6	7	0	4	0.66	0.86	No
CSAH 81/79th Ave.	3	0	2	1	0	1	1	0	1	0.18	0.50	No
CSAH 81/Greenhaven Dr.	3	0	0	1	0	0	1	0	1	0.17	0.95	No
CSAH 81/CSAH 109	10	0	5	10	0	7	12	0	7	0.75	0.88	No
CSAH 81/Central Ave.	7	0	1	8	0	1	9	0	4	0.71	0.79	No
CSAH 81/CSAH 30	3	0	2	6	0	3	4	0	2	0.42	0.93	No

*Critical Crash Rate is calculated by adjusting the Average Crash Rate for an intersection of similar size based on the amount of vehicular exposure to the intersection

(1) 2003 crash data is excluded due to data quality issues.

(2) Crash rates are reported per Million Vehicle Miles (MVM).

Another safety concern within the project corridor is the existing number of local access connections to the CSAH 81 mainline. According to the Federal Highway Administration (FHWA), the crash rate increases as the density of access points increases[1]. Improved access management and side street/frontage road connections are needed to improve safety within the project corridor.

3. ROADWAY DESIGN AND CONDITION

CSAH 81 is an aging four-lane divided roadway that was originally constructed as part of the state's Trunk Highway system. The roadway was turned back to the County in 1988. The roadway was last graded and paved in 1957 and is considered to be in fair to poor condition, according to a Hennepin County report on roadway condition, and is in need of reconstruction of the roadbed rather than repaving. Photographs taken along the corridor illustrate several locations where cracking of the roadbed is particularly severe (see Appendix C).

In addition, the current rural roadway design north of Wilshire Boulevard does not provide adequate treatment of stormwater runoff along the CSAH 81 corridor, which has experienced substantial urbanization since the roadway was first designed and built. South of Wilshire Boulevard, the stormwater is collected by limited storm sewer systems and conveyed essentially untreated to Twin Lake.

The roadway's status as an "A" Minor Arterial facility within the Twin Cities metropolitan area indicates that it should provide a high level of mobility and have limited access to facilitate the through movement of vehicular traffic. However, the current rural design with its limited number and length of turn-lanes and its multiple accesses to local streets is not consistent with the roadway's "A" Minor Arterial designation, nor with the roadway's setting in a fully developed urban area. In addition, the roadway currently crosses the Canadian Pacific Railroad on a bridge (Bridge Number 5200) that has been classified as "Structurally Deficient". (See Section II for further discussion).

The Hennepin County Bicycle Transportation System Plan has identified the CSAH 81/BNSF corridor as a route for an on/off-roadway bikeway. The plan calls for the addition and improvement of bicycle facilities within the corridor.

4. CONSISTENCY WITH REGIONAL AND LOCAL PLANS

Hennepin County has identified the need to improve capacity and address design deficiencies along CSAH 81 in a number of plans. The 2000 Hennepin County Transportation Systems Plan identified areas where capacity deficiencies were anticipated and where roadway expansion was needed. CSAH 81 was documented as having "probable" and "potential" capacity deficiencies along the corridor for the entire study area.

[1] Federal Highway Administration. *Safety Effectiveness of Highway Design Features, Vol. I-VI.* Publication Nos. FHWA-RD-91-044 to -049. 1992.

To address capacity and other transportation deficiencies noted in the 2000 Hennepin County Transportation Systems Plan, the County prepared a Capital Improvement Program (CIP). The CIP outlines all of the projects that will receive funding in a five year period (2008-2012). Segment One of the CSAH 81 roadway reconstruction project (TH 100 in Robbinsdale to CSAH 10 in Crystal) is included in the 2010 element of the CIP as County Project Number 0118 (CP 0118). Additionally, Segment Two, CP 0119, from CSAH 10 in Crystal to 63rd Avenue North in Brooklyn Park, is identified in the CIP as a funded project.

In addition to having the first segment of the CSAH 81 roadway improvements in its CIP, Hennepin County has also applied for and received federal funding for these proposed roadway improvements. Funding for the Crystal segment of the project will be available in 2010.

IV. ALTERNATIVES

A. Alternative Under Consideration (Preferred Alternative)

The Preferred Alternative includes roadway reconstruction ultimately to a six-lane facility with intersection improvements and an urban section (curb, gutter, and storm sewer) from TH 100 in Robbinsdale (southern terminus) to CSAH 30 in Maple Grove (northern terminus). Improved access management and side street/frontage road connections will increase safety. Additional lanes at key intersections along the corridor provide the necessary through movement of vehicular traffic to enhance safety and provide lane continuity for CSAH 81 and cross-streets. Improved intersection capacity will reduce delay and congestion. The proposed design accommodates the forecast traffic volumes with acceptable LOS in 2030, except at the intersection with CSAH 130/CSAH 152. At this location there is a need for an additional through lane on the side street; this is addressed at the end of the discussion on the Preferred Alternative under the heading Transportation Benefits of the Preferred Alternative.

Additional through lanes are proposed since intersection improvements alone are not possible due to intersection spacing. Further, continuous additional lanes result in improved design continuity over repeating turn lane transitions.

The roadway will improve water quality and stormwater conveyance systems with new curb, gutter, and sewer as well as new ponding locations.

To better communicate the proposed improvements for the roadway, the CSAH 81 corridor was divided into four segments. See Figure 2. Roadway improvements are discussed for each segment of the corridor. See Figures 4A through 4J in Appendix A for a map of the project segments. It should be noted that funding will not necessarily follow a segment by segment basis.

Segment One (TH 100 to CSAH 10): County Project No. 0118

Segment One roadway improvements begin at TH 100 in Robbinsdale and extend to CSAH 10 in Crystal (See Figures 4A through 4C in Appendix A). Existing typical sections are shown on Figure 5A and proposed typical sections for the roadway are shown on Figure 6A in Appendix A.

Roadway Improvements

Segment One includes the reconstruction of CSAH 81 as a six-lane urban roadway. It also includes the construction of raised/depressed grass and concrete medians. Other improvements along CSAH 81 include intersection modifications, a new bridge over the Canadian Pacific/Soo Line Railroad, access management, and pedestrian/bicycle facilities. Improvements will be made to the at-grade BNSF Railway Company railroad crossing along the side street west of CSAH 81. These items are discussed below.

The stretch of roadway between TH 100 and Wilshire Boulevard would be constructed as a six-lane section but striped for four lanes with shoulders, on an interim basis, since traffic volumes in this stretch do not yet warrant six lanes. This is being done at the request of the community not to stripe for six lanes until needed. The provision of shoulders also provides refuge for disabled vehicles. An analysis was conducted to determine when the forecast demand volumes would likely exceed capacity of a four-lane facility. Results indicate that the CSAH 81 segment from TH 100 to Wilshire Boulevard would reach the capacity of a four-lane roadway between years 2020 and 2025. The County will monitor traffic volumes along CSAH 81 and side streets and stripe this segment for six lanes when warranted.

Intersection improvements along CSAH 81 are proposed at the following locations.

- 47th Avenue North
- Corvallis Avenue North
- Wilshire Boulevard
- CSAH 10

At these locations, a number of geometric changes are proposed. Most of the intersections include a slight realignment to accommodate additional turn lanes and roadway width. Additionally, most of the cross streets are widened at their intersection with CSAH 81 to accommodate left- and right-turn lanes.

All existing traffic signal systems will be replaced with modern equipment. All unsignalized intersections within the construction limits will be evaluated during final design to determine the appropriate traffic control.

The existing structurally deficient bridge over the Soo Line Railroad is proposed to be replaced with two new bridges (one northbound bridge (27B59) and one southbound bridge (27B58)). Replacement of this bridge is desirable to improve the safety of the separated grade crossings. The new bridges will be designed to accommodate pedestrians and bicyclists and the additional width of the new roadway.

Access along this segment of CSAH 81 will also change as part of the proposed improvements. Along the west side of CSAH 81 from 47th Avenue North to Corvallis Avenue North, the frontage road along CSAH 81 will be removed. Access to the side streets in this area will be limited to the parallel CSAH 8, located approximately 1/6 mile west of CSAH 81. Access from 49th Avenue North and Vera Cruz Avenue North to CSAH 81 will also be closed in this area. Along the east side of CSAH 81 from 47th Avenue North to 51st Avenue North the frontage road will be reconstructed with a greater setback from CSAH 81 at the intersections of 47th Avenue North and 51st Avenue North. Access from 49th Avenue North to CSAH 81 will also be closed in this area. The frontage road from CSAH 10 (Bass Lake Road) to the Crystal Airport will be removed and replaced with a backage road. The backage road will connect to CSAH 10 (Bass Lake Road) at Adair Avenue and follow Lakeland Avenue, Brunswick Avenue, and Colorado Avenue before resuming the frontage road alignment at the Crystal Airport. Airport Road will be realigned to intersect with the backage road.

In addition to roadway changes on CSAH 81 and at the cross streets, the proposed project also includes the construction of pedestrian and bicycle facilities. On the west side of CSAH 81, a trail is proposed from 47th Avenue North to Corvallis Avenue North and a sidewalk from Wilshire Avenue North to CSAH 10. On the east side of CSAH 81, trail segments are proposed from 47th Avenue North to Airport Road. Trail and sidewalk segments are also proposed on both sides of CSAH 10.

As part of the roadway reconstruction, railroad safety improvements, including signal and gates, will be made at the BNSF Railway Company crossing with CSAH 10/Bass Lake Road.

Ponding areas are proposed on the west side of CSAH 81 between Byron Avenue North and 48th Avenue North, at the northwest quadrant of CSAH 81 and Corvallis Avenue North, and on the east side of CSAH 81 south of Wilshire Boulevard.

Segment Two (CSAH 10 to 63rd Avenue North): County Project No. 0119

Segment Two roadway improvements begin at CSAH 10 (Bass Lake Road) in Crystal and go to 63rd Avenue North in Brooklyn Park (See Figures 4C and 4D in Appendix A). Existing typical sections are shown on Figures 5A and 5B and proposed typical sections for the roadway are shown on Figures 6A and 6B in Appendix A.

Roadway Improvements

Segment Two includes the reconstruction of CSAH 81 as a six-lane urban roadway. It also includes the construction of grass and raised medians along the roadway. Other changes along CSAH 81 include intersection modifications, access management, and pedestrian/bicycle facilities. Improvements will also be made to the at-grade BNSF Railway Company railroad crossing along the side streets west of CSAH 81. These items are discussed below.

Intersection improvements along CSAH 81 are proposed at 63rd Avenue North and at the intersection of Hampshire Avenue North and 63rd Avenue North. A number of

geometric changes are proposed at the intersection of CSAH 81 and 63rd Avenue North. The intersection includes a slight realignment to accommodate the additional traffic lanes on CSAH 81. The profile of CSAH 81 will be raised to improve the relationship between CSAH 81 and the railroad crossing at 63rd Avenue North. Additionally, 63rd Avenue North will be widened at its intersection with CSAH 81 to accommodate left- and right-turn lanes. An existing traffic signal at 63rd Avenue North will also be replaced.

Access along this segment of CSAH 81 will also change. On the east side of CSAH 81, right-in/right-out access from 60th Avenue North, 62nd Avenue North and 64th Avenue North will be closed. The frontage road south of 63rd Avenue North will be realigned to become the south leg of the intersection of 63rd Avenue North and Hampshire Avenue North. The frontage road north of 63rd Avenue North will no longer connect to 63rd Avenue North. The frontage road will terminate with a cul de sac between 63rd Avenue North and 64th Avenue North. Access will be maintained to the frontage road via Hampshire Avenue North.

In addition to roadway changes to CSAH 81 and at the cross streets, the proposed project also includes the construction of pedestrian/bicycle facilities along the corridor. Trail and sidewalk segments are proposed along both the north and south sides of 63rd Avenue near CSAH 81.

A new park and ride facility in the northwest quadrant of CSAH 81 and 63rd Avenue North, which opened in 2007, has space for 550 vehicles. This facility replaces the park and ride facility at 85th Avenue North which was displaced by the construction of the TH 169/CSAH 81 interchange by the Minnesota Department of Transportation.

As part of the roadway reconstruction, railroad safety improvements will be made at the BNSF Railway Company crossing with 63rd Avenue North.

Stormwater ponding areas are proposed in the northeast quadrant of CSAH 81 and 63rd Avenue North and in the southwest quadrant of the intersection of the realigned frontage road and 63rd Avenue North.

Segment Three (63rd Avenue to TH 169 Interchange Area): County Project No. 0203

Segment Three roadway improvements begin at 63rd Avenue North in Brooklyn Park and go to TH 169 in Brooklyn Park (See Figures 4D through 4G in Appendix A). Existing typical sections are shown on Figure 5B and proposed typical sections are shown on Figure 6B in Appendix A.

Roadway Improvements

Segment Three includes reconstruction of CSAH 81 as a six-lane urban roadway. It also includes the construction of grass and raised medians along the roadway. Other changes along CSAH 81 include intersection modifications, access management, and pedestrian/bicycle facilities. Improvements will also be made to the at-grade BNSF Railway Company railroad crossing along the side streets west of CSAH 81. These items are discussed below.

Intersection improvements along CSAH 81 are proposed at the following locations:

- Eastbound Ramp I-94/I-694
- Westbound Ramp I-94-/I-694
- CSAH 8/71st Avenue North
- 73rd Avenue North
- CSAH 130/CSAH 152
- 79th Avenue North
- Green Haven Drive North

At these locations, a number of geometric changes are proposed. Most of the intersections include a slight realignment to accommodate additional roadway width on CSAH 81. Additionally, most of the cross streets are widened at their intersection with CSAH 81 to accommodate left- and right-turn lanes. Existing traffic signals will also be replaced at all of the above locations.

The CSAH 130/CSAH 152 intersection operates at an unacceptable LOS using existing volumes. Two additional intersections (I-94 South Ramp and CSAH 8) have p.m. peak hour traffic volumes exceeding 85 percent of the capacity.

Additional roadway improvements along CSAH 81 within Segment Three include ramp and loop revisions and the replacement of an existing traffic signal at the I-94/I-694 interchange, pending Mn/DOT approval. Hennepin County staff has met with Mn/DOT staff regarding the proposed changes to the I-94 interchange ramp and will continue to coordinate with Mn/DOT, through detailed design, to determine the appropriate intersection design. Hennepin County is aware that the proposed interchange modification may require Federal Highway Administration (FHWA) approval via the Interstate Access Request process. Roadway improvements are also proposed at the CSAH 81/TH 169 interchange; these improvements will be completed by Mn/DOT when funding and approvals for the project are acquired. The proposed CSAH 81 roadway improvements for Segment Three terminate at the southerly limits of the proposed CSAH 81/TH169 interchange project.

Access along this segment of CSAH 81 will also change. Two private right-in/right-out driveway accesses to CSAH 81 will be closed in the vicinity of CSAH 130. Both properties will have full access to the local street system.

In addition to roadway changes on CSAH 81 and at the cross streets, the proposed project also includes the construction of pedestrian and bicycle facilities. Trails are proposed on the west side of CSAH 81 from 71st Avenue North/West Broadway to 85th Avenue North. Trails are also proposed on the east side of CSAH 81 from I-94/I-694 to TH 169 and on both sides of CSAH 130. Sidewalks are also proposed along other cross streets to make connections from the proposed intersections to local sidewalks.

As part of the roadway reconstruction, railroad safety improvements will be made at the BNSF Railway Company crossings with 71st Avenue North, 73rd Avenue North, Brooklyn Boulevard, and Green Haven Drive.

Stormwater ponding areas are proposed at the northeast quadrant of the CSAH 81 and I-94 intersection and just west of both the CSAH 8 and 79th Avenue North intersections

with CSAH 81. Reconstruction of this segment of CSAH 81 will also require replacement of a box culvert crossing of Shingle Creek in the area north of 79th Avenue North.

Segment Four (TH 169 Interchange Area to CSAH 30): County Project No. 0226

Segment Four roadway improvements begin at TH 169 Interchange with CSAH 81 in Brooklyn Park and go to CSAH 30 in Maple Grove. This segment also passes through the community of Osseo (See Figures 4G through 4J in Appendix A). Existing typical sections are shown on Figures 5B and 5C and proposed typical sections are shown on Figures 6B and 6C in Appendix A.

Roadway Improvements

Segment Four includes the reconstruction of CSAH 81 to a six-lane urban roadway. Mn/DOT is responsible for the improvements to the CSAH 81/TH 169 interchange. CSAH 81 roadway improvements will begin north of 85th Avenue North. The construction of grass and raised medians is also proposed along the roadway. Other changes along CSAH 81 include intersection modifications, access management, and pedestrian/bicycle facilities. Improvements will also be made to the at-grade BNSF Railway Company railroad crossing along the side streets west of CSAH 81. These items are discussed below.

Intersection improvements along CSAH 81 are proposed at the following locations:

- 4th Avenue SE
- Jefferson Highway North
- Future 89th Avenue North Extension
- School Road
- Zachary Lane North
- CSAH 30/93rd Avenue North

Improved and/or new turn lanes will be provided on the cross streets and on CSAH 81. At these locations, a number of geometric changes are proposed. Most of the intersection improvements will include a slight realignment to accommodate additional roadway width on CSAH 81. Additionally, most of the cross streets will be widened at their intersection with CSAH 81 to accommodate left- and right-turn lanes. Existing traffic signals will also be replaced at all of the above intersections, with the exception of 4th Avenue SE, future 89th Avenue North extension, and School Road. These intersections are currently unsignalized and will be evaluated during final design to determine if signals are warranted.

The Jefferson Highway North intersection has p.m. peak hour traffic volumes exceeding 85 percent of the capacity. If traffic volumes continue to increase at a rate of one percent per year, this intersection would be over-capacity and begin to operate unacceptably sometime before 2013.

Access along this segment of CSAH 81 will also change. Full access will be removed at the intersections of CSAH 81 and 2nd Avenue S.E. and 1st Avenue NW and Wellington Lane North. Both 2nd Avenue S.E. and Wellington Lane North will be connected to reconstructed access points via frontage roads. First Avenue N.W. will be

connected to Central Avenue via 1st Street N.W. Right-in/right-out access will be removed at the intersection of CSAH 81 and 89th Avenue. The existing full access of 4th Street SE at CSAH 81 will be reconstructed as a right-in/right-out access.

Motorists will be able to access CSAH 81 at Jefferson Highway North. A frontage road will also be constructed on the east side of CSAH 81 from the Osseo/Maple Grove border to Wellington Lane. The north end of the corridor ties into the CSAH 81 segment built under the TH 610 project, which is currently striped as four lanes with shoulders.

In addition to the roadway changes on CSAH 81 and at the cross streets, the proposed project also includes the construction of pedestrian/bicycle facilities along the corridor. Trails are proposed on both sides of CSAH 81 from 85th Avenue North to CSAH 30. Sidewalk connections are also proposed along several of the cross streets to provide pedestrian connections from the intersection to the local sidewalk system.

As part of the roadway reconstruction, railroad safety improvements will be made at the BNSF Railway Company crossings with 85th Avenue North, Jefferson Highway/Central Avenue, Zachary Lane, and 93rd Avenue North/CSAH 30.

A ponding area is proposed near TH 169 and CSAH 81 in Brooklyn Park. Additional ponding for this segment will be addressed in the Maple Grove Stormwater Management Plan as part of the City's comprehensive plan update and stormwater treatment areas will be identified and allocated as adjacent property develops or becomes available.

Intersection Improvements for all Segments along the CSAH 81 Corridor

Plans for reconstruction of CSAH 81 include improvements to major cross street intersections and portions of most cross streets. These improvements are identified along the length of the corridor and frequently include the addition of dedicated turn lanes. Pedestrian safety features, such as pedestrian refuges and crosswalk striping, are also included in the design for most intersections. Existing traffic signal systems will be replaced with new state-of-the-art systems including pedestrian phase "count-down" timers, except as prohibited by the proximity to the railroad. Existing and proposed intersection geometrics can be found in Tables 5 and 6. Proposed intersection improvements are shown in Figures 4A through 4J in Appendix A. Other pedestrian improvements such as lighting, crossing timing, and connectivity to local systems will be addressed during the design phase of the project.

Transportation Benefits of Build Alternative

The Preferred Alternative will provide additional capacity to accommodate the forecasted increase in vehicles. See Table 7 for future traffic volumes under Build conditions. These volumes are from the March 7, 2006 *Forecast Update Memorandum* prepared by SRF Consulting Group, Inc. A traffic demand forecast was completed for the proposed project. A complete copy of the demand forecast memorandum from January 7, 2003 County Road 81 Traffic Forecast (Year 2025) and the March 7, 2006 Forecast Update (Year 2030) can be obtained from Hennepin County.

TABLE 5
EXISTING INTERSECTION GEOMETRICS

CSAH 81 at:	Southbound Number of Lanes			Northbound Number of Lanes			Eastbound Number of Lanes			Westbound Number of Lanes		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
CSAH 30 (93rd Ave.)	1	2	1	2	2	1	1	2	1	1	2	1
Zachary Ln.	1	2	1	1	2	1	1	2	1	2	2	1
Jefferson Hwy.	1	2	1	1	2	1	1	1	1		>2<	
Greenhaven Dr.	1	2	1	1	2	1	1	1 <		2	1 <	
79th Avenue	1	2			2	1				1		1
CSAH 130/152	2	2	1	1	2	1	1	2	1	1	2	1
73rd Ave./Winnetka Ave.	1	2	1	1	2	1	1	1	1	1	1 <	
CSAH 8	1	2	1	1	2	1	1	2 <		2	1 <	
I-94 North Ramp	1	2			2	1				1		1
I-94 South Ramp	1	2			2	1				1		1
63rd Ave.	1	2	1	1	2	1	1	2	1	1	2 <	
CSAH 10	1	2	1	1	2	1	2	2	1	1	2	1
Wilshire Blvd.	1	2	1	1	2	1		> 1	1		> 1	1
51st Ave./Corvallis Ave.	1	2	1	1	2	1		> 1	1		> 1 <	

LT is left-turn lane; TH is thru lane; RT is right-turn lane
< Denotes shared lane.

TABLE 6
PROPOSED INTERSECTION GEOMETRICS

CSAH 81 at:	Southbound Number of Lanes			Northbound Number of Lanes			Eastbound Number of Lanes			Westbound Number of Lanes		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
CSAH 30 (93rd Ave.)	2	3	1	2	3	1	1	2	1	1	2	1
Zachary Ln.	1	3	1	1	3	1	2	2	1	2	2	1
Jefferson Hwy.	1	3	1	1	3	1	1	1 <		1	1<	
Greenhaven Dr.	1	3	1	1	3	1	1	1 <		2	1 <	
79th Ave.	1	3			3	1				1		1
CSAH 130/152	2	3	1	2	3	1	2	2	1	2	2	1
73rd Ave./Winnetka Ave.	1	3	1	1	3	1	1	1	1	1	1 <	
CSAH 8	1	3	1	1	3	1	2	2	1	2	2	1
I-94 North Ramp	2	3			3	1				2		2
I-94 South Ramp	2	3			3	1				2		1
63rd Ave.	2	3	1	1	3	1	2	2	1	2	2	1
CSAH 10	2	3	1	2	3	1	2	2	1	1	2	1
Wilshire Blvd.	1	3	1	1	3	1		> 1	1		> 1	1
51st Ave./Corvallis Ave.	1	2[(1)]	1	1	2[(1)]	1	1	1	1	1	1	1

LT is left-turn lane; TH is thru lane; RT is right-turn lane

< Denotes shared lane.

[(1)] Design provides for wide shoulders which could be converted to an additional thru lane if, and when, it is needed.

TABLE 7
YEAR 2030 BUILD ANNUAL AVERAGE DAILY TRAFFIC (AADT) SIX-LANE SCENARIO

Location on CSAH 81	Year 2004 Volumes (AADT) *	Year 2030 Build (AADT)
South of TH 100	21,100	25,000
47th Ave. N. to CSAH 10	25,700	36,000
CSAH 10 to 63rd Ave. N.	23,100	35,000
63rd Ave. N. to just south of I-94/I-694	27,300	36,000
South of I-94/I-694 to N. junction of I-94/I-694	30,200	46,000
N. junction of I-94/I-694 to W. 73rd Ave.	24,000	40,000
W. 73rd Ave. to CSAH 130/152	24,000	38,000
CSAH 130/152 to TH 169	24,400	39,000
TH 169 to CSAH 109	22,800	39,000
CSAH 109 to Broadway St.	24,400	36,000
Broadway St. to Zachary Ln.	18,100	30,000
Zachary Ln. to CSAH 30	15,000	24,000

* Year 2004 AADTs are presented here because these values were presented as part of the March 7, 2006 *Forecast Update Memorandum*. See Table 1 for comparison of year 2002, 2004 and 2007 AADTs.

Year 2030 Build Intersection Operations

To assess intersection operations following the proposed improvements, an intersection operations analysis was conducted for year 2030 under Build conditions (six lanes). Results of the analysis, as listed in Table 8, indicate that all intersections are expected to operate at an acceptable LOS D or better during the a.m. and p.m. peak hours, except the CSAH 130/CSAH 152 intersection during the p.m. peak hour.

TABLE 8
YEAR 2030 BUILD PEAK HOUR CAPACITY ANALYSIS LEVEL OF SERVICE RESULTS CSAH 81 INTERSECTIONS (SIX-LANE SCENARIO)

Intersection	Level of Service	
	A.M. Peak	P.M. Peak
51st Ave/Corvallis Ave.	B	C
Wilshire Blvd.	C	B
CSAH 10 (Bass Lake Road)	D	D
63rd Ave.	D	D
I-94 South Ramp	B	C
I-94 North Ramp	B	C
CSAH 8 (71st Ave./W Broadway)	D	D
Winnetka Ave./73rd Ave.	B	B
CSAH 130/152	D	E/F
79th Ave.	A	B
Green Haven Dr.	B	C
Jefferson Hwy.	D	D
Zachary Ln.	C	D
CSAH 30 (93rd Ave.)	C	C

To improve the operations at the CSAH 130/152 intersection, a six-lane roadway would be needed on CSAH 130. No reasonable additional improvements are possible for CSAH 81, as the proposed geometrics already include dual left-turn lanes, three through lanes and exclusive right-turn lanes. The design of this intersection will provide for expansion of CSAH 130/152 to six-lanes in the future. It is expected that this intersection, with the proposed improvements, will operate at an acceptable LOS and capacity until year 2020-2025.

Summary

The additional lanes and intersection improvements would provide increased capacity, help alleviate congestion, and improve traffic flow. Improved traffic flow would be expected to lead to improved safety of the roadway through a reduction in the number of crashes.

B. Alternatives Considered But Rejected

1. No Build Alternative

The No Build Alternative would maintain the existing four-lane rural roadway, without intersection improvements. This alternative was not chosen as the Preferred Alternative as it would not address traffic operations, safety concerns, or roadway and pedestrian conditions. However, the No Build Alternative is used for a basis of comparison throughout this document.

2. Design Alternatives

When this project was first initiated, a transit component, BRT, was included as one of its elements. Accordingly, several design alternatives were developed for roadway and busway configurations along the CSAH 81 corridor. These alternatives are discussed below. An evaluation of these alternative concepts is summarized in Table 9.

Initially, it was assumed that proposed roadway project impacts to the BNSF Railway Company property were to be avoided. This was primarily due to the fact that the timeline necessary to acquire railroad property or easements for busway and roadway use would be greater than the proposed design and construction schedule. Therefore, several design alternatives were developed along the corridor with this restriction in mind. The alternatives developed were evaluated and recommendations were made by the Project Management Team, the Technical Advisory Committee, and the Community Advisory Committee. The following paragraphs summarize these alternatives.

Four-lane roadway with busway on outside lanes (six-lane footprint constrained on the east side of CSAH 81): A design alternative with four urban section roadway lanes and two adjacent bus lanes was developed. This alternative included two lanes in each direction, separated by a median and a bus lane along the outside lane of the roadway. Reconstruction of existing frontage roads was included, where appropriate. This alternative constrained the construction on the east side of CSAH 81 to match the existing easterly edge of the east frontage road, and expanded the roadway facility to

TABLE 9
EVALUATION OF ALTERNATIVE CONCEPTS CONSIDERED BUT REJECTED

Evaluation Criteria	Alternatives					
	No Build	Four-lane roadway with busway on outside lanes (constrained on east side of CSAH81)	Four-lane roadway with busway on outside lanes (constrained on west side of CSAH 81)	Four-lane roadway with separated busway west side of CSAH 81	Four-lane roadway with median busway	Six-lane roadway with exclusive busway on BNSF right of way
BNSF acquisitions required	None	Yes	No	Yes	No	Yes
Provides six roadway lanes	No	No	No	No	No	Yes
Right of way acquisitions	None	Low	Medium	High	High	High
Cost (construction/operations)	None	Medium	Low	High	Medium	High
Traffic Operations (roadway-busway) • Conflicts at intersections • Intersection capacity	• No • Neutral	• Yes • Capacity decreases	• Yes • Capacity decreases	• Yes • Capacity decreases	• No • Neutral	• No • Neutral
Strong transit presence	No	Yes	Yes	Yes	Yes	Yes

the west. It would have required the acquisition, or negotiation for use, of a portion of the BNSF Railway Company property at several locations along the length of the corridor. This alternative was considered but rejected primarily due to the impact to the railroad corridor, which was to be avoided based on the design assumptions, and due to the need for six traffic lanes to meet traffic demand.

Four-lane roadway with busway on outside lanes (six-lane footprint constrained on the west side of CSAH 81): A design alternative with four urban section roadway lanes and two adjacent bus lanes was developed. This alternative was similar to the alternative described above except that the construction was constrained on the west edge to ten feet east of the existing BNSF Railway Company right of way and expanded the roadway facility to the east. This shift to the east would have required the acquisition of several additional properties along the east side of CSAH 81 to accommodate the construction of the roadway, busway, and frontage roads. Although this alternative had a relatively lower cost to construct than the other alternatives considered, several operational issues were created by this alternative. For example, the weaving of busses and general traffic at intersections creates confusion among right-turning motorists and busses that are turning to or from the bus lane. In addition, traffic analysis shows that when a busway "queue jump phase" is added to the traffic signal to give bus operation a travel time advantage, it causes a reduction in the intersection capacity by reducing mainline and side street green time. This alternative was rejected primarily for these reasons. The need for six lanes to meet the anticipated traffic demand also precluded this alternative.

Four-lane roadway with a separated busway on the west side of CSAH 81: A design alternative with four urban section roadway lanes separated by a median together with a two-lane urban section busway located west of the CSAH 81 roadway improvement and the reconstruction of existing frontage roads was also developed. The busway was separated from the southbound CSAH 81 traffic lanes by a proposed median and the easterly frontage road was separated from the northbound CSAH 81 traffic lanes by a proposed median. This alternative was constrained by the existing easterly frontage road curb line and by the easterly BNSF Railway Company property, similar to the alternatives described above. Due to the increased width of the roadway, busway, and frontage road, this alternative affected more properties on the east side of the roadway and created more impact into the BNSF Railway Company property than the two alternatives described above. Although this alternative provides a strong permanent transit presence, demonstrates support for Transit Oriented Development, and provides for better pedestrian access to the park and ride facility at 63rd Avenue North, it creates several problems. Among these are the increased cost to construct and maintain the facility, the additional right of way impacts, and the need to negotiate with the BNSF Railway Company for easements. In addition, traffic conflicts are created between vehicles crossing the busway and busses turning into and from the busway, resulting in reduced intersection capacity, particularly for right-turning vehicles from CSAH 81. This alternative was rejected primarily for these reasons and the need for six lanes to meet the anticipated traffic demand also precluded this alternative.

Four-lane roadway with median busway: A design alternative with four urban section roadway lanes separated by medians and a two lane urban section busway in the center

of CSAH 81 was developed. The busway and associated stations were located between medians that separated northbound and southbound CSAH 81 traffic. A median separating CSAH 81 traffic from the reconstructed frontage roads was also included in this alternative. Due to the increased width of the roadway, busway, and frontage road, this alternative affected more properties on the east side of the roadway and created more impact into the BNSF Railway Company property than the curb lane busway alternative described above. The construction cost of this alternative is greater than the alternative with the outside lane busway and less than the alternative with a separated busway on the west side of CSAH 81. This alternative provides a strong permanent transit presence and preserves intersection capacity by substantially reducing the need for bus turning movements.

This alternative, with the BRT component, was originally selected for development of a detailed preliminary design and layout in 2002 due to its reduction in negative traffic intersection impacts, compared to other alternatives, and the need to avoid the BNSF Railway Company property to the extent possible. As the preliminary detailed design progressed, concerns were raised about pedestrian access to the busway across CSAH 81. At the same time, renewed negotiations with the BNSF Railway Company for use of a portion of its corridor made the median busway a less desirable alternative. The alternative was subsequently rejected in favor of the alternative discussed below. It should be noted that traffic volume forecasts were updated during the preliminary design phase when the Metropolitan Council updated its regional model from year 2025 to 2030. The revised forecasts indicate that the four-lane roadway would be inadequate within the life of the project and that a six-lane facility would be needed to meet demand.

Six-lane roadway with exclusive busway on BNSF Railway Company right of way: A design alternative with six urban section roadway lanes and a two-lane urban section bus rapid transit (BRT) facility located on BNSF Railway Company right of way was also developed. An exclusive busway on BNSF Railway Company right of way, immediately east of the railroad tracks, allows busses to avoid the delays and congestion that busses travelling with regular traffic would experience. This alternative was selected for development of a detailed design and layout in 2006 and an analysis of the impacts of the project was undertaken. However, in 2008 a Bottineau Boulevard Transit Alternatives Analysis was initiated by the Hennepin County Regional Rail Authority to study, in additional detail, the type, configuration, and mode of a transit element within this corridor. This analysis is currently underway, and since roadway improvements along the CSAH 81 corridor are required regardless of the study's decision, Hennepin County has continued with the EA for roadway improvements. Therefore, this alternative was subsequently rejected in favor of the Preferred Alternative as described in Section IV.A.. If a BRT facility is recommended in the Bottineau Boulevard corridor as a result of the Hennepin County Regional Rail Authority's Transit Alternatives Analysis, a separate environmental document would be needed to allow that plan to proceed. Appendix D of this document contains a Technical Memorandum identifying key findings and studies conducted for the BRT component before it was removed from the project.

V. PROJECT COST, FUNDING, & SCHEDULE

A. Estimate of Cost

The anticipated cost for reconstruction of the CSAH 81 roadway and associated facilities between TH 100 in Robbinsdale and CSAH 30 (93rd Avenue North) in Maple Grove, including right of way acquisition costs is anticipated to be $109.5 million. This does not include railroad acquisition costs, enhanced streetscape costs and railroad crossing improvement costs and is based on anticipated 2007 construction and right of way acquisition costs. The estimated project costs, by segment, are anticipated to be as follows:

County Project No. 0118:	
- Roadway Construction:	$ 23.5 Million
- Right of Way and Easements:	$ 17.8 Million
County Project No. 0119:	
- Roadway Construction:	$ 10.9 Million
- Right of Way and Easements:	$ 11.3 Million
County Project No. 0203:	
- Roadway Construction:	$ 24.1 Million
- Right of Way and Easements:	$ 2.3 Million
County Project No. 0226:	
- Roadway Construction:	$ 16.5 Million
- Right of Way and Easements:	$ 3.1 Million
Total	**$109.5 Million**

B. Anticipated Funding

Funding for the proposed improvements will not necessarily follow a segment-by-segment basis as described in the project description. At the time the EA was completed, funding for two of the four project segments had been secured: Segment One, TH 100 to CSAH 10 (CP 0118); and Segment Two, CSAH 10 to 63rd Avenue North (CP 0119).

Hennepin County was awarded $5.885 million of federal funding, obtained through the Metropolitan Council Surface Transportation Program (STP) for Segment One roadway improvements. Hennepin County was also awarded approximately $320,000 in federal funding (Section 130 Rail Safety Funds) for the railroad safety improvements in this segment. Hennepin County obtained an additional $750,000 in federal funding for pedestrian safety enhancement as part of the federal Transportation, Community, and System Preservation (TCSP) funding process. The remainder of the Segment One roadway reconstruction project construction and right of way and easement acquisition costs will be funded by Hennepin County, the City of Robbinsdale, and the City of Crystal in accordance with the Hennepin County Cost Participation Policy.

Hennepin County was awarded $7.84 million of federal funding, obtained through the Metropolitan Council STP for Segment Two roadway improvements. The remainder of the Segment Two roadway reconstruction project construction and right of way and easement acquisition costs will be funded by Hennepin County, the City of Crystal, and the City of Brooklyn Park in accordance with the Hennepin County Cost Participation Policy.

Segment One is in the 2009 – 2012 State Transportation Improvement Program (STIP).

Federal fiscal year 2010, Sequence # 1826 (STP funds)

Estimated cost shown in STIP: $ 24,062,500

Federal funding shown in STIP: $ 5,885,000

The pedestrian safety enhancements in Segment One are also in the 2009-2012 State STIP.

Federal fiscal year 2010, Sequence # 1826 (TCSP funds)

Estimated cost shown in STIP: $ 937,500

Federal funding shown in STIP: $ 750,000

Segment Two is in the 2009-2012 STIP

Federal fiscal year 2012, Sequence # 2105 (STP funds)

Estimated cost shown in STIP: $ 10,080,000

Federal funding shown in STIP: $ 7,840,000

Segments Three and Four of the project have not been funded at this time. They will be constructed as funding becomes available.

C. Anticipated Schedule

Tentative schedules for the County Project No. 0118 and 0119 improvements (Segment One and Segment Two) is described below. A detailed schedule for all segments has not yet been determined due to the uncertainty of the timeline for construction and funding of all segments.

Preliminary Design	January 2006 to November 2007
Public Information Meetings	June 2006 to July 2007
City Council Preliminary Layout Approvals	December 2006 to November 2007
Environmental Assessment	Summer/Fall 2008
Public Hearing	Fall 2008
EIS Need Decision/FONSI	Winter 2008/2009

Segment One

Detailed Design	Fall 2007 to Winter 2008/2009
Right of Way Acquisition Process	Fall 2008 to Summer 2009
Approval of FHWA to Bid	Summer 2009
Contract Letting	Winter 2010
Construction	March 2010 to November 2011

Segment Two

Detailed Design	2009/2010
Right of Way Acquisition Process	2010/2011
Approval of FHWA to Bid	Summer 2011
Contract Letting	Winter 2012
Construction	March 2012 to November 2013

The other segments of the project would likely require a similar timeframe but would not begin until a later date, when appropriate funding sources have been identified.

D. Future Stages or Improvements

The project as currently proposed will be constructed in segments to limit impact to roadway users during construction and is dependent on the funding for each stage. Generally, each segment will be constructed in stages to keep the roadways open to traffic during construction as much as possible, except as specifically noted below. Specific details for each stage of construction will be determined during the final design of the project. The tentative schedule, dependent on funding, for each segment of the project is as follows (refer to Section IV.A for more detailed descriptions of project segments):

- The County Project No. 0118 segment is currently identified, and partially funded, in the County's Capital Improvement Program (CIP) for construction in 2010. This project will generally be staged to keep the roadways open to traffic during construction, but a road closure is being considered between Corvallis Avenue and Wilshire Boulevard to allow for replacement of the "structurally deficient" bridge over the Soo Line/Canadian Pacific Railroad. The traffic would be detoured if this closure is deemed appropriate during final design of the project.

- The County Project No. 0119 segment is currently identified as a provisional project in the County's CIP for construction in 2012.

- The County Project No. 0203 segment is not currently programmed in the County's CIP but would be constructed as a separate segment once funding becomes available.

- The County Project No. 0226 segment is currently not programmed in the County's CIP but would be constructed as a separate phase once funding becomes available.

- Mn/DOT, Hennepin County, and the Cities of Osseo and Brooklyn Park are currently under agreement for the construction of the TH 169/CSAH 81 interchange,

including a portion of CSAH 81 through the interchange area. Construction of this segment, County Project No. 9847, began in July 2008. The TH 169 interchange project is being designed and administered by Mn/DOT, separate from the other segments of the CSAH 81 project described here.

- Mn/DOT and Hennepin County cooperated on the reconstruction of CSAH 81 in the future common area of CSAH 81 and TH 610 in the City of Maple Grove. This segment of the roadway reconstruction is County Project No. 0115 and was undertaken in 2005 and 2006 as a project separate from the other segments of the CSAH 81 project and is already complete.

VI. SOCIAL, ECONOMIC AND ENVIRONMENTAL (SEE) IMPACTS

A. Hazardous Materials

The presence of potentially contaminated properties (defined as properties where soil and/or groundwater is impacted with pollutants, contaminants, or hazardous wastes) is a concern in the development of roadway projects because of potential liabilities associated with construction personnel encountering unexpected wastes, contaminated soil, or groundwater. Contaminated materials encountered during roadway construction projects must be properly handled and treated in accordance with state and federal regulations. Further, improper handling of contaminated materials can worsen their impact on the environment. Contaminated sites must be treated appropriately to avoid or minimize potential groundwater contamination. Contaminated materials also cause adverse impacts by increasing construction costs and causing construction delays, which can also increase project costs.

Two Phase I Environmental Site Assessments (ESAs) were completed for the broader roadway project corridor, in general conformance with the American Society of Testing and Materials standards. The first ESA (Phase I ESA – CSAH 81 from Xerxes Avenue to 85th Avenue North in Minneapolis, Robbinsdale, Crystal, and Maple Grove, Minnesota, DPRA Environmental Consulting, Inc.) was completed in June 2002. Data collected from Xerxes Avenue to TH 100 was used for the EAW that was completed for improvements to CSAH 81 within the Cities of Minneapolis and Robbinsdale. That project is currently under construction. The second ESA was completed in July 2003 (Phase I ESA – CSAH 81 Corridor from 85th Avenue to CSAH 30, Osseo, and Maple Grove, Minnesota, DPRA Environmental Consulting, Inc.) The review area for environmental sites was limited to within approximately 500 feet of the outermost edge of the pavement of the proposed roadway improvements. Copies of the Phase I ESA reports have been placed on file and are available for review at Hennepin County.

Sites of potential concern identified by the Phase I ESAs can be categorized into three risk areas: high, medium, and low environmental risk. In general, high environmental risk sites are properties that have a documented release of chemicals or other strong evidence of contamination such as soil staining or storage of large volumes of petroleum or other chemicals, and sites enrolled in the Minnesota Pollution Control Agency (MPCA) Voluntary Investigation and Cleanup (VIC) program. These sites have the greatest potential for high cleanup costs and/or environmental liability and are

the focus of the Phase 1 ESA report's recommendations. Medium and low potential sites do not merit additional investigation, but if contaminants are discovered while the roadway is under construction, they will be dealt with in accordance with the Construction Contingency Plan developed by Hennepin County Environmental Services.

The two Phase I ESAs identified 213 known or potentially contaminated properties in the total study area: 63 high environmental risk sites, 49 medium risk sites, and 101 low risk sites. The majority of the high potential sites along CSAH 81 are former filling stations or auto repair facilities. They are located within 300-500 feet of the roadway, and have amassed documented releases of pollutants to the subsurface, such as a leak or spill. Strategies for these sites were described on a case by case basis in the document, and most of the high potential sites recommended additional soil testing be done due to a record of spills, leaks from underground storage tanks, or discovery of other groundwater contaminants.

Hennepin County contracted for additional geotechnical testing at high potential sites within the anticipated construction limits. The remainder of the sites was determined to be of minimal concern since construction activities were not likely to disturb existing conditions.

Sites of high environmental risk that will likely be disturbed by construction activities are identified in Table 10 (Phase I ESA, Xerxes Avenue to 85th Avenue) and Table 11 (Phase I ESA, 85th Avenue to 93rd Avenue). These locations are depicted in Figures 8A through 8D in Appendix A. It should be noted that only sites along the current project area are included in this analysis. Data for areas to the south of the project limit were collected and used for a previous EAW for a segment of CSAH 81 in Minneapolis and Robbinsdale that is presently under construction. Forty-seven of the 63 sites of high environmental risk identified in the Phase I ESA reports are likely to be disturbed by construction activities associated with the proposed project. Any contaminated materials encountered during construction will be handled and treated in accordance with applicable state and federal regulations. The sites are numbered according to the site numbers assigned from each Phase I ESA. The letters "CS" were added to the site numbers to correspond with their identification as "contaminated sites" on Figures 8A through 8D in Appendix A. More detailed information about the history and documentation associated with each site can be found in the body of the Phase I ESA documents.

TABLE 10
POTENTIAL SITES OF CONCERN LIKELY TO BE IMPACTED BY CONSTRUCTION ACTIVITIES—XERXES AVENUE TO 85TH AVENUE (DETAILED IN PHASE I, JUNE 2002)

Site #	Location/Address	Reason for Ranking	Current Status
CS*-40	McDonalds Restaurant, 4601 Lake Dr.	Former filling station	No information about tank location.
CS-41	Oasis Market, 4180 Lakeland Ave.	LUST[(1)]	Underground tanks present, located away from corridor.
CS-42	Marathon Gas Station, 4200-4202 West Broadway	LUST	Underground tanks present, located away from corridor.
CS-43	Pilgrim Dry Cleaners, 4606 Lake Dr.	Former dry cleaning & filling station	No tanks present on site.
CS-47	Cavanagh Early Childhood Center, 5400 Corvallis	LUST	Tank basin located on north side of school building away from construction.
CS-55	Rise, 5353 Lakeland Ave.	LUST and Spills	Tank basin located on east side of building.
CS-56	Holiday Station, 5410 Lakeland Ave.	UST[(2)]	Historical contamination cleaned up. No subsurface investigation required.
CS-57	Hom Furniture, 5419 Lakeland Ave.	Former filling station	Spills recorded.
CS-66	Norling Motors, 5521 Lakeland Ave.	LUST, former filling station	Tanks removed, abandoned in place. Groundwater contamination encountered. Median of CSAH 81 is preferred location for additional soil borings.
CS-68	Undeveloped, 5551 Lakeland Ave.	Former filling station, VIC[(3)] site	No record of tanks.
CS-71	Valvoline Oil Change, 5602 Lakeland Ave.	LUST and Spills	Tanks have been removed.
CS-81	Jack's Auto Sales, 6030 Lakeland Ave.	Auto repair with poor housekeeping	Groundwater flow and contaminated soils away from the construction area.
CS-86	Marsh Park, 6224 Lakeland Ave.	VIC	No contaminants found in 1995 sampling.

TABLE 10 continued
POTENTIAL SITES OF CONCERN LIKELY TO BE IMPACTED BY CONSTRUCTION ACTIVITIES—XERXES AVENUE TO 85TH AVENUE (DETAILED IN PHASE I, JUNE 2002)

Site #	Location/Address	Reason for Ranking	Current Status
CS-90	Stop-n-Go Tobacco, 6288 Lakeland Ave.	Former filling station	No tanks remain on site.
CS-94	Former Gasoline Station, 6300 Lakeland Ave.	LUST	Insufficient information to determine if tanks remain on property.
CS-99	Kennedy Transmission, 6400 Lakeland Ave.	LUST	Tanks removed.
CS-107	Inside Out Home Selection Center, 6973 West Broadway	LUST and Spills	No contaminants found after 1989 spill and clean up. No subsurface investigation recommended.
CS-108	Levitz Furniture, 7016 Lakeland Ave.	LUST	Tanks removed.
CS-134	Undeveloped lot, 7700 & 7706 Lakeland Ave.	VIC	Insufficient information to determine if tanks are under ground.
CS-135	Undeveloped lot, 7708 Lakeland Ave.	VIC	No contamination detected in borings, groundwater flows away from construction area. No additional subsurface investigation recommended.
CS-136	Undeveloped lot, / Joyners, 7716 Lakeland Ave.	VIC	No subsurface investigation recommended.
CS-137	Undeveloped lot, 7732 Lakeland Ave.	VIC	Contamination is decreasing, groundwater flows away from the construction area. No subsurface investigation recommended.
CS-142	Oasis Market, 7820 Lakeland Ave.	LUST	Three tanks remain on property. Insufficient data as to location of tank. No subsurface investigation recommended.
CS-143	Saturn of Brooklyn Park, 7910-7911 Lakeland Ave.	VIC	One tank remains on property. Contaminated soils documented next to CSAH 81.

Source: Phase 1 Environmental Assessment (June 2002), DPRA Environmental Consulting
* "CS" was added to the site numbers to correspond with their identification as "contaminated sites" on Figures 8A through 8D in Appendix A.
(1) LUST refers to Leaking Underground Storage Tank; (2) UST refers to Underground Storage Tank; (3) Voluntary Investigation and Cleanup Program
(2) VIC refers to Voluntary Investigation and Cleanup Program
(3) UST refers to Underground Storage Tank

TABLE 11
POTENTIAL SITES OF CONCERN LIKELY TO BE IMPACTED BY CONSTRUCTION ACTIVITIES—85TH AVENUE TO 93RD AVENUE (DETAILED IN PHASE I, JULY 2003)

Site #	Location/Address	Reason for Ranking	Current Status
CS*-8	Osseo Radiator, 337 CSAH 81	Auto repair, commercial since 1964	No outside storage of chemicals observed.
CS-9	Northern Tractor & Equip., 335 CSAH 81	Engine repair, commercial since 1979	No outside storage of chemicals observed. No violations reported in RCRIS/SQG and FINDS databases.
CS-10	Furniture Manor Multi-Tenant, 300 Fifth Ave. SE	LUST(1) facility	One tank removed from property. Contaminated soils documented on southern portion of property near west boundary.
CS-11	Cermaic Industrial Coating, 325 CSAH 81	LQG, SPILLS, commercial since 1953	Property listed on RCIS-LQG, FINDS, SPILLS, and TRIS databases. Two violations reported.
CS-14	Marathon Gas, 408 Third St. SE	LUST, SPILLS, VIC(2)	Violations listed in several databases. Seven tanks have been removed, six tanks are active. Three monitoring wells on property.
CS-18	Osseo Automotive, 257 Fourth Ave. SE	Former filling station	Seven tanks removed.
CS-24	BPA Recycling Center, 201 CSAH 81	UST(3), poor housekeeping	One tank removed.
CS-25	Osseo Lumber Center, 202 CSAH 81	Former auto repair, commercial since 1953	Three rusted, open drums on property.
CS-27	Royal Blades/Action TV, 124 CSAH 81	Suspected former filling station	Identified on UST database. Four tanks removed.
CS-35	Multi-Tenant Medical Bldg., 10 Central Ave.	LUST	Identified on LUST database. Five tanks removed.
CS-37	Heinen and Mason, 15-33 Central Ave.	Auto repair since 1977	Identified in SQG and LUST databases. No violations reported.
CS-38	Bob & Carl's Multi Tenant Bldg., 107 Central Ave.	Auto repair since 1951	Three tanks remain on property. Nine tanks removed from site.

TABLE 11 continued
POTENTIAL SITES OF CONCERN LIKELY TO BE IMPACTED BY CONSTRUCTION ACTIVITIES—85TH AVENUE TO 93RD AVENUE (DETAILED IN PHASE I, JULY 2003)

Site #	Location/Address	Reason for Ranking	Current Status
CS-39	Heinen and Mason Motorcycles, 21 First St. NW	Former coal yard	Two soil borings on south and east sides of property recommended.
CS-40	Multi Tenant Office Bldg., 101 & 201 Broadway	VIC (Hans Foreign Auto)	Property identified on VIC database. A Phase I ESA was filed with MPCA in 1998. Contaminated soils were documented and an aboveground used oil tank and unused well were observed. One other well and septic system historically used on site. Fuel-oil fired boiler observed on site but no evidence of fuel-oil storage tank. Phase II examination found significant contamination. Remedial Action Plan (RAP) resulted in excavation of contaminated soils. Groundwater flow northeast toward CSAH 81.
CS-43	Vacant property, 200 Second Ave. NW	LUST (Osseo Brooklyn School Bus)	Listed on the LUST database. No violations reported. Two tanks removed. Recently graded for development.
CS-44	Texaco Multi Tenant, 9970 CSAH 81	LUST	Listed on the LUST and UST databases. Four underground tanks present. Monitoring well (MW-3) damaged and repaired. Located in CSAH 81 right of way.
CS-46	County Concrete, 10100 89th Ave.	LUST	Two underground storage tanks (one removed, one closed in-place) reported in LUST database. Two underground storage tanks removed from north end of property.
CS-48	Hanson Spancrete Midwest, 10655 CSAH 81	LUST	Listed on LUST, SQG, FINDS, SPILLS, and TRIS databases. Three spills reported. Six underground storage tanks present.

TABLE 11 continued
POTENTIAL SITES OF CONCERN LIKELY TO BE IMPACTED BY CONSTRUCTION ACTIVITIES—85TH AVENUE TO 93RD AVENUE (DETAILED IN PHASE I, JULY 2003)

Site #	Location/Address	Reason for Ranking	Current Status
CS-49	Maple II Business Center, 10500 CSAH 81	Former industrial use	Multi-tenant property. Several tenants listed on RCRIS-SQG and FINDS databases. No violations reported.
CS-50	Maple Business Park, 10650 CSAH 81	Former industrial use	Multi-tenant property. One tenant listed on SQG and FINDS databases. One aboveground storage tank present.
CS-51	Multi-tenant, 10730 CSAH 81	Auto repair/commercial since 1979	Multi-tenant property. Two tenants listed on SQG and FINDS databases. No violations reported.
CS-52	Multi-tenant, 10900 CSAH 81	Auto repair/commercial since 1982	Multi-tenant property. Several tenants listed on SQG and FINDS databases. No violations reported.
CS-55	O'Ryans Conoco, 11201 93rd Ave.	Filling station	Four underground storage tanks present.

Source: Phase 1 Environmental Assessment (July 2003), DPRA Environmental Consulting
* "CS" was added to the site numbers to correspond with their identification as "contaminated sites" on Figures 8A through 8D in Appendix A.
(1) LUST refers to Leaking Underground Storage Tank
(2) VIC refers to Voluntary Investigation and Cleanup Program
(3) UST refers to Underground Storage Tank

B. Endangered Species Act of 1973

The majority of the proposed roadway improvements will occur in developed areas that have been previously disturbed by residential, commercial, and industrial development and previous roadway construction. Wildlife in these areas is limited to those species that have adapted to urban areas. Typical examples of such species include whitetail deer, raccoons, squirrels, rabbits, and various birds. Since the project is fully within an urban area and does not include the conversion of open space to developed land, no substantial concerns regarding wildlife habitat have been identified.

The proposed project is in proximity to Twin Lakes, which provides fishery habitat. No impacts to fish are anticipated as a result of the project (see Item C for more information about impacts to lakes). Best management practices will minimize impacts in other areas of the proposed project to protect water quality during construction. Indirect effects of the project, such as increased runoff from impervious areas, will be addressed so as not to cause adverse effects to water quality. As described in Item E, the project includes provisions to treat stormwater from the roadway prior to discharge into nearby water bodies.

The Mn/DOT Office of Environmental Services (OES) was contacted to review the project area for federally threatened and endangered (T & E) species. In correspondence dated June 6, 2006, (see Appendix B) Mn/DOT OES indicated that the project area is within the distribution range of the bald eagle (*Haliaeetus leucocephalus*) and the Higgins eye pearlymussel (*Lampsilis higginsi*) which are both federally-listed species (the bald eagle was subsequently delisted in 2007). However, due to the location of the proposed project within a fully developed urban corridor and the fact that there are no known occurrences of federally-listed T & E species or critical habitat within the area, Mn/DOT OES concluded that the project has little to no potential to have any measurable influence on federally-listed threatened and endangered species, candidate species or listed critical habitat. Mn/DOT OES adds that since the proposed action is not scheduled to begin for several years, the project will need to be re-evaluated closer to the time of construction.

C. Wetland Protection and Section 404 of the Clean Water Act

Preliminary data was gathered and reviewed to determine the locations of potential wetland habitats in the project area. These data sources included the following:

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

Wetlands along the project corridor were delineated in 2004 and verified during 2006 and Spring 2007 using criteria from the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1. U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS). Wetland areas are shown on Figures 4A through 4J in Appendix A. Within the project area, there are 16 naturally occurring wetland areas along project corridor, including three MnDNR protected waters wetlands and the South Fork Rush Creek. Identified wetlands are also classified according to descriptions set forth in *Wetland Plants and Plant Communities of Minnesota & Wisconsin - Second Edition* (USCOE Publication; Eggers and Reed. 1997), as required by the Minnesota Wetland Conservation Act (WCA).

The proposed project will affect a portion of an existing DNR protected wetland (563W), other wetlands, roadside and stormwater conveyance systems (ditches and ponds), and Shingle Creek (DNR protected watercourse). The following sections describe: 1) the surface water resources identified (delineated) on site; 2) potential impacts based on conceptual development plans; 3) impact avoidance and minimization efforts utilized during site concept development; 4) opportunities for wetland replacement/ mitigation; and 5) permitting/regulatory coordination to be completed for the project.

Creeks

Shingle Creek

Within the project limits, a short reach of Shingle Creek flows from west of the project limits under existing CSAH 81 to the east, eventually to the Mississippi River. The existing CSAH 81 culvert through which Shingle Creek flows will be extended due to the new embankments, or will be replaced with the project. The design of the culvert will meet regulatory requirements for headwater/stage increases and flow rates.

Wetlands

Three wetlands, three constructed stormwater ponds, and eight constructed ditches, all with wetland characteristics, are located completely or partially in the project area. The topography is generally flat, and most of the wetlands adjacent to the roadway are ditch-like, serving mainly as stormwater conveyance systems. In general, the delineated ditch and wetland boundaries adjacent to the existing roadway have an abrupt boundary where they meet the steep road embankment. The wetland areas are generally dominated by cattails (*Typha sp.*), reed canary grass (*Phalaris arundinacea*), willows (*Salix sp.*) and box elder (*Acer negundo*). The vegetation changes abruptly from that in the wetland to mowed ditch banks and roadsides dominated by smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), dandelions (*Taraxacum officinale)*, box elder and other weedy species.

Wetland W-1: North of Corvalis Avenue in Crystal, and bounded on the west by the BNSF Railway Company right of way, on the north by the Soo Line Railroad right of way and on the east by CSAH 81, Wetland W-1 is mapped on the NWI as a semi-

permanently flooded deep marsh wetland (Type 4). W-1 is underlain by Seelyeville and Markey muck soils. Through the years, Wetland W-1 has become choked with cattails and does not have any open water area that is typical of a semi-permanently flooded deep marsh wetland; therefore it is now classified as a shallow marsh (Type 3). There are inlets that discharge water into Wetland W-1, however there are no outlets. Therefore, Wetland W-1 is an isolated wetland. This wetland provides some wildlife habitat, flood storage and water quality improvement to the waters discharged into it.

Wetland W-2: North of 73rd Avenue in Brooklyn Park, a large DNR protected water wetland (563W), through which Shingle Creek flows, lies to the west of the BNSF Railway company right of way, and a bisected portion of this wetland (W-2) lies between the BNSF Railway Company right of way and CSAH 81. Wetland W-2 is a shallow marsh (Type 3) underlain with mucky soils, dominated by cattails and connected to the larger portion of DNR wetland 563W via culvert under the BNSF rails. This wetland mainly provides water quality protection to Shingle Creek as well as some flood storage.

Wetland W-1-Greenhaven: North of 77th Avenue North and west of CSAH 81 and the BNSF Railway Company right of way in Brooklyn Park, lies a large wetland complex (W-1-Greenhaven) that is identified on the DNR Protected Waters Inventory as #560W (note that this wetland was delineated subsequent to the delineation of W-1 and W-2 described above and was labeled W-1 in the delineation report; it has been relabeled W-1-Greenhaven for inclusion in the EA). Shingle Creek flows through the southeast corner of this wetland. The majority of the 28.85-acre wetland is classified as a seasonally flooded shallow marsh (Type 3), with shrub carr (Type 6), and hardwood swamp (Type 7) components. Vegetation is dominated by cattails, lake sedge (*Carex lacustris*) and reed canary grass within the shallow marsh portions. Willows and dogwood (*Cornus sp*.) dominate the shrub carr components and eastern cottonwood (*Populus deltoides*) and box elder dominate the hardwood swamp areas. This wetland provides water quality protection to Shingle Creek, flood storage, wildlife habitat and recreation opportunities because it is within Greenhaven Park.

As shown on Figures 4A through 4J in Appendix A, aside from Wetlands W-2 and W-1-Greenhaven noted above, linear stormwater conveyance structures and stormwater ponds with wetland characteristics are located throughout the corridor. These constructed ditches and storm ponds are located in areas mapped as upland soils according to the NCSS Web Soil Survey for Hennepin County, and are not located in any NWI mapped areas. Ditches along the corridor north of Shingle Creek predominantly flow to the south and into Shingle Creek, with a small section north of 93rd Avenue that may also flow to the north. Ditches along the corridor, south of Shingle Creek and north of I-94, flow to the north and into Shingle Creek. (See Section VI.D).

Avoidance and Minimization Alternatives

Alternative road alignments were evaluated to determine if the wetlands and Shingle Creek could be avoided and to identify minimization opportunities. Those wetlands proposed for impact are located within the right of way, near or at the toe-of-slope of

the existing roadway. Shingle Creek flows under the existing CSAH 81 corridor. Thus, aside from the No Build Alternative which would not meet the project needs, complete avoidance is not feasible.

Impacts were minimized to the extent practicable with steeper side slopes through the highway sections that are adjacent to wetlands, thereby minimizing the roadway footprint where possible. Temporary impacts from adjacent grading for flood storage and stormwater treatment will be restored to preconstruction conditions through regrading to original contours and planting to appropriate wetland plant species following construction. In addition, construction in this area could be completed in the winter when the surface is frozen, thus minimizing compaction. The site will be restored to an equal or improved condition after grading. Further minimization is not feasible without compromising the project goals.

Impacts to wetland water quality functionality will be minimized by the use of water quality improvement features known as Best Management Practices (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. Permanent 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 in wetlands or other environmentally-sensitive areas.

Wetland Impacts

Table 12 shows the impacts to the wetlands within the project area, as well as the areas of stormwater features that will be affected. Figures 4B, 4F, and 4G in Appendix A depict the wetland locations. A total of 1.7 acres of wetland will be disturbed: 1.0 acre will be permanently filled upon completion of the project and 0.7 acres will be restored after disturbance. The stormwater ditches within the roadway corridor will be converted to underground storm sewer systems, and stormwater ponds will be modified to address the increased impervious surface.

Mitigation Considerations

Application for permits for wetland impacts must be made to the U.S. Army Corps of Engineers, the DNR, the City of Maple Grove, Shingle Creek WMC and Elm Creek WMC. See Appendix B for correspondence from the U.S. Army Corps of Engineers concurring with the need for a Section 404 permit for this project. Mitigation for wetland impacts is anticipated to be provided through a combination of on-site wetland restoration at Wetland W-1, other off-site mitigation efforts, and purchase of credits from the Board of Soil and Water Resources (BWSR) Wetland Banking Program, as appropriate. Mitigation for wetland impacts will occur as improvements for funded segments of the project are constructed. Mitigation will not occur ahead of project funding for the project segments.

Conclusion

Based upon the above factors and considerations, it is determined that there is no practicable alternative to the proposed construction in the identified wetlands, and the proposed action includes all practicable measures to minimize harm to the wetlands.

TABLE 12
WATER RESOURCE IMPACTS

Wetland ID and Topographic Setting*	Total Wetland Area (ac)	Wetland Type (Eggers & Reed/Circ 39)	Roadway Impact Area/% of Total Wetland Area (ac)	Type of Impact
W-1 Isolated	1.0	Shallow marsh/Type 3	0/0%	N/A
W-2 Tributary	1.0	Shallow Marsh/Type 3	1.0/100%	Road fill
W-1-Greenhaven Flow-through	28.9	Shallow marsh/scrub shrub/forested/Type3/6/7	0.7/2%	Temporary impact for grading of adjacent flood/stormwater facilities
		Total Wetland Impacts	**1.7**	
Stormwater Ponds			**Area of Impact**	
ST-1	N/A	N/A	<0.1	Pipe inlet
ST-2	N/A	N/A	0	N/A
ST-3	N/A	N/A	0.37	Part of reworking into a larger ponding area
		Total Stormwater Pond Impacts	**0.4**	
Ditches				
D-1**	N/A	N/A	0	
D-2**	N/A	N/A	0	
D-3	N/A	N/A	0	
D-4	N/A	N/A	0.13	Conversion to subsurface conveyance
D-5	N/A	N/A	0.5	Conversion to subsurface conveyance
D-6	N/A	N/A	0.62	Conversion to subsurface conveyance
D-7	N/A	N/A	0.26	Conversion to subsurface conveyance
D-8	N/A	N/A **Total Ditch Impacts**	0 **1.51**	

* Topographic setting included to help determine which wetlands may fall under COE jurisdiction (i.e., non-isolated - in **BOLD**).

* Impacts due to TH 169 interchange construction, not associated with this project.

D. Floodplain Management

The proposed project includes widening of CSAH 81 and construction of a trail along the majority of the corridor. The proposed project will encroach upon the 100-year floodplain at the Shingle Creek crossing in Brooklyn Park near 79th Avenue North. The City of Brooklyn Park has mapped the floodway and flood fringe areas associated with Shingle Creek in the Flood Hazard Area Overlay within its code of ordinances. Roads, bridges and railroad tracks are permitted in the floodway as long as their design and construction meet specific standards described by local ordinances. Sources of floodplain information include:

- Flood Insurance Rate Map (FIRM) for Hennepin County – community panel number 27053C0182E, with an effective date of September 2, 2004.

- Flood Insurance Study (FIS) for Hennepin County – FIS numbers 27053CV001A and 27053CV002A, dated September 2, 2004.

The FIRM indicates a Base Flood Elevation of 873.0 feet for the portion of Shingle Creek flowing between CSAH 81 and the railroad tracks to the west. The fill associated with the roadway widening and trail construction would create approximately 400 feet of transverse floodplain impacts as measured on the FIRM.

Furthermore, the project will fill a portion of an existing ditch that is tributary to Shingle Creek and which runs roughly parallel to CSAH 81 along the roadway's west side up to 85th Avenue North. In addition to acting as the conveyance system for roughly 2,300 acres of Maple Grove, Osseo, and Brooklyn Park, the ditch provides flood storage and attenuation. It will likely be necessary to replace the ditch with a pipe for the entire length between TH 169 and the Shingle Creek crossing (approximately 3700 feet). Therefore, new flood storage is proposed west of the railroad tracks, between Brooklyn Boulevard and Greenhaven Drive. See Section VI.E for further discussion relating to this ditch.

As a result of the floodplain impacts, the following four areas are addressed per Executive Order 11988:

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

The existing roadway elevation is above the 100-year flood elevation, and the finished grade of the proposed improvements in this area will be similar to the existing condition. Therefore, this project will have no significant potential for the interruption of a transportation facility or emergency vehicle access.

Area 2: No significant impact on natural and beneficial floodplain values.

Construction of the proposed CSAH 81 improvements is not anticipated to have adverse impacts on fisheries, plant materials, public boat access, boat passage, threatened or endangered species, or water quality within the existing floodplain.

Wetlands will be encroached upon within the Shingle Creek floodplain. These impacts are discussed in Section VI.C.

Erosion control and turf establishment measures will be implemented to minimize impacts on water quality and soil stability due to the extension or replacement of box culverts. Water quality is discussed in Section VI.E.

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

Any extension or replacement of box culverts at Shingle Creek will be designed so that they will not cause any significant increase in flood stages. The amount of flood storage provided in the ditch to be filled relative to the overall floodplain is minor. In addition, a stormwater pond is proposed upstream of the railroad tracks on the south side of Shingle Creek. Since the pond will be hydraulically connected to the floodplain via an outlet pipe and emergency spillway, the pond volume may be feasible as floodplain mitigation for the filling of the existing ditch. Therefore, it is not expected that the proposed project will result in any significant increase in flooding.

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

The proposed project expands upon an existing highway but will not provide any additional access to the floodplain area beyond what already exists.

Conclusion

Given the above analysis, no significant floodplain impacts are anticipated as a result of the proposed project. The design of any necessary mitigation measures, including culvert sizing, will be coordinated with the appropriate agencies during the final design and permitting processes.

E. Water Pollution/MPCA - NPDES

The proposed project will increase the total impervious surface area from about 126 acres to about 145 acres (a 15 percent increase). As a result, the peak flow and the total surface water runoff volume will increase along the majority of the corridor. To manage this increased runoff, a storm sewer network along the entire corridor will be designed to convey the water to stormwater treatment basins, proprietary stormwater quality treatment devices (hereinafter referred to as grit chambers), and infiltration areas where feasible. Following treatment, stormwater will be discharged at a rate equal to existing flow (to the extent practicable) to various receiving waters. Further discussion of the added impervious surface area and treatment strategies for each specific project segment is included later in this section. A National Pollutant Discharge Elimination System (NPDES) permit will be required for each segment when constructed.

The proposed CSAH 81 project corridor is contained entirely within Hennepin County and impacts five cities (Robbinsdale, Crystal, Brooklyn Park, Osseo, and Maple Grove). Additionally, the project corridor is contained within the limits of three

WMOs: Shingle Creek WMC, West Mississippi River WMC, and Elm Creek WMC. City, WMO, MPCA via the NPDES permit, and the Mn/DOT guidelines make up the regulatory framework for stormwater management. The Cities of Robbinsdale, Brooklyn Park, and Maple Grove have water management plans that define a set of rules and regulations governing water resources. All three WMOs, along with the Crystal Airport, have water management plans that provide guidelines and policies for surface and groundwater management and conveyance. All sets of rules and policies will be considered when designing water resource features, such as storm sewers and treatment devices, which are associated with the CSAH 81 improvements. For preliminary planning purposes, the most stringent rule applicable to any given situation will typically be used as the governing framework for design of the whole corridor.

Where feasible along the entire project corridor, various BMPs will be implemented to treat runoff according to water quality guidelines established by the Nationwide Urban Runoff Program (NURP), WMOs, cities, and Hennepin County. These guidelines identify design practices that will substantially reduce sediment and nutrient loads contained within stormwater runoff. The most prominent BMPs will include: stormwater treatment ponds, grit chambers, and infiltration areas. Additionally, the proposed ponds and infiltration areas will act as rate control tools, which will maintain discharge at existing rates into low areas, wetlands, and other various receiving waters. Final locations for ponds, infiltration areas, and grit chambers will be coordinated with local municipalities, Hennepin County, watershed management personnel, and state permitting agencies. Figures 11A through 11J show their preliminary locations.

Rules for the Shingle Creek WMC and West Mississippi River WMC currently include infiltrating one-half inch of runoff from impervious surfaces within 72 hours where feasible using various accepted BMPs. It should be noted that Shingle Creek WMC is considering revisions to its volume-reduction rule. To the extent possible, the proposed design will incorporate features such as infiltration basins and infiltration trenches around pond fringes and between the roadway and the railroad tracks. Further coordination with the WMOs is needed regarding this requirement given the right of way and elevation constraints.

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 urban and rural highways contain nitrogen and phosphorus as byproducts of combustion and from atmospheric deposition, in precipitation or dust. Existing CSAH 81 is mainly a rural design; therefore, the drainage systems primarily consist of vegetated ditches and open channels that provide some water quality treatment by reducing the pollutant load conveyed by highway runoff. However, concentrations of pollutants in urban stormwater may be above the maximum standards defined by the MPCA under existing conditions. The proposed wet detention basins, grit chambers, and infiltration areas along the project corridor are expected to reduce pollutant concentrations in stormwater to within MPCA maximum standards, which are defined as the highest level aquatic organisms can be exposed to for a brief time with zero to slight mortality[2].

[2] Minnesota Pollution Control Agency, Protecting Water Quality in Urban Areas, March, 2000.

The proposed drainage patterns will be designed to emulate the existing drainage patterns to the extent practical. These drainage patterns are defined by stormwater routes to lakes and creeks via ditch flow, culverts, and storm sewer. The receiving water bodies along the project corridor include: Crystal Lake, Twin Lakes, Shingle Creek and various wetlands and low areas. Note that while the project crosses through the jurisdictional boundaries of the three WMOs previously listed, the entire project drains to Shingle Creek, except for a small portion of the project north of 93rd Avenue that may flow north to Elm Creek. Ultimately, all of the above mentioned water bodies drain to the Mississippi River. Table 13 provides a summary of treatment strategies and receiving water bodies within each segment, while the following discussion describes each of these water bodies in more detail.

TABLE 13
RECEIVING WATER BODIES AND TREATMENT STRATEGIES

Receiving Water Bodies	Roadway Segment	Treatment Strategies
Twin Lakes	1, 2	9 ponds[+] 2 grit chamber*
Shingle Creek	3, 4	9 ponds** 3 grit chambers*

[+] Includes one existing pond.
* Refers to proprietary stormwater quality treatment device.
** Includes three existing ponds.

In order to benchmark water quality in the proposed condition, it is important to understand the existing conditions of the receiving water bodies along the project corridor. Based on shallow Secci disk readings, high total phosphorus readings, high Chlorophyll-a readings, and high Total Kjeldahl Nitrogen readings, the utility of Crystal Lake and Twin Lakes for recreational uses is impaired. Additionally, Crystal Lake has a long-term average Trophic State Index (TSI) of 78 (Hypereutrophic), and Twin Lakes have a TSI of 75 (Hypereutrophic). Neither of these lakes is generally considered recreationally suitable[3]. Shingle Creek contains high chloride, total and dissolved phosphorus, and total and volatile suspended solids, which have negatively affected aquatic life in the creek[4].

In addition, Crystal Lake, Twin Lakes, and Shingle Creek are identified on the EPA 303(d) Total Maximum Daily Load (TMDL) list of impaired waters. Table 14 indicates the receiving waters and their associated impairments.

[3] Shingle Creek Watershed Management Organization, Second Generation Watershed Management Plan, July 2003.

TABLE 14
IMPAIRED RECEIVING WATER BODIES ALONG PROPOSED CSAH 81 IMPROVEMENTS

Receiving Water Body	Impaired Water Uses	Specific Impairments
Crystal Lake	• Aquatic Recreation	• Excess nutrients
Twin Lakes	• Aquatic Consumption • Aquatic Recreation	• Mercury FCA[1] • PCB FCA • Excess Nutrients
Shingle Creek	• Aquatic Life	• Chloride • Invertebrate IBI[2] • Low oxygen

[1] FCA - Fish Consumption Advisory
[2] IBI - Index of Biotic Integrity

Segment One (TH 100 to CSAH 10): County Project No. 0118

Land use within this segment consists mostly of industrial and residential areas, along with wetlands, parks, and open spaces. The majority of existing stormwater runoff in this segment is routed through several storm sewer trunk lines to Twin Lakes without any water quality treatment or rate control BMPs. A portion of CSAH 81 runoff in the existing condition is treated in a pond located in the southeast quadrant of CSAH 81 and the SOO Line railroad while another portion of this segment drains to a storm sewer system on Bass Lake Road; both ultimately discharge to Twin Lakes. The existing trunk storm sewer does not have adequate capacity for the drainage area. Therefore, an overflow relief system was constructed in an effort to address the problem. The existing storm sewer west of the BNSF railroad is routed through a series of stormwater ponds and wetlands before ultimately discharging to Twin Lakes.

The proposed improvements result in added impervious area, increasing both the total volume of runoff and the peak discharge from the existing condition. In order to address these impacts as well as treat potential increased pollutant and sediment loading, four stormwater ponds are proposed in this segment. These ponds will attenuate peak inflows prior to discharging to existing storm sewer connections. See Figures 11A through 11C in Appendix A for a graphical representation of the ponds and drainage patterns in this segment.

As will be discussed further in the next segment, a series of flow diversions are proposed in order to address the increase in runoff and the restrictions against ponds near the Crystal Airport property.

Segment Two (CSAH 10 to 63rd Avenue North): Project No. 0119

Land use within this segment consists mostly of industrial and residential areas, along with wetlands, parks, open spaces, and the Crystal Airport. Currently, stormwater runoff between Bass Lake Road and just south of 62nd Avenue is directed to an infiltration area located on the airport property. This basin outfalls through a series of

ditches and culverts within the airport property to a large wetland complex, and ultimately to Twin Lakes. The remainder of the runoff within this segment drains to either a pond/wetland on the west side of CSAH 81 or directly to a lift station via ditches on the east side of CSAH 81. The lift station pumps the water through a storm sewer network to Twin Lakes.

The proposed improvements result in added impervious surface, increasing the total volume of runoff and the peak discharge from the existing condition. In order to address these impacts as well as treat potential increased pollutant and sediment loading, one dry pond, two stormwater ponds, and two grit chambers are proposed in this segment. See Figure 11C and 11D in Appendix A for a graphical representation of the ponds, grit chambers, and drainage patterns in this segment.

As discussed above, a portion of CSAH 81 runoff in the existing condition drains onto and through the Crystal Airport property. The increased pavement of the proposed project would result in a greater volume of runoff reaching the property and higher peak discharges. However, Federal Aviation Administration regulations and right of way constraints do not allow a pond upstream of the discharge point. Therefore, the project proposes to divert a portion of the drainage area at the southern end of the segment south to the Bass Lake Road system and a portion north of the airport to ponds at 63rd Avenue. Furthermore, due to the capacity constraints of the Bass Lake Road storm sewer system, the area of CSAH 81 immediately south of Bass Lake Road will be diverted to proposed ponds south of Wilshire Boulevard. The intent of these diversions is to maintain discharge rates to the airport basin and to the Bass Lake Road system at existing levels by diverting water to other systems where proposed ponds would be better able to control the peak discharges. Further coordination may be necessary during final design to ensure that the concerns of the cities, the Metropolitan Airports Commission, and the County are met.

Segment Three (63rd Avenue North to TH 169 Interchange Area): County Project No. 0203

Land use within this segment consists mostly of industrial areas, with some residential areas, wetlands, and open spaces. All runoff for CSAH 81 south of the I-94 interchange currently is routed through ditches or storm sewer south to 63rd Avenue, where a storm sewer trunk line conveys the water to Twin Lakes. Existing runoff from CSAH 81 within the I-94 interchange is routed to dry ponds within the interchange, which discharge ultimately into Shingle Creek. The remainder of this segment from I-94 to TH 169 is conveyed via storm sewer or ditches to Shingle Creek. The ditches between Shingle Creek and TH 169 provide storage and rate attenuation due to the small culverts under entrance roads and long, gentle ditch slopes.

The proposed improvements result in increased pavement for the roadway as well as eliminating ditches, resulting in an increase of both the total volume of runoff and the peak discharge from the existing condition. Therefore, five stormwater ponds and two grit chambers are proposed along this section of the alignment. One of the pond locations represents an expansion of an existing pond on private property. Further coordination between the County and the property owner is ongoing. Refer to

Figures 11D through 11G in Appendix A for a graphical representation of the ponds, grit chambers, and drainage patterns in this segment. Note that all CSAH 81 runoff within the proposed TH 169/CSAH 81 interchange will be treated in stormwater ponds designed and constructed under a separate Mn/DOT project.

With this project, the ditch between CSAH 81 and the railroad tracks from Shingle Creek north to roughly 84th Avenue would be filled by the road widening and proposed trail. As this ditch is the conveyance system for roughly 2,300 acres of Maple Grove, Osseo, and Brooklyn Park, coordination between the various municipalities, the Shingle Creek WMC, and Mn/DOT took place to discuss the appropriate design flow and replacement pipe size. The size will need to balance conveyance capacity, which could help the City of Osseo address flooding issues in their downtown area, with concern voiced by the City of Brooklyn Park regarding downstream impacts, as the replacement of the ditch with a closed conduit results in a loss of storage, infiltration capacity, and flood attenuation. The TH 169 interchange ponds will be used for additional flood storage and excavation within the Greenhaven Park is proposed to accommodate diversion of high flows. Further coordination between the above-mentioned entities may be required during final design of this area.

Segment Four (TH 169 Interchange Area to CSAH 30): County Project No. 0226

Land use within this segment consists mostly of industrial areas, along with residential areas, wetlands, open spaces, schools, and parks. Similar to Segment Three, existing CSAH 81 has a rural design with relatively flat profile slopes. Existing runoff within this segment is conveyed in wide, fairly deep ditches that run north-to-south along the existing railroad tracks, beginning at a high point near 93rd Avenue just north of the northern project terminus. The City of Maple Grove Stormwater Plan identifies the ditches along CSAH 81 as stormwater ponds. A timber weir outlet structure installed in the ditch just south of the dividing line between Maple Grove and Osseo limits peak flows prior to discharge into storm sewer carrying combined flow for the City of Osseo and CSAH 81. This storm sewer ultimately drains through the ditch south of TH 169 that was described in the previous segment. Although the majority of Segment Four drains to Shingle Creek, small portions at the north end fall within the boundaries for West Mississippi WMC and Elm Creek WMC.

The proposed improvements within this segment will result in an increase in impervious area for the roadway and an increase in both the total volume of runoff and the peak discharge. Treatment for the runoff from CSAH 81 north of 89th Avenue North will continue to occur in the existing ditches noted by Maple Grove to be treatment ponds. However, their volume will be reduced due to fill from the trail and expanded roadway section. A rate-control pond is required in the vicinity of 89th Avenue North to attenuate the increased discharge rate and act as an overflow for the ditches. The remaining ditch volume, augmented by the pond, provides treatment for the project area north of 89th Avenue North and approximately 83 acres of offsite city areas that currently receive some level of treatment in the existing ditches. Treatment strategies for CSAH 81 south of 89th Avenue North include one grit chamber and one stormwater pond. Refer to Figures 11G through 11J in Appendix A for a graphical representation of the pond, grit chambers, and drainage patterns in this segment.

F. Air Quality

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 the project are analyzed by addressing criteria pollutants, a group of common air pollutants regulated by the Environmental Protection Agency (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 Standards (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, result 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. Transportation sources emit NOx and VOCs and can therefore affect ozone concentrations. However, due to the phenomenon of atmospheric formation of ozone from chemical precursors, concentrations are not expected to be elevated near a particular roadway.

A recent study conducted for the MPCA (Sonoma Technology Inc. Preliminary Assessment of Ozone Air Quality Issues in the Minneapolis/St. Paul Region, October 10, 2002) states:

> *Thus, overall trends in ozone show that the numbers of occurrences of higher ozone concentrations are on the rise. While the 1-hr ozone NAAQS level of 0.12 ppm has only been reached twice in the last ten years, the 8-hr NAAQS level of 0.08 ppm is reached on average twice per year at one or more sites. Note that during some years 8-hr ozone levels do not reach 0.08 ppm while in other years 8-hr ozone reaches that level 4 or 5 times. Increasing population and congestion will likely lead to further increases in ozone levels in the future.*

As a result of this trend, the MPCA, in cooperation with various other agencies, industries, and groups, has encouraged voluntary control measures to control ozone and has begun developing a regional ozone modeling effort. Ozone concentrations in the lower atmosphere are influenced by a complex relationship of precursor concentrations, meteorological conditions, and regional influences on background concentrations. The MPCA staff has begun development of ozone modeling for the Twin Cities metropolitan area. 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 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 can 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.

The following summary of potential health impacts is excerpted from the EPA brochure Particle Pollution and Your Health (EPA document 452/F-03-001, September 2003):

> *Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems.*
>
> ***Long-term exposures,*** *such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis—and even premature death.*
>
> ***Short-term exposures*** *to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.*

The MPCA states on its web site:

> *Recent data suggests that particles 2.5 microns or smaller may pose the greatest threat to human health because, for the same mass, they absorb more toxic and carcinogenic compounds than larger particles and penetrate more easily deep into the lungs.*

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 study *Transportation-Related Air Toxics: Case Study Materials Related to US 95 in Nevada*, March 7, 2003, completed by Sonoma Technology states:

> *With the exception of road dust, essentially all of the particulate matter attributed to vehicles (either as direct emissions or compounds which are emitted as gases and condense into particulate matter in the ambient air) is smaller than 2.5 mm in size (pm2.5).*

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. A recent study, Transportation-Related Air Toxics: Case Study Materials Related to US 95 in Nevada, March 7, 2003, completed by Sonoma Technology reviewed the limited data relating road proximity and fine particle concentrations and discussed the extent to which roadways might contribute to exceedances of $PM_{2.5}$ NAAQS:

> *However, these limited findings indicate that, relative to the 24-hour NAAQS of 65 mg/m^3, on-road vehicle $PM_{2.5}$ emissions may be a concern near a road (e.g., within 100 m) if background concentrations are already near the NAAQS. More research is needed to further understand the relationship between $PM_{2.5}$ concentrations and road proximity.*
>
> *There is currently a lack of guidance available to analysts regarding methodological approaches for analyzing the PM impacts of transportation projects at the micro 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, are 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 MPCA 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. Appendix C of the MPCA's 2001 Legislative Report Air Quality in Minnesota: Problems and Approaches states:

> *Monitored NO2 levels are currently about one third of the annual NO2 standard. Although NOx emissions have increased and may increase further due to increased vehicle travel and increased fuel combustion, it is unlikely that these increases will pose a threat to the annual NO2 standard.*

The EPA's regulatory announcement EPA420-F-99-051 (December 1999) describes the Tier 2 standards for tailpipe emissions and states:

> *The new tailpipe standards are set at an average standard of 0.07 grams per mile for nitrogen oxides for all classes of passenger vehicles beginning in 2004. This includes all light-duty trucks, as well as the largest SUVs. Vehicles weighing less than 6000 pounds will be phased-in to this standard between 2004 and 2007.*
>
> *As newer, cleaner cars enter the national fleet, the new tailpipe standards will significantly reduce emissions of nitrogen oxides from vehicles by about 74 percent by 2030. The standards also will reduce emissions by more than 2 million tons per year by 2020 and nearly 3 million tons annually by 2030.*

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.

Sulfur 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 to the air comes from electric utilities, especially those that burn coal. The MPCA Air and Water Emissions Report, March 2000, indicates 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 the traffic-related pollutant of most concern in urban areas. Concentrations of CO are generally highest at intersections with poor levels of service and, consequently, more idling vehicles. Air quality analysis of "worst-case" conditions was performed to estimate the effect of the proposed project on future CO concentrations at the intersections in the project area that operates at the lowest level of service. MPCA staff was consulted in the development of the scope, methods, and procedures used in performing CO analysis as described below.

Carbon Monoxide Modeling Methodology and Assumptions

Carbon monoxide concentrations near the worst case intersection were predicted using forecasted traffic volumes, proposed intersection geometrics, optimized signal timing, and with computer models, including the U.S. EPA MOBILE 6 emission model and the U.S. EPA CAL3QHC dispersion model. The scope of the air quality analyses was developed based on input from MPCA staff.

The modeling assumptions used in this analysis are identified in Table 15.

TABLE 15
CARBON MONOXIDE MODELING ASSUMPTIONS

Analysis Year:	2011 and 2020
Cold Start Percentage:	20.6 percent for all traffic
Hot Start Percentage:	27.3 percent for all traffic
Cruising Speed:	• Posted Speed Limits for Streets • Modeled Peak Hour (Congested) Speeds for Freeways
Traffic Mix:	National Default Values
Wind Speed:	1 meter/second (3.3 feet/second)
Temperature:	-6.6 degrees Celsius (20 degrees Fahrenheit)
Surface Roughness[(1)]:	108 centimeters (42.5 inches)
Stability Class[(2)]:	D
Inspection Maintenance:	No
Oxygenated Fuel:	Yes
8-Hour Persistence Factor[(3)]:	0.7
(a) Wind Direction:	**(b) 36 directions at 10 degree increments**

Notes:

The Surface Roughness, Stability Class and 8-Hour Persistence Factor are discussed in *Guidelines for Air Quality Maintenance Planning and Analysis Volume 9 (Revised): Evaluating Indirect Sources*, U.S. EPA, 1978, and are summarized below.

(1) Surface Roughness indicates the initial ground level turbulence into which the exhaust plume will be released. Generally, the higher the roughness, the lower the concentration. The number used here is conservatively low for the TH 169 corridor (results in a worst-case).

(2) Stability Class characterizes the mixing potential of the atmosphere. Stability Class D is used as a worst-case in suburban and urban areas.

(3) The 8-Hour Persistence Factor is used to determine 8-hour average CO contributions, and takes into account fluctuating wind directions, temperature and traffic, which will have a greater effect over eight hours than during one hour. The factor is multiplied by the 1-hour modeling result.

Background Carbon Monoxide Concentrations

Background CO concentrations are used in microscale carbon monoxide analysis to represent conditions without the influence of nearby vehicles. By definition, the background CO concentration in any particular area is that concentration which exists independently of direct contributions from nearby traffic. The background concentrations are added to intersection-scale modeled results to yield predicted CO levels.

Background CO concentrations were monitored by Mn/DOT in January 1999 at 9400 Winnetka Avenue North in Brooklyn Park, four miles north of the CSAH 81/CSAH 10 intersection. Maximum monitored average concentrations of 1.62 ppm and 1.08 ppm for 1-hour and 8-hour averaging times, respectively, were measured.

For purposes of the 2011 and 2020 analyses, the background concentrations were adjusted for region-wide increases in traffic volumes and vehicle emissions. The adjustment factor for traffic growth was based on the regional travel forecast model.

The adjustment factor for vehicle emission was based on the MOBILE 6 emissions model, which incorporates anticipated decreases in CO emissions from motor vehicles due to emission controls. The results are summarized in Table 16.

TABLE 16
CALCULATION OF CO BACKGROUND CONCENTRATIONS

Factor	2011		2020	
	1-Hour	8-Hour	1-Hour	8-Hour
Maximum 1999 Monitored Concentration (ppm)	1.62	1.08	1.62	1.08
Background Traffic Volume Adjustment Factor	1.43	1.43	1.86	1.86
Emission Adjustment Factor	0.89	0.89	0.89	0.89
Worst-Case Background Concentration (ppm)	2.1	1.4	2.7	1.8
State Standard (ppm)	**30**	**9**	**30**	**9**
Federal Standard (ppm)	**35**	**9**	**35**	**9**

Intersection Carbon Monoxide Modeling

Microscale carbon monoxide analyses were performed for years 2011 and 2020 (one and ten years after construction) at the CSAH 81/CSAH 30 and the CSAH 81/CSAH 130 intersections. These intersections are expected to operate at the lowest levels of service in the CSAH 81 corridor. CO concentrations at these intersections would therefore be expected to be higher ("worst-case") than other intersections in the corridor. The intersection of CSAH 81 at TH 100 is not included in the project analysis because it is being reconstructed by Mn/DOT before the schedule of this project.

Locations of likely outdoor human activity adjacent to the analyzed intersection were selected for air quality modeling receptors. Table 17 describes the locations of these receptors.

TABLE 17
INTERSECTION RECEPTOR LOCATIONS

CSAH 81 and CSAH 10	Description of Receptor Location	Quadrant
Receptor 1	Sidewalk	SW
Receptor 2	Commercial Parking Lot	NW
Receptor 3	Commercial Parking Lot	NE
Receptor 4	Sidewalk	SE
CSAH 81 and CSAH 130		
Receptor 1	Pedestrian Refuge Island	NW
Receptor 2	Crosswalk Waiting Area	NE
Receptor 3	Pedestrian Refuge Island	SE
Receptor 4	Crosswalk Waiting Area	SW

Carbon monoxide concentrations modeled for Build peak traffic volumes for the years 2011 and 2020 are shown in Table 18. The CO concentrations shown for each receptor are the predicted maximum CO concentrations taken from the results of all modeled wind angles (0 – 360 degrees).

TABLE 18
CARBON MONOXIDE MODELING RESULTS[(1)] – P.M.

CSAH 81 and Bass Lake Road	2011		2020	
	1-hour	8-hour	1-hour	8-hour
Receptor 1	3.1	2.1	3.7	2.5
Receptor 2	3.0	2.1	3.3	2.3
Receptor 3	3.5	2.4	4.0	2.7
Receptor 4	3.2	2.2	3.5	2.4
CSAH 81 and CSAH 130	**1-hour**	**8-hour**	**1-hour**	**8-hour**
Receptor 1	3.7	2.5	3.7	2.8
Receptor 2	3.8	2.6	3.8	2.9
Receptor 3	3.6	2.5	3.7	2.8
Receptor 4	3.5	2.4	3.6	2.7
State Standard	**30**	**9**	**30**	**9**
Federal Standard	**35**	**9**	**35**	**9**

Note: [(1)] CO concentrations are in parts per million (ppm).

Summary of Carbon Monoxide Study Results

CSAH 81 and CSAH 10 Intersection: The worst-case carbon monoxide levels (3.5 ppm and 2.4 ppm for 2011 1-hour and 8-hour concentrations, and 4.0 ppm and 2.7 ppm for 2020 1-hour and 8-hour concentrations) are predicted at the northeast corner of the intersection; these concentrations are below both state and federal standards.

CSAH 81 and CSAH 130 Intersection: The worst-case carbon monoxide levels (3.8 ppm and 2.6 ppm for 2011 1-hour and 8-hour concentrations, and 3.8 ppm and 2.9 ppm for 2020 1-hour and 8-hour concentrations) are predicted at the northeast corner of the intersection; these concentrations are below both state and federal standards.

Conclusion

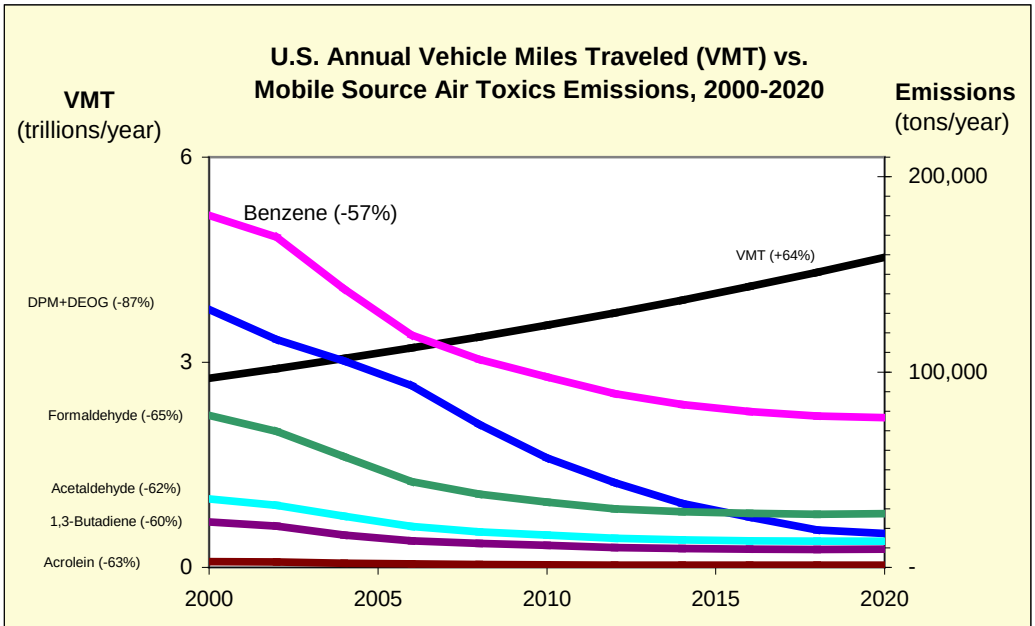
Carbon monoxide concentrations at all modeled receptor sites would be well below federal and state standards with the Build Alternative in 2011 and 2020. The intersections of CSAH 81 with Bass Lake Road and CSAH 130 are predicted to have the lowest levels of service; therefore these carbon monoxide concentrations are considered to be worst case and air quality is not expected to be an issue within the study area.

Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are 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, the FHWA projects that even with a 64 percent increase in vehicle miles traveled (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 following graph:



Notes: For on-road mobile sources. Emissions factors were generated using MOBILE6.2. Methyl tertiary-butyl ether proportion of market for oxygenates is held constant, at 50%. Gasoline Reid Vapor Pressure and oxygenate content are held constant. VMT: *Highway Statistics 2000* , Table VM-2 for 2000, analysis assumes annual growth rate of 2.5%. "Diesel Particulate + Diesel Exhaust Gas" 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.

As a result, the 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 Clean Air Act Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

Unavailable Information for Project Specific MSAT Impact Analysis

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

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 SATs in the context of highway projects. While the MOBILE 6.2 emissions model 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 with emission factors that 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 particulate matter under the conformity rule, the EPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.

   These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 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 National Cooperative Highway Research Program 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.

4. **Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs**

Research into the health impacts of MSATs is on-going. 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 non-cancer 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[5]. 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 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, a qualitative analysis of MSAT emissions relative to the project alternatives has been provided. A qualitative assessment of this type is recommended by the FHWA for roadway widening projects where the average forecast AADT is less than 150,000 vehicles. The project alternative 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.

Mobile Source Air Toxics Analysis

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences

[5] 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.

among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at **www.fhwa.dot.gov/ environment/airtoxic/ msatcompare/msatemissions.htm**

For the No Build and Build Alternative in this EA, the amount of MSATs emitted would be proportional to the average daily traffic (ADT) assuming that other variables such as fleet mix are the same for each alternative. The ADT on CSAH 81 is expected to be higher under the Build Alternative, while the ADT on other routes, such as Brooklyn Boulevard is expected to be lower. Small differences in emissions resulting from differences in ADT are offset somewhat by lower MSAT emission rates due to increased speeds under Build conditions compared to congested conditions anticipated under No Build conditions; according to EPA's MOBILE 6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset ADT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

Regardless of the alternative chosen (No Build versus Build), emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, as discussed previously. Local conditions may differ from these national projections in terms of fleet mix and turnover, ADT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for ADT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the Build Alternative will have the effect of moving some traffic closer to nearby homes, schools and businesses; therefore, under the Build Alternative, there may be localized areas where ambient concentrations of MSATs could be higher than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along CSAH 81 from TH 100 to Brooklyn Boulevard. Localized decreases in MSAT concentrations may occur in other locations. However, as discussed above, the magnitude and the duration of these potential increases and decreases compared to the No Build Alternative cannot be accurately quantified due to the inherent deficiencies of current models.

In sum, when a highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSATs will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Transportation Conformity

The 1990 Clean Air Act Amendments require that a State Implementation Plan (SIP) demonstrate how a state will meet federal air quality standards. The EPA has designated all of Hennepin, Ramsey, Anoka, and portions of Carver, Scott, Dakota, Washington, and Wright counties as a maintenance area for carbon monoxide. The project area is included in this maintenance area.

The EPA issued final rules on transportation conformity that describe the methods required to demonstrate SIP conformity for transportation projects. These guidelines indicate that non-exempt transportation projects such as the CSAH 81 project may need to be included in a regional emissions analysis to demonstrate that the project will not increase regional emissions and would not increase the frequency or severity of existing violations. The regional analysis must be part of the metropolitan planning organization's long-range plan.

Accordingly, this project is included in the current 2009-2012 Twin Cities Transportation Improvement Program (TIP), which was used to complete the regional analysis. The transportation conformity section of the TIP also includes this project in Appendix B. The regional analysis shows that emissions are below the EPA-established emissions budget for the region. This project does not interfere with implementation of any transportation control measures included in the SIP. Therefore, this project conforms to the requirements of the Clean Air Act Amendments and to the Conformity Rules, 40 CFR 93.

G. Highway Traffic Noise

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 loudest traffic scenario. 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 19 below).

The following chart provides a rough comparison of the noise levels of some 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. A rule of thumb regarding sound level decrease due to increasing distance from a line source (roadway) that is commonly used is: beyond approximately 50 feet from the sound source, each doubling of distance from the line source over hard ground (such as pavement or water) will reduce the sound level by 3 dBA, whereas each doubling of distance over soft ground (such as vegetated, or grassy ground) results in a sound level decrease of 4.5 dBA.

For residential and parkland uses (Federal Land Use Category B), the Federal L_{10} noise abatement criterion is 70 dBA for both daytime and nighttime. Locations where noise levels are "approaching" (defined as being within 1 dBA of the criterion threshold, i.e., 69 dBA) or exceeding the criterion level, must be evaluated for noise abatement reasonableness. The Federal noise abatement criterion for commercial and industrial land uses is 75 dBA. Federal noise abatement criteria (NAC) are shown in Table 19.

TABLE 19
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*	Residential, hospitals, libraries, etc.

** Applies to interior noise levels. All other land uses are exterior levels.*

In addition to the identified Federal 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 and Hennepin County consider an increase of 5 dBA or greater a substantial noise level increase. Because Federal funds will be used as part of this project, the Federal noise abatement criteria apply to all roads within the project area.

Minnesota has established State noise standards for daytime and nighttime periods. Traffic noise impacts associated with the proposed project, as it relates to State noise standards, was described in an Environmental Assessment Worksheet (EAW). A complete copy of the EAW and traffic noise analysis comparison to State noise standards can be obtained from Hennepin County.

The FHWA Minnesota Division has developed guidance material for evaluating traffic noise impacts of local federally funded projects that are exempt from State noise standards. The guidance material can be found at the web site:

http://www.dot.state.mn.us/stateaid/forms/NoiseGuidance.pdf

Mn/DOT's Noise Abatement Policy for local agencies is given below.

Mn/DOT Noise Abatement Policy.[6] FHWA requires that all State Highway Agencies adopt a written statewide noise policy that clarifies the requirements of 23 CFR 772. The Mn/DOT Noise Policy states that it applies to all Federal-aid highway projects under the jurisdiction of Mn/DOT. The Mn/DOT Noise Policy establishes the noise level that approaches the FHWA Noise Abatement Criteria (NAC), a *substantial increase* in noise levels and a *substantial noise reduction*. The policy also gives criteria for determining *reasonable and feasible* noise abatement measures.

Federal-aid highway projects under local jurisdiction must also comply with Mn/DOT's Noise Policy. CSAH 81 is owned and maintained by Hennepin County. The proposed CSAH 81 reconstruction is a federal-aid highway project. As such, the proposed project must comply with Mn/DOT's Noise Policy.

The Mn/DOT noise abatement policy is discussed below.

1. **Noise Level Approaching the NAC.** Mn/DOT defined the level that approaches noise abatement criteria as 1 dBA less than the criterion for each activity category. For example, 69 dBA is considered approaching noise abatement criteria for activity category B and 74 dBA is considered approaching noise abatement criteria for activity category C. (See Table 19 above for Federal noise abatement criteria).

[6] Minnesota Department of Transportation. 2007. The Minnesota Department of Transportation Web Site (online). Office of Environmental Services. Noise Analysis. Mn/DOT Noise Policy for Type I and Type II Federal Aid Projects as per 23 CFR 772 accessed 2007-12-03 at http://www.dot.state.mn.us/environment/noise_analysis/policy.html.

2. **Substantial Increase in Noise.** Comparison of the project design year noise levels to the existing (current year) noise levels determines the change in noise levels that are used to determine whether there is a substantial increase. Mn/DOT has defined a substantial increase over existing noise levels as 5 dBA or more.

3. **Substantial Noise Reduction.** When noise abatement measures are being considered, FHWA regulations require that every reasonable effort be made to obtain substantial noise reductions. Mn/DOT defines a substantial noise reduction as 5 dBA or more.

4. **Noise Barrier Reasonable and Feasible Criteria.** Mn/DOT gives criteria that must be met by Type I projects to be considered for construction of a noise barrier. The following are Mn/DOT's criteria for consideration of a noise barrier as they relate to Federal noise abatement requirements:

    a) The receptors shall have predicted future noise levels that approach or exceed the Federal NAC, or exceed existing noise levels by 5 dBA or more.

    b) The cost-effectiveness of the barrier shall not exceed $3,250/dBA/residence in 1997 dollars for residential receptors. Mn/DOT may annually adjust this cost-effectiveness figure up or down based on changes in the construction price index after 1997.

    c) A receptor's inclusion in the cost-effectiveness calculation shall be contingent on the receptor receiving a minimum or 5 dBA reduction due to the construction of the barrier.

    d) Housing density must be a minimum of 10 dwelling units per half mile.

    e) The municipality where affected residents reside supports the installation of a barrier.

The above policy is to be applied in an effort to avoid conflict with obligations of Mn/DOT to comply with criteria and standards of Federal agencies for obtaining and using Federal funds.

Project Setting

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

The CSAH 81 project corridor is located in an urban/suburban area with both residential and commercial uses. Traffic noise is generated by vehicles traveling on CSAH 81 as well as other intersecting County and local roadways. Several major highways that run perpendicular to the CSAH 81 corridor also have an influence on sound levels near CSAH 81. TH 100, I-94, and TH 169 are the three largest intersecting roadways that contribute to the existing noise environment at locations near their interchanges or intersections with CSAH 81.

Aircraft using the Crystal Airport, which is located east of CSAH 81 and north of CSAH 10 in the City of Crystal, is an additional source of ambient noise within the project area. Airport noise levels would not be expected to change due to construction of the proposed project.

Other sources include noise generated by freight trains traveling on the Canadian Pacific Railway (CP Railway)/Soo Line Railroad and BNSF Railway lines. The CP Rail crosses CSAH 81 between TH 100 and CSAH 10 and carries approximately 10 trains per day at approximately 30 miles per hour (mph). The BNSF Railway line runs parallel to the CSAH 81 corridor and carries on average one train per day at approximately 25 mph.[7]

Traffic Noise Monitoring

Noise level monitoring is commonly performed during a noise study to document existing noise levels. Existing daytime noise levels were monitored at three sites in the project area, chosen to represent areas of outdoor human activity in representative areas along the CSAH 81 project corridor. Existing noise levels were monitored on June 1, 2007, for 15 minutes during the hour prior to and including the P.M. peak hour (4:00 P.M to 5:30 P.M.). Monitoring methods used in this study comply with State and Federal guidelines. A trained noise monitoring technician was present at each session for the entire monitoring session to ensure correct operation of the noise monitoring equipment.

The three noise monitoring locations are identified below and illustrated in Figures 9A through 9D:

- Receptor R6, representing residences along the west side of CSAH 81 at Fairview Avenue North in Crystal;
- Receptor R27, representing residences along the east side of CSAH 81 at 65th Avenue North in Brooklyn Park; and
- Receptor R43, representing residences along the east side of CSAH 81 at 1st Avenue N.E. and Jefferson Highway in Osseo.

Receptors were programmed into the noise model input files at the locations where noise levels were monitored in the field to determine the relationship between monitored and modeled traffic noise levels. The computer model predicted a P.M. peak hour L_{10} noise level of 66.8 dBA at the first location, 71.5 dBA at the second location, and 68.2 dBA at the third location. The existing noise level monitored during the P.M. peak hour was 66.0 dBA, 73.5 dBA, and 65.0 dBA, respectively (see Table 20). The monitored L_{10} noise levels are consistent with the modeled L_{10} noise levels, indicating that the predominant noise source at locations adjacent to the project corridor is from roadway traffic on CSAH 81.

[7] Minnesota Department of Transportation. 2009. The Minnesota Department of Transportation Web Site (online). Freight Maps, Data, Tools and Resources. 2009 Twin Cities Area Freight Railroad Map Volumes and Speeds accessed 2009-02-17 at http://www.dot.state.mn.us/ofrw/maps/Metro2009RailVolSpeed.pdf.

Traffic Noise Modeling

Forty-seven (47) representative noise modeling receptor locations were initially identified along the CSAH 81 project corridor. Noise model receptor locations were identified to represent those areas most sensitive to potential traffic noise impacts resulting from construction of the proposed project (i.e., sites adjacent to CSAH 81). The receptors were placed between the CSAH 81 roadway and the residence (or commercial sites) in areas where frequent human use would be likely to occur and where noise impacts could be reasonably expected to be the greatest. At residential locations, receptors were programmed into the noise model input file in either the front or back yard, whichever was closest to CSAH 81, as a worst-case scenario, and located approximately half-way between the residential structure and the right of way limits.

Each noise model receptor was assigned a unique identification number from south (45th Avenue North in Robbinsdale) to north (CSAH 30 in Maple Grove). Land uses at each receptor location are indicated in the noise model results tables. Noise modeling receptor locations and corresponding identification numbers are illustrated in Figures 9A through 9D in Appendix A.

Noise modeling was completed using the noise prediction program "MINNOISE", a version of the FHWA "STAMINA" model adapted by Mn/DOT. This model uses traffic volumes, vehicle speed, class of vehicle (i.e., cars, medium trucks, heavy trucks) and the typical characteristics of the roadway being analyzed. Receptor coordinates and elevations, as well as existing earthen berms, other topological features, or existing noise barriers were also programmed into the noise model input files. Traffic noise model input files were developed for existing conditions (i.e., as the CSAH 81 roadway exists today) and for future Build conditions (i.e., as the CSAH 81 roadway would be if it were reconstructed).

Traffic noise impacts for the project area were evaluated based on the four segments described in Section IV.A.

Noise level predictions were based on the following model input file assumptions:

- Annual average daily traffic (AADT) for existing conditions was evaluated using year 2007 Hennepin County and Mn/DOT AADT counts.[8]
- Average daily traffic data for future year 2030 are based on information provided in the March 7, 2006 *Forecast Update Memorandum* prepared by SRF Consulting Group, Inc (see Section IV.A). Year 2030 was evaluated for future conditions because this is the future design year of the proposed CSAH 81 reconstruction.
- Noise modeling for the proposed CSAH 81 reconstruction was completed for the P.M. peak traffic hour. FHWA regulations state that traffic noise impacts should be assessed for the noisiest hour of the day in the design year. The P.M. peak traffic hour was assumed to be the loudest hour of the day because of the high commuter

[8] Year 2007 was used for the existing conditions analysis. Year 2008 AADT volumes for Hennepin County were not formally published at the time this analysis was prepared.

traffic volumes operating on CSAH 81 during this period. Year 2030 was evaluated for future conditions because this is the future design year for the proposed CSAH 81 reconstruction.

- The P.M. peak traffic hour represents 10 percent of existing average daily traffic volumes. The P.M. peak traffic hour was assumed to be 10 percent of average daily traffic for No Build and Build conditions. The directional split on CSAH 81 during the P.M. peak hour was assumed to be 60 percent northbound and 40 percent southbound for existing and future No Build and Build conditions.
- Noise modeling was completed for the CSAH 81 mainline and also considered intersecting cross roadways. Local access roads/service roads were not evaluated as part of the noise modeling analysis. It was assumed that the corridor is fully developed, and there would be no land use changes along the corridor that would result in a high-volume local roadway under future No Build and Build conditions.
- The vehicle type mix (i.e., percent cars and light trucks, medium trucks, and heavy trucks) programmed into the noise model input files was based on 2002 Hennepin County traffic counts. The vehicle percentage assumed for CSAH 81 south of I-94 was as follows: 96.5 percent cars and light trucks; 2.5 percent medium trucks; and 1 percent heavy trucks. The vehicle percentage assumed for CSAH 81 north of I-94 was as follows: 94 percent cars and light trucks; 5 percent medium trucks; and 1 percent heavy trucks.
- Traffic noise level predictions were based on a constant operating speed of 45 miles per hour (mph) under existing and future No Build and Build conditions.
- The analysis assumed an acoustically soft ground cover between the modeled receptor locations and the modeled roadways (i.e., alpha=0.5).
- The analysis assumed that the proposed Mn/DOT interchange reconstruction at TH 169 and CSAH 81 (S.P. 2750-57) had been completed under the future No Build and Build conditions.

The discussions of modeling results presented below reference the L_{10} values because the L_{10} descriptor is used to define the Federal noise level regulatory thresholds (see Table 19).

Noise Model Results

Traffic noise model results are presented below by segment location along the CSAH 81 project corridor. Noise level modeling results are tabulated in Table 20.

Segment One (TH 100 to CSAH 10): County Project No. 0118

Noise modeling results for Segment One are tabulated in Table 20. Existing noise levels at modeled receptor locations in Segment One range from 57.0 dBA to 70.1 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.8 dBA to 1.2 dBA (L_{10}) from existing to future No Build conditions. One model receptor location (Receptor R5) exceeds Federal noise abatement criteria under existing and future No Build conditions.

Construction of the proposed CSAH 81 improvements is predicted to result in modeled future noise levels from 58.2 dBA to 69.1 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.9 dBA to 2.1 dBA (L_{10}) from existing to future Build conditions. A decrease is predicted at Receptor R5 where the CSAH 81 alignment is shifted by approximately 40 feet to the west under Build conditions. Two model receptor locations (Receptors R6, and R7) are predicted to approach (69 dBA or greater) Federal noise abatement criteria under future Build conditions. None of the modeled receptor locations are predicted to experience a substantial increase (increase over existing noise levels of 5 dBA or greater) in modeled noise levels from existing to future Build conditions.

Segment Two (CSAH 10 to 63rd Avenue North): County Project No. 0119

Noise modeling results for Segment Two are tabulated in Table 20. Existing noise levels at modeled receptor locations in Segment Two range from 58.2 dBA to 68.3 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.9 dBA to 2.3 dBA (L_{10}) from existing to future No Build conditions. None of the modeled receptor locations exceed Federal noise abatement criteria under existing and future No Build conditions.

Construction of the proposed CSAH 81 improvements is predicted to result in modeled noise levels from 61.0 dBA to 68.4 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.8 dBA to 2.8 dBA (L_{10}) from existing to future Build conditions. None of the modeled receptor locations are predicted to approach Federal Noise Abatement Criteria (69 dBA or greater) under future Build conditions or experience a substantial increase (increase over existing noise levels of 5 dBA or greater) in modeled noise levels from existing to future Build conditions.

Segment Three (63rd Avenue North to TH 169 Interchange Area): County Project No. 0203

Noise modeling results for Segment Three are tabulated in Table 20. Existing noise levels at modeled receptor locations in Segment Three range from 60.4 dBA to 71.3 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.3 dBA to 2.7 dBA (L_{10}) from existing to future No Build conditions. Two model receptor locations in Segment Three (Receptors R25 and R27) exceed Federal noise abatement criteria under existing conditions. Three model receptor locations in Segment Three (Receptors R25, R27 and R28) are predicted to exceed Federal noise abatement criteria under future No Build conditions.

Construction of the proposed CSAH 81 improvements is predicted to result in modeled future noise levels from 61.0 dBA to 72.1 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.4 dBA to 3.7 dBA (L_{10}) from existing to future Build conditions. Three model receptor locations (Receptors R25, R27 and R28) are predicted to approach or exceed Federal noise abatement criteria under future Build conditions. None of the modeled receptor locations are predicted to experience a substantial increase (increase over existing noise levels of 5 dBA or greater) in modeled noise levels from existing to future Build conditions.

TABLE 20
CSAH 81 NOISE LEVEL MODELING RESULTS

Area	Receptor*	Monitor L10	Existing (2007) L10	Impact	No Build (2030) L10	Impact	Difference Between No Build (2030) and Existing (2007)	Build (2030) L10	Impact	Difference Between Build (2030) and Existing (2007)	Difference Build (2030) and No Build (2030)
Segment One (County Project No. 0118): TH 100 to CSAH 10											
	R1 (R)(7)		58.1	No	59.3	No	1.2	59.5	No	1.4	0.2
	R2 (P)		57.0	No	58.1	No	1.1	58.2	No	1.2	0.1
	R3 (R)(9)		62.7	No	63.5	No	0.8	63.8	No	1.1	0.3
	R3A (R)(4)		66.0	No	66.8	No	0.8	67.2	No	1.2	0.4
	R4 (R)(2)		63.7	No	64.5	No	0.8	65.0	No	1.3	0.5
	R5 (R)(10)		**70.1**	**Yes**	**71.0**	**Yes**	0.9	68.4	No	-1.7	-2.6
A1	R6 (R)(2)	66.0	67.0	No	67.8	No	0.8	**69.1**	**Yes**	2.1	1.3
A1	R7 (R)(1)		68.1	No	68.9	No	0.8	**69.1**	**Yes**	1.0	0.2
	R8 (S)		66.3	No	67.2	No	0.9	67.4	No	1.1	0.2
	R9 (R)(5)		65.7	No	66.5	No	0.8	66.6	No	0.9	0.1
	R10 (R)(7)		62.9	No	64.0	No	1.1	65.2	No	2.3	1.2
	R11 (C)(5)		62.2	No	63.2	No	1.0	63.3	No	1.1	0.1
	R12 (R)(9)		64.3	No	65.5	No	1.2	66.8	No	2.5	1.3
	R13 (R)(1)		59.1	No	60.2	No	1.1	60.7	No	1.6	0.5
	R14 (R)(7)		60.7	No	61.8	No	1.1	61.9	No	1.2	0.1
Segment Two (County Project No. 0119): CSAH 10 to 63rd Avenue N											
	R15 (R)(5)		61.4	No	62.5	No	1.1	62.8	No	1.4	0.3
	R16 (R)(3)		62.7	No	63.8	No	1.1	63.9	No	1.2	0.1
	R17 (R)(28)		64.5	No	65.4	No	0.9	65.5	No	1.0	0.1
	R18 (R)(9)		62.8	No	63.7	No	0.9	63.9	No	1.1	0.2
	R19 (R)(10)		65.2	No	66.1	No	0.9	66.3	No	1.1	0.2
	R20 (R)(6)		67.6	No	68.5	No	0.9	68.4	No	0.8	-0.1
	R21 (R)(1)		58.2	No	60.5	No	2.3	61.0	No	2.8	0.5
	R22 (R)(13)		64.1	No	65.1	No	1.0	65.3	No	1.2	0.2
	Fed. NAC B	70	70	-	70	-	-	70	-	-	-
	Fed. NAC C	75	75	-	75	-	-	75	-	-	-

Bold numbers approach or exceed Federal noise abatement criteria or result in a substantial increase in noise (≥ 5 dBA from existing to Build conditions).
(R) – Residence; (C) – Commercial; (S) – School; (H) – Hotel; (P) – Recreation Area/Park
* – Number in parentheses in this column is the number of receptors and/or commercial buildings represented by each receptor.

TABLE 20 - continued
CSAH 81 NOISE LEVEL MODELING RESULTS

Area	Receptor*	Monitor L10	Existing (2007) L10	Impact	No Build (2030) L10	Impact	Difference Between No Build (2030) and Existing (2007)	Build (2030) L10	Impact	Difference Between Build (2030) and Existing (2007)	Difference Build (2030) and No Build (2030)
Segment Three (County Project No. 0203): 63rd Avenue N to TH 169											
	R23 (R)(3)		63.1	No	63.7	No	0.6	64.2	No	1.1	0.5
	R24 (R)(4)		60.4	No	60.7	No	0.3	61.0	No	0.6	0.3
A2	R25 (R)(5)		**69.5**	**Yes**	**70.1**	**Yes**	0.6	**70.9**	**Yes**	1.4	0.8
	R26 (R)(2)		66.3	No	66.7	No	0.4	67.0	No	0.7	0.3
A2	R27 (R)(3)	**73.5**	**71.3**	**Yes**	**72.0**	**Yes**	0.7	**72.1**	**Yes**	0.8	0.1
A2	R28 (R)(3)		68.3	No	**69.0**	**Yes**	0.7	**69.0**	**Yes**	0.7	0.0
	R29 (R)(1)		67.0	No	67.7	No	0.7	67.7	No	0.7	0.0
	R30 (R)(5)		65.7	No	66.5	No	0.8	66.8	No	1.1	0.3
	R31 (H)(1)		64.5	No	65.9	No	1.4	66.0	No	1.5	0.1
	R32 (C)(1)		63.9	No	66.6	No	2.7	66.7	No	2.8	0.1
	R33 (C)(1)		64.1	No	65.5	No	1.4	64.8	No	0.7	-0.7
	R34 (C)(2)		68.0	No	**69.5**	**Yes**	1.5	68.6	No	0.6	-0.9
	R35 (R)(1)		64.2	No	66.1	No	1.9	66.7	No	2.5	0.6
	R36 (R)(2)		64.6	No	66.5	No	1.9	67.3	No	2.7	0.8
	R37 (R)(4)		63.2	No	65.2	No	2.0	66.4	No	3.2	1.2
	R38 (R)(3)		61.0	No	63.4	No	2.4	64.7	No	3.7	1.3
	R39 (C)(7)		64.1	No	66.0	No	1.9	64.5	No	0.4	-1.5
Segment Four (County Project No. 0226): TH 169 to CSAH 30											
	R40 (C)(1)		68.3	No	70.1	No	1.8	70.3	No	2.0	0.2
	R41 (R)(2)		62.4	No	64.2	No	1.8	64.3	No	1.9	0.1
	R42 (R)(2)		66.2	No	68.0	No	1.8	68.1	No	1.9	0.1
	R43 (R)(1)	65.0	68.0	No	**69.8**	**Yes**	1.8	68.9	No	0.9	-0.9
	R44 (R)(6)		67.4	No	**69.3**	**Yes**	1.9	68.5	No	1.1	-0.8
	R45 (S)		65.2	No	67.0	No	1.8	67.3	No	2.1	0.3
	R46 (C)(1)		66.2	No	66.3	No	0.1	67.5	No	1.3	1.2
	Fed. NAC B	70	70	-	70	-	-	70	-	-	-
	Fed. NAC C	75	75	-	75	-	-	75	-	-	-

Bold numbers approach or exceed Federal noise abatement criteria or result in a substantial increase in noise (≥ 5 dBA from existing to Build conditions).
(R) – Residence; (C) – Commercial; (S) – School; (H) – Hotel; (P) – Recreation Area/Park
* – Number in parentheses in this column is the number of receptors and/or commercial buildings represented by each receptor.

Segment Four (TH 169 Interchange Area to CSAH 30): County Project No. 0226

Noise modeling results for Segment Four are tabulated in Table 20. Existing noise levels at modeled receptor locations in Segment Four range from 62.4 dBA to 68.3 dBA (L_{10}). Modeled noise levels are predicted to increase by 0.1 dBA to 1.9 dBA (L_{10}) from existing to future No Build conditions. None of the modeled receptor locations in Segment Four exceed Federal noise abatement criteria under existing conditions. Two model receptor locations in Segment Four (Receptors R43 and R44) are predicted to exceed Federal noise abatement criteria under future No Build conditions.

Construction of the proposed CSAH 81 improvements is predicted to result in modeled future noise levels from 64.3 dBA to 70.3 dBA (L_{10}). Modeled daytime and nighttime noise levels are predicted to increase by 0.9 dBA to 2.2 dBA (L_{10}) from existing to future Build conditions. None of the modeled receptor locations are predicted to approach Federal Noise Abatement Criteria (69 dBA or greater) under future Build conditions or experience a substantial increase (increase over existing noise levels of 5 dBA or greater) in modeled noise levels from existing to future Build conditions.

Future Build vs. Future No Build Conditions

In general, modeled traffic noise levels are predicted to be less than 1 dBA up to 1.7 dBA (L_{10}) greater under future Build conditions compared to future No Build conditions at most modeled receptor locations.

In a few limited locations, a decrease in noise levels of 0.3 dBA to 2.6 dBA (L_{10}) is predicted under future Build conditions compared to future No Build conditions. At most of these locations, the horizontal alignment for the proposed CSAH 81 roadway is shifted away from the modeled receptor locations, resulting in a decrease in noise levels under future Build conditions compared to future No Build conditions. The comparison of future No Build noise levels to future Build levels was not used in the determination of noise impacts. However, comparing future No Build to Build modeled noise levels indicates that traffic noise will increase with or without the proposed CSAH 81 project as background traffic volumes increase over time.

<u>Feasibility and Reasonableness of Traffic Noise Abatement</u>

Future noise levels approach and exceed the Federal noise abatement criterion along the proposed reconstruction area of CSAH 81. As such, Federal noise abatement measures identified in 23 CFR 772.13(c) were evaluated. 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.

The following is a discussion of the evaluation of noise abatement measures.

Traffic Management Measures

These measures include such items as signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, and modified speed limits. Traffic management measures such as vehicle-use restrictions and time of use restrictions would not be consistent with the function of CSAH 81 as an "A" Minor Arterial facility.

Reducing speed limits would reduce noise levels adjacent to project area roadways. A general rule of thumb is that a decrease in speed of approximately 20 miles per hour is necessary for a perceptible decrease in noise. Reduced speed limits are not feasible for this project because this would also be inconsistent with the function of CSAH 81 as an "A" Minor Arterial facility. Moreover, Hennepin County cannot arbitrarily reduce speed limits on a roadway. The Minnesota Commissioner of Transportation sets speed limits based on the results of a speed study.

Horizontal and Vertical Alignments

The mitigation of noise impacts begins with the evaluation of design features, such as shifts in the roadway horizontal and vertical alignment, to reduce predicted noise levels. Shifting the horizontal alignment away from an affected receptor, as well as vertical alignment shifts such as a cut section, can be effective in minimizing noise impacts.

Alteration of the horizontal or vertical roadway alignment is not feasible because the proposed CSAH 81 improvements are located within an existing roadway corridor that is fully developed on both sides. Shifts in the horizontal alignment to reduce noise at residential receptors adjacent to CSAH 81 would result in substantial right of way impacts and/or increased noise at other residential receptors. Changes in the vertical alignment (i.e., lowering the roadway profile) is not feasible because of right of way impacts resulting from side slopes, proximity of the frontage road system, and impacts to utilities and drainage systems within the corridor. Changes in the vertical alignment are also not feasible because of adjacent side street profiles and driveway connections to these side streets.

Vegetation/Landscaping

The use of vegetation as a noise screen can be effective only if at least 75 to 100 feet of dense, evergreen vegetation (evergreen vegetation maintains its foliage year round) is

provided between the source and receptor. The use of vegetation is not reasonable and feasible for this project because of right of way limitations. The depth of vegetation necessary to function as an effective noise screen would result in substantial right of way impacts to adjacent properties.

Buffer Zones and Exclusive Land Use Designations

Providing buffer zones to construct earthen berms or increase the distance between the noise source and adjacent receptors is not reasonable or feasible for this project because the land has previously been developed along the project corridor. Acquisition of right of way to accommodate a buffer zone would result in substantial property impacts and relocations. Costs for right of way acquisition to accommodate a buffer zone for this project would also be unreasonable.

Noise Barriers

Construction of noise barriers was evaluated. Noise barrier construction decisions are based on a study of feasibility and reasonableness. Feasibility is determined by physical and/or engineering constraints (i.e., whether or not a noise wall could feasibly be constructed on site). Reasonableness is a more subjective criterion and is based on a number of factors. Economic reasonableness or cost-effectiveness is the first consideration in determining the reasonableness of proposed noise barriers. If noise mitigation is found to be cost-effective, additional reasonableness factors such as aesthetics and the desires of affected property owners are considered. Local communities are also consulted as to their desire for noise walls.

The feasibility of noise barrier construction is sometimes dependent on design details that are typically not known until the final design phase of the project. The following analysis assumes that noise walls could be feasibly constructed up to 20 feet high within the proposed CSAH 81 right of way throughout the project corridor.

As previously described, for a noise barrier to be considered acoustically effective, it must achieve a noise reduction of 5 dBA or more. Using Mn/DOT's noise mitigation policy, for the construction of a noise barrier to be considered cost-effective, it must provide receptors a minimum 5 dBA reduction and must have cost-effectiveness that does not exceed $3,250/dBA/residence. The following formula can be used to determine the cost-effectiveness of the barrier:

The cost-effectiveness index is equal to the cost of the noise barrier[1] divided by the product of the average noise level reduction based on those residences that had noise level reductions of 5 dBA or more and the number of residences that had noise level reductions of 5 dBA or more.

[1]The cost of a noise wall is calculated using $15 per square foot of wall, except on bridges, where the cost is $18 per square foot.

Only residences that experience a 5 dBA or greater decrease in noise following construction of a noise barrier are considered in this analysis. The result of the above formula is a cost per decibel per residence. This overall approach is outlined in Mn/DOT Noise Policy for Type I and Type II Federal-Aid Projects as per 23 CFR 772.

Noise barriers have been previously constructed at the TH 100 and I-94 interchanges and will remain in place with the proposed CSAH 81 improvements. With the reconstruction of the Highway 169 Triangle in Brooklyn Park and Osseo, noise barriers are planned to replace the existing in-place wall located north of the TH 169/ CSAH 81 interchange. These existing walls are not affected by the CSAH 81 project.

For this study, three heights of potential noise barriers were analyzed: 20, 15 and 10 feet. Because of safety considerations at intersections, areas at intersections where barriers cannot be constructed because of sightlines were identified. Section 5-2.02.01 of the Minnesota Road Design Manual was used to identify sight line distances. Cost calculations assumed a cost of $15/square foot as noted above. If a modeled noise barrier meets the reasonableness criteria and is feasible, it would be reevaluated during final design and proposed for construction.

Feasibility and Reasonableness Analysis of Noise Barriers

A reasonableness analysis for the placement of noise barriers was performed for each of the three areas along the CSAH 81 corridor where traffic noise impacts (based on Federal noise abatement criteria and/or a substantial increase in noise from existing to future Build conditions) are predicted to occur (see Table 20). Additional representative receptors were incorporated into the noise model input files for the noise wall analysis where appropriate. As previously noted, it was assumed that all modeled barriers were structurally feasible. The results of the reasonableness calculations (i.e., cost-effectiveness calculations) are summarized below.

Table 21 tabulates the dBA (L_{10}) reduction achieved for 10-foot, 15-foot, and 20-foot modeled walls.

Cost-effectiveness for modeled barriers was calculated based on the reductions shown in Table 21. Cost-effectiveness results for all modeled noise barriers are tabluated in Tables 22A through 22C and are described below.

Area 1: West of CSAH 81 from 48th Avenue North to Corvallis Avenue North

A 1690-foot long noise wall was modeled along the west side of CSAH 81 from 48th Avenue North to Corvallis Avenue (Figure 9E). This wall was modeled within Hennepin County right of way in the boulevard area between the sidewalk and the southbound CSAH 81 travel lanes. The modeled wall was located two feet from the edge of the sidewalk and approximately 12 feet from face of the southbound CSAH 81 curb. There are 15 first-row residences adjacent to the modeled noise wall at this location.

TABLE 21
NOISE MITIGATION ANALYSIS RESULTS

	Build Year 2030 – No Wall	Build Year 2030 10' Wall		Build Year 2030 15' Wall		Build Year 2030 20' Wall	
Receptor	**L_{10}**	**L_{10}**	**Difference**	**L_{10}**	**Difference**	**L_{10}**	**Difference**
Area 1: West of CSAH 81 from 48th Avenue N to Corvallis Avenue N							
R6	**69.1**	64.1	5.0	60.5	8.6	57.8	11.3
R6A	68.5	63.3	5.2	59.7	8.8	57.3	11.2
R6B	65.6	61.5	4.1	58.3	7.3	56.3	9.3
R6C	67.2	62.6	4.6	59.3	7.9	57.4	9.8
R6D	**69.8**	64.5	5.3	61.4	8.4	59.9	9.9
R6E	**72.7**	67.2	5.5	66.0	6.7	65.5	7.2
R7	**69.1**	68.6	0.5	68.4	0.7	68.3	0.8
R7A	65.5	62.9	2.6	61.6	3.9	61.1	4.4
Area 2: East of CSAH 81from 63rd Avenue N to I-94 Eastbound On Ramp							
R25	**70.9**	65.1	5.8	61.3	9.6	58.8	12.1
R27	**72.1**	66.5	5.6	62.5	9.6	59.9	12.2
R27A	**70.0**	65.4	4.6	63.6	6.4	62.8	7.2
R28	**69.0**	67.1	1.9	66.4	2.6	66.2	2.8

Bold numbers approach or exceed Federal Noise Abatement Criteria.

A noise barrier is not reasonable at this location. The 10-foot, 15-foot, and 20-foot modeled barriers resulted in a 5 dBA or greater reduction in noise levels (i.e., acoustically effective). The cost-effectiveness of the 10-foot modeled barrier was $6,882/dBA/residence; the cost-effectiveness of the 15-foot modeled barrier was $5,054/dBA/residence; and the cost-effectiveness of the 20-foot modeled barrier was $5,373/dBA/residence. The cost-effectiveness of these barriers exceeds the criteria of $3,250/dBA/residence (see Tables 22A-22C). As such, a noise barrier will not be constructed at this location.

Area 2: East of CSAH 81 from 63rd Avenue North to I-94 Eastbound On Ramp

A 2,037-foot long noise wall was modeled along the east side of CSAH 81 from approximately 600 feet north of 63rd Avenue North, north of commercial properties at northeast corner of the intersection of the CSAH 81 and 63rd Avenue North to approximately 120 feet south of the eastbound I-94 on ramp (Figures 9F and 9G). The wall was modeled within Hennepin County right of way between the northbound CSAH 81 travel lanes and the east frontage road, two feet from the east frontage road curb line. There are 12 first-row residences adjacent to the modeled noise wall at this location.

A noise barrier is not reasonable at this location. The 10-foot-, 15-foot and 20-foot modeled barriers resulted in a 5 dBA or greater decrease in noise levels (i.e., acoustically effective). The cost-effectiveness of the 10-foot modeled barrier was $7,602/dBA/residence; the cost-effectiveness of the 15-foot modeled barrier was $5,645/dBA/residence; and the cost-effectiveness of the 20-foot modeled barrier was

$6,036/dBA/residence. The cost-effectiveness of the modeled barriers exceeds the criteria of $3,250/dBA/residence (see Tables 22A-22C). As such, a noise barrier will not be constructed at this location.

Conclusion

Construction of the project would generally result in increases in noise due to increased traffic. In general, these increases range from approximately 1 dBA to 4 dBA. A sound increase of 3 dBA is barely perceptible by the human ear; a 5 dBA increase is clearly noticeable. The proposed project includes some minor horizontal alignment shifts in CSAH 81. Subsequently, the increases in noise with construction of the proposed project are greater at some modeled receptor locations where the CSAH 81 alignment is shifted towards residences. Increases in noise at other modeled receptor locations are less pronounced where the CSAH 81 alignment is shifted away from residences.

Mitigation measures as identified in 23 CFR 772.13(c) were evaluated. Measures such as traffic management measures, alteration of alignments (horizontal and vertical), vegetation/landscaping, buffer zones, and exclusive land use designations were determined to be not feasible.

The feasibility and reasonableness (i.e., cost-effectiveness) of noise barriers was evaluated. For the purposes of this analysis, it was assumed that all barriers were feasible. Cost-effectiveness of noise walls was evaluated for locations that approached or exceeded Federal noise abatement criteria or at locations where a substantial increase in noise ($\geq$ 5 dBA or greater from existing to future Build conditions) was predicted. None of the modeled walls that met the minimum 5 dBA reduction threshold were found to be cost-effective. Based on the analysis above, noise abatement measures will not be constructed with this project.

Local planning officials will be informed of future modeled noise levels along the CSAH 81 project corridor. This information can be used as a guide for local planning officials responsible for land use controls within their community to help prevent future traffic noise impacts on lands identified for development or redevelopment.

TABLE 22A
NOISE MITIGATION ANALYSIS – COST-EFFECTIVENESS RESULTS (10-Foot Wall)

Receptors	Daytime L_{10} Noise (dBA)		Reduction (in dBA) with 10 ft Noise Wall	Number of Residences	Number of Affected Residences	Length of Wall (Feet)	Total Cost of Wall $15/sq ft [(1)]	Cost/dBA/ Residence
	Pref. Alt. Year 2030 (No Wall)	Pref. Alt. Year 2030 (10 ft Wall)						
Area 1: West of CSAH 81 from 48th Avenue N to Corvallis Avenue N								
R6 (R)	**69.1**	64.1	5.0	2	1	1,690	$250,500	$6,882
R6A (R)	68.5	63.3	5.2	3	3			
R6B (R)	65.6	61.5	4.1	1	0			
R6C (R)	67.2	62.6	4.6	1	0			
R6D (R)	**69.8**	64.5	5.3	1	1			
R6E (R)	**72.7**	67.2	5.5	1	1			
R7 (R)	**69.1**	68.6	0.5	2	0			
R7A (R)	65.5	62.9	2.6	4	0			
Area 2: East of CSAH 81 from 63rd Avenue N to I-94 Eastbound On Ramp								
R25 (R)	**70.9**	65.1	5.8	3	3	2,037	$302,550	$7,602
R27 (R)	**72.1**	66.5	5.6	4	4			
R27A (R)	**70.0**	65.4	4.6	2	0			
R28 (R)	**69.0**	67.1	1.9	3	0			

Bold numbers approach or exceed Federal Noise Abatement Criteria.
(R) – Residence; (C) – Commercial; (P) – Recreation Area/Park; (S) – School; (H) – Hotel
(1) Surface area for modeled walls includes taper at wall ends.

TABLE 22B
NOISE MITIGATION ANALYSIS – COST-EFFECTIVENESS RESULTS (15-Foot Wall)

Receptors	Daytime L_{10} Noise (dBA)		Reduction (in dBA) with 15 ft Noise Wall	Number of Residences	Number of Affected Residences	Length of Wall (feet)	Total Cost of Wall $15/sq ft [1]	Cost/dBA/ Residence
	Pref. Alt. Year 2030 (No Wall)	Pref. Alt. Year 2030 (15 ft Wall)						
Area 1: West of CSAH 81 between 48th Avenue N and Corvallis Avenue								
R6 (R)	**69.1**	60.5	8.6	2	2	1,690	$373,500	$5,054
R6A (R)	68.5	59.7	8.8	3	3			
R6B (R)	65.6	58.3	7.3	1	1			
R6C (R)	67.2	59.3	7.9	1	1			
R6D (R)	**69.8**	61.4	8.4	1	1			
R6E (R)	**72.7**	66.0	6.7	1	1			
R7 (R)	**69.1**	68.4	0.7	2	0			
R7A (R)	65.5	61.6	3.9	4	0			
Area 2: East of CSAH 81 between 63rd Avenue N and I-94								
R25 (R)	**70.9**	61.3	9.6	3	3	2,037	$451,575	$5,645
R27 (R)	**72.1**	62.5	9.6	4	4			
R27A (R)	**70.0**	63.6	6.4	2	2			
R28 (R)	**69.0**	66.4	2.6	3	0			

Bold numbers approach or exceed Federal Noise Abatement Criteria.
(R) – Residence; (C) – Commercial; (P) – Recreation Area/Park; (S) – School; (H) – Hotel
[1] Surface area for modeled walls includes taper at wall ends.

TABLE 22C
NOISE MITIGATION ANALYSIS – COST-EFFECTIVENESS RESULTS (20-Foot Wall)

Receptors	Daytime L_{10} Noise (dBA)		Reduction (in dBA) with 20 ft Noise Wall	Number of Residences	Number of Affected Residences	Length of Wall (feet)	Total Cost of Wall $15/sq ft [(1)]	Cost/dBA/ Residence
	Pref. Alt. Year 2030 (No Wall)	Pref. Alt. Rear 2030 (20 ft Wall)						
Area 1: West of CSAH 81 between 48th Avenue N and Corvallis Avenue								
R6 (R)	**69.1**	57.8	11.3	2	2	1,690	$496,500	$5,373
R6A (R)	68.5	57.3	11.2	3	3			
R6B (R)	65.6	56.3	9.3	1	1			
R6C (R)	67.2	57.4	9.8	1	1			
R6D (R)	**69.8**	59.9	9.9	1	1			
R6E (R)	**72.7**	65.5	7.2	1	1			
R7 (R)	**69.1**	68.3	0.8	2	0			
R7A (R)	65.5	61.1	4.4	4	0			
Area 2: East of CSAH 81 between 63rd Avenue N and I-94								
R25 (R)	**70.9**	58.8	12.1	3	3	2,037	$600,600	$6,036
R27 (R)	**72.1**	59.9	12.2	4	4			
R27A (R)	**70.0**	62.8	7.2	2	2			
R28 (R)	**69.0**	66.2	2.8	3	0			

Bold numbers approach or exceed Federal Noise Abatement Criteria.
(R) – Residence; (C) – Commercial; (P) – Recreation Area/Park; (S) – School; (H) – Hotel
(1) Surface area for modeled walls includes tapers at wall ends.

H. Section 106 of the National Historic Preservation Act of 1966

In early 2006 Hennepin County began coordination with the Mn/DOT Cultural Resources Unit (CRU). The Mn/DOT CRU reviewed the project under Section 106 of the National Historic Preservation Act of 1966 (as amended) as part of the federal review of the project. The Mn/DOT CRU stated that no archeological work was necessary for this project and that a Phase I survey would be required (See Appendix B). The *Phase I Architectural History Survey for the CSAH 81 Reconstruction Project* (Phase I Report) was completed by The 106 Group Ltd., (The 106 Group), in December 2006 to identify properties potentially eligible for the National Register of Historic Places (NRHP). The *Phase II Architectural History Survey for the CSAH 81 (Bottineau Road) Reconstruction Project* (Phase II Report) was completed by The 106 Group in March 2007 to evaluate further and fully determine the eligibility status of the Phase I properties. The surveys included a review of a 2004 cultural resources assessment, documents on previously inventoried properties, and surveys conducted within the project area as a well as a field survey to identify and evaluate properties within the area of potential effect (APE) that contain buildings or structures constructed prior to 1961. Because the project will take several years to complete, 1960 was established as the general cutoff date for properties to be considered eligible for the NRHP.

The APE for architectural history, determined by Mn/DOT CRU, accounts for any physical, auditory, or visual impacts to historic properties (See Figure 12A in Appendix A). It includes all areas of road reconstruction activity, areas of proposed property takings, and all parcels within and immediately adjacent to the project area. The area around the intersection of CSAH 81 and TH 169 was omitted from the APE since this stretch of CSAH 81 was rebuilt as part of the TH 169 reconstruction project and no additional work is anticipated in this area. It should be noted that when the APE for the project was defined and the Phase I and II studies were conducted, a BRT was included as part of the project and was therefore included in the APE. The project was subsequently revised to remove the BRT component.

Phase I Report Recommendations

In December 2006, a meeting was held with Mn/DOT CRU to review The 106 Group's Phase I Report. The report covered 585 properties within the APE with buildings or structures constructed before 1960, 533 of which were recommended as not eligible due to a lack of significance or integrity. Of the remaining properties that are within the CSAH 81 roadway reconstruction project area, two are railroads previously determined to be eligible (Minneapolis & Pacific Railway Company Line and Minneapolis & Northwestern Railroad Company Line, commonly known as the Soo Line and BNSF Railroad respectively) and one is an individual properties (house) that was determined to be potentially eligible.

Phase II Report Recommendations

During the Phase II survey, the individual property that was identified by the Phase I survey as being potentially eligible for the NRHP was fully evaluated. Based on the results of the Phase II Report research, the house was recommended as not eligible for the NRHP by the 106 Group. See Figure 12B in Appendix A for eligible properties.

Findings of Phase II Report

The Phase II survey was conducted in five segments as described below[9]. Figure 12A depicts the APE; Figure 12B shows the historic properties along the project corridor.

Segment One (TH 100 to CSAH 10)

One property in this segment, the Minneapolis & Pacific Railway Company Line (commonly known as the Soo Line), has been previously determined eligible for the NRHP. There will be some visual effects on the railway but these effects will not change its function.

Segment Two (CSAH 10 to 63rd Avenue North)

No properties in this segment are recommended as eligible for listing on the NRHP.

Segment Three (63rd Avenue North to TH 169)

No properties in this segment are recommended as eligible for listing on the NRHP.

Segment Four (TH 169 to CSAH 30)

No properties in this segment are recommended as eligible for listing on the NRHP.

Multiple Segments

One property extends across multiple segments, the Minneapolis and Northwestern Railroad (commonly known as BNSF), and has been previously determined eligible for listing on the NRHP. There will be some visual effects. It was recommended that there are no adverse effects.

Conclusion

The Mn/DOT CRU made a determination of no adverse effect on the eligible properties (Minneapolis & Pacific Railway Company Line and Minneapolis & Northwestern Railroad Company Line, commonly known as the Soo Line and BNSF Railroad respectively) in a letter to the State Historic Preservation Office (SHPO) dated May 12, 2008; the SHPO subsequently concurred with this determination in a letter dated June 9, 2008 (see correspondence in Appendix B).

[9] Note that these segments do not correspond with the roadway project segments identified in Section IV of this EA.

I. Section 4(f) of the Transportation Act of 1966

Four existing parks are located in the vicinity of the project corridor (see Figures 13A-13C). A future park site is located in the project area as well.

Existing Parks:

- Cavanagh Early Childhood Learning Center, Crystal
- Becker Park, Crystal
- Graeser Park, Robbinsdale
- Greenhaven Park, Brooklyn Park
- Independent School District 279 park property, Osseo

Future Park:

- Future Park, Osseo

Park Impacts

Cavanagh Early Childhood Learning Center

This facility, located on the east side of CSAH 81 between Corvallis Avenue North and 51st Avenue North in the City of Crystal, includes a preschool, early childhood family education program, and alternative high school. There is a fenced-in outdoor play area on the western side of the building that is not open for public use. Ball fields on the eastern side of the building are open to the public and used as a park in the Cavanagh neighborhood.

A chain link fence and a number of coniferous trees along the fence buffer the outdoor play area on the western side of the property from the frontage road on the east side of CSAH 81. The proposed road reconstruction includes a new frontage road alignment and intersection with 51st Avenue further east of its present day location. This involves taking a portion of the site on the west side of the building. Since the outdoor play area on the western portion of the site is not open to the public it is not a Section 4(f) resource. Therefore, no park impacts are expected.

During a coordination meeting with Robbinsdale Area Schools (ISD 281), school district staff expressed concern about the loss of buffer between the playground and the road; however, they noted that there is no good alternative to the plan and added that the frontage road and intersection improvements were in everyone's best interest for better traffic alignment. The school is planning other improvements to the school and is coordinating those improvements with the proposed roadway reconstruction plans. Therefore, from a safety and engineering standpoint, they are supportive of the reconstruction plans.

Becker Park

Becker Park is a 12+ acre community park located in the southwest quadrant of CSAH 81 and CSAH 10 in the City of Crystal (See Figure 14 in Appendix A). It offers athletic fields, tennis courts, basketball courts, playground equipment, walking trails, and a shelter structure. It is directly adjacent to the BNSF Railway Company right of way which is west of the CSAH 81 roadway. Temporary impacts to the trail on the northern edge of the park along CSAH 10 are anticipated during reconstruction of the intersection. The area will be restored after construction to an improved condition with additional trees. The City of Crystal is considering an entrance monument for this area as well.

The roadway widening along CSAH 10 will likely require a permanent easement, overlapping an existing City of Crystal drainage and utility easement, on park property. The proposed permanent easement for the CSAH 81 project would require less area than the existing permanent easement. There are no recreational facilities located in the proposed easement area. The proposed project will impact approximately 4,000 square feet of parkland which is below the less than the 1-acre threshold for preparing a federal Section 4(f) Evaluation for a park this size (between 10 and 100 acres). A Programmatic Section 4(f) Evaluation is provided in Appendix E. The proposed project will not impact the function of Becker Park or park activities.

Greenhaven Park

Greenhaven Park, 7880 Mt. Curve Boulevard N, in the City of Brooklyn Park, is a neighborhood park (See Figure 15 in Appendix A). This 29-acre park provides a picnic shelter, playground, basketball, picnic area, and natural areas. It is located west of the BNSF Railway Company right of way and north of Brooklyn Boulevard. The recreational portion of the park, about one acre of the total 29-acre park, is about 800 feet west of the CSAH 81 right of way and is surrounded by open space and wetlands. The CSAH 81 project proposes grading of approximately one acre of parkland adjacent to the BNSF Railway Company right of way to lower the elevation to match that of the surrounding area to accommodate anticipated overflow from the culvert proposed in replacement of the ditch along CSAH 81. Impacts to the park will be temporary and the area will be restored to an equal or improved condition after construction. A federal Section 4(f) Evaluation is not required for these temporary impacts. See Appendix B for correspondence from the City of Brooklyn Park regarding its concurrence with the proposed impacts and mitigation.

Independent School District #279 Property

The school property is immediately adjacent to CSAH 81 on the east side. The outdoor recreational facilities at the high school property in the City of Osseo are available for use by the public as a community park facility when not being used for school purposes. No project impacts are anticipated to occur on the outdoor recreational areas of the site. The proposed roadway design includes improving access and connecting a frontage road to the access. The connection of the frontage road will require right of way acquisition for highway purposes at the intersection overlapping the existing access.

Future Park Site

A future park is proposed in the City of Osseo at the northwest corner of Jefferson Avenue and CSAH 81. This site is owned by the City but has not been officially designated as parkland and is not listed as such in the City's comprehensive plan. The City's plans for the site include a gateway/landscaped area with a fountain and benches. Trails and sidewalks are proposed to connect a pedestrian system between different districts in the City. The site will need to be acquired for CSAH 81 right of way for the proposed project. However, there will be adequate space to install the planned improvements once construction of the roadway is complete. The City does not intend to designate the site as parkland until after the right of way needs of the proposed project have been determined.

J. Section 6(f) of the Land and Water Conservation Fund Act of 1965

The project will not impact Section 6(f) lands or properties.

K. Farmland Protection Policy Act of 1981

The project will not involve the acquisition of farmland.

L. Cumulative Impacts

Cumulative impacts are defined by the Council on Environmental Quality (CEQ) as "Impacts on the environment that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 158.7).

Direct and indirect impacts of the proposed project are discussed in other sections of this EA. Cumulative impacts are not causally linked to the reconstruction of CSAH 81, but are the total effect of all known actions (past, present and future) in the vicinity of the proposed action with similar impacts to the proposed action. The purpose of cumulative impacts analysis is to look for impacts that may be minimal, and therefore, neither significant nor adverse when examined within the context of the proposed action, but that may accumulate and become significant and adverse when combined with other actions.

Scope of Cumulative Impacts Analysis

The cumulative impacts analysis is limited to those resources, ecosystems, and human communities affected by the proposed project - land development, floodplains, wetlands, stormwater quality and quantity, floodplains, traffic noise, and parkland. While the proposed action may affect several resources either directly or indirectly, the purpose of the cumulative impacts analysis is to narrow the focus to the project-related impacts that could potentially have the largest cumulative impacts.

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

The temporal scope of the analysis attempts to consider previous impacts to the resources that occur over time. The year 2020 is considered the current limit of comprehensive planning activities for the area, as the extent of transportation and land use planning efforts are reasonably available up to this time, and thus can be used as the basis for future cumulative impact assessment.

Past and Recent Actions

Past actions in the project area include decades of residential and commercial/industrial development, as well as highway and other infrastructure construction, that have created the existing built urban environment. Existing residential, commercial, and industrial development along the CSAH 81 corridor in Robbinsdale, Crystal, Brooklyn Park, and Osseo has been in place for more than 30 years. Commercial and industrial development along the corridor in Maple Grove is more recent and has been in place for about 20 years.

Recent actions considered for this assessment of the potential for cumulative impacts include:

- The City of Robbinsdale has experienced higher density housing developments and some commercial infill and redevelopment.
- Redevelopment of commercial and industrial properties in the City of Crystal has occurred just south of CSAH 10 in the past ten years and the area north of CSAH 10 has seen expansion of commercial uses in recent years.
- The City of Osseo has experienced modest infill development and redevelopment.
- Reconstruction of CSAH 81 in Robbinsdale from Lowry Avenue to TH 100 and construction of a new interchange at TH 100 in the City of Robbinsdale.
- An upgrade to the Central Avenue/Jefferson Highway with mill and overlay occurred in the City of Osseo in 2007.
- Street reconstruction in the City of Crystal was completed in 2008.
- Construction of a new park and ride facility has recently been completed at 63rd Avenue North in the City of Brooklyn Park.

Future Actions Anticipated

The projects, listed below, that were considered for this analysis are consistent with the recent Minnesota State Supreme Court Ruling regarding cumulative potential effects inquiry under state statute, i.e., the projects: 1) are either existing, actually planned for, or for which a basis of expectation has been laid; 2) are located in the surrounding area; and 3) might reasonably be expected to affect the same natural resource.

- Construction of infill housing is anticipated on excess right of way acquired after completion of the TH 100 interchange project in the City of Robbinsdale.
- Construction of a new interchange at TH 169 in the Cities of Brooklyn Park and Osseo is underway.

- Construction of new senior housing, 64 units, on the east side of CSAH 81 is underway in the City of Osseo.
- High density housing is proposed along Central Avenue near CSAH 81 in the City of Osseo for 2010-2040.
- Commercial redevelopment (restaurant, office, RV sales) is proposed for a site on the west side of CSAH 81 in the City of Osseo for 2010-2040.
- The extension of TH 610 from TH 169 to I-94 in Maple Grove is proposed but is not yet funded. Induced residential, commercial, and industrial development is anticipated as a result.
- Construction of North Memorial/Fairview Hospital in Maple Grove is underway.

As discussed in previous sections of this EA, the Cities of Robbinsdale, Crystal, Brooklyn Park, Osseo, and Maple Grove are anticipating future growth within their communities. In Robbinsdale, Crystal, and Osseo most growth will be accommodated through redevelopment of existing land uses. The future land use map for the City of Brooklyn Park shows the majority of the City's growth occurring northwest of the CSAH 81 corridor. The future land use plan for the City of Osseo calls for replacement of industrial land uses north of BNSF Railway Company right of way with commercial land uses along both sides of the CSAH 81 corridor. Future growth in Maple Grove is expected to occur west of CSAH 81.

City of Crystal staff anticipates that the Crystal Airport, owned by MAC, will cease operation sometime in the next 30 years. No plans are underway to determine the future use of the property.

Floodplains

Existing Conditions

Currently Shingle Creek passes underneath CSAH 81 via two box culverts in series, with ditch storage area between the two culverts considered floodplain. Shingle Creek, beyond the project area, runs through large flat wetland complexes that serve as flood storage both up- and downstream of the project area.

Impacts from Proposed Action

The CSAH 81 roadway reconstruction will encroach on a delineated 100-year floodplain at the Shingle Creek crossing, north of Brooklyn Boulevard. The road widening and proposed trail would fill the ditch between the two culverts.

Impacts from Other Actions

According to City of Brooklyn Park staff, there have been no impacts to this floodplain in the past 30 or more years, aside from ditch maintenance about 20 years ago at Brooklyn Boulevard and CSAH 81. In addition, City staff stated that no future impacts to the floodplain are anticipated.

Potential for Cumulative Impacts

Adverse cumulative impacts are not anticipated to result from the CSAH 81 reconstruction project with the implementation of the proposed mitigation measures. As no further impacts are anticipated from other activities in the area, there is little or no potential for cumulative impacts.

Stormwater Quality and Quantity

Existing Conditions

As discussed in Section VI.E, the stormwater within the project area is conveyed via ditch flow, culverts, and storm sewer to receiving waters that include Crystal Lake, Twin Lakes, Shingle Creek, and various wetlands and low areas. Ultimately, all of the above water bodies drain to the Mississippi River. In general, most of the runoff generated today from the existing highway right of way does not receive water quality treatment prior to discharging to the respective receiving water.

Impacts from Proposed Action

The proposed project will increase the total impervious surface area from about 126 acres to about 145 acres (15 percent increase). As a result, the peak flow and the total surface water runoff volume will be increased along the majority of the corridor. In an effort to manage this increased runoff, a storm sewer network along the entire corridor will be designed to convey the water to stormwater treatment basins, proprietary stormwater quality treatment devices, and infiltration areas where feasible. Following treatment, stormwater will be discharged at a rate equal to existing flow (to the extent practicable) to various receiving waters. Impacts and proposed mitigation are discussed in detail in Section VI.E.

Impacts from Other Actions

The proposed project lies within the limits of three watershed management organizations: Shingle Creek WMC, West Mississippi River WMC, and Elm Creek WMC. Past actions (CSAH 81 in Robbinsdale, I-94 Interchange), and future roadway improvements (TH 169 Interchange) or commercial, residential, or industrial redevelopment may also result in increased impervious surface area within the three watershed organizations and thus increase in stormwater runoff. If not properly managed, increased runoff could result in a variety of negative impacts on receiving bodies. These potential negative impacts include increased chances of flooding, erosion of streambanks and drainage ways, and decreased ground water flow due to less infiltration. Stormwater management practices are used to reduce the magnitude of these potential impacts.

Potential for Cumulative Impacts

As discussed in Section VI.E, there are federal, state, regional, and local surface and groundwater management regulations in place that require mitigation in conjunction with proposed development and roadway improvements. Given the design standards

and management controls available for protecting the quality of surface waters, it is likely that potential impacts of the project, along with other foreseeable actions, will be minimized or mitigated to a substantial degree, and adverse cumulative impacts on water quality and quantity are not anticipated.

Traffic Noise

Existing Conditions

Existing noise levels in the project corridor are influenced by vehicles traveling on CSAH 81 as well as by traffic on adjacent roadways including TH 100, I-94, and TH 169. Others sources of noise in the area are aircraft using the Crystal Airport and freight trains crossing and running parallel to CSAH 81.

Traffic noise is a common complaint in the City of Robbinsdale according to City staff. Helicopter traffic is also an issue for residences near North Memorial Medical Center. According to City of Crystal staff, traffic noise has been mentioned as a concern by some residents in City neighborhoods adjacent to the CSAH 81 corridor; train whistle noise is an issue for residences in neighborhoods abutting the railroad right of way. According to City staff from Osseo and Maple Grove, traffic noise is not a common complaint.

Impacts from Proposed Action

Compared to existing conditions, noise levels under year 2030 Build conditions are projected to be higher as a result of increased traffic. In general, these increases range from approximately 1 dBA to 4 dBA.

Mitigation measures such as traffic management measures, alteration of alignments vegetation/landscaping, buffer zones, and exclusive land use designations were evaluated but were determined to be not feasible.

The feasibility and reasonableness of noise barriers was evaluated. None of the modeled walls that met the minimum 5 dBA reduction threshold were found to be cost-effective.

Impacts from Other Actions

As noise tends to disperse quickly as it moves further away from the source, the resources potentially affected by the project as well as other actions are limited to areas within one-quarter mile of the project corridor. Therefore, only actions occurring within this corridor have the potential to generate cumulative effects.

The area surrounding the proposed project is almost fully developed and no future development plans have been identified that would add additional sensitive receptors to the area.

Potential for Cumulative Impacts

There are no other future actions planned that have the potential to increase traffic noise levels that have not been considered in the noise analysis for this project. The potential for adverse cumulative traffic noise impacts is minimal.

Parkland

Becker Park

Existing Conditions

Becker Park in the City of Crystal is a 12+acre community park located in the southwest quadrant of the CSAH 81 and CSAH 10 intersection. It offers athletic fields, tennis courts, basketball courts, playground equipment, walking trails, and a shelter structure.

Impacts from the Proposed Action

Reconstruction of the CSAH 81/CSAH 10 intersection will require permanent easements as the wider roadway will bring additional travel lanes closer to the northern boundary of the park. Temporary impacts to the trail on the northern edge of the park along Bass Lake Road are anticipated during reconstruction of the intersection. The area will be restored after construction to an improved condition with additional trees. The City of Crystal is considering an entrance monument for this area as well. The roadway widening along Bass Lake Road will require a permanent easement overlapping an existing City of Crystal drainage and utility easement on park property.

Impacts from Other Actions

There is an existing drainage and utility easement on parkland property; no recreation facilities are located in the easement area. Efforts have been made to minimize project impacts on parkland by confining impacts to an area that is already impacted by a drainage and utility easement, and the project will not encroach onto additional parkland. None of the future actions anticipated that were described previously will impact Becker Park, including street reconstruction in the City of Crystal in 2008.

Potential for Cumulative Impacts

Since no other projects will affect this park, no cumulative impacts to the park are anticipated.

Greenhaven Park

Existing Conditions

Greenhaven Park in the City of Brooklyn Park is a neighborhood park that provides a picnic shelter, playground, basketball, picnic area and natural areas. It is located west of the BNSF Railway Company right of way and north of Brooklyn Boulevard. The

recreational portion of the park, about one acre of the total 29-acre park, is about 800 feet west of the CSAH 81 right of way and is surrounded by open space and wetlands.

Impacts from the Proposed Action

The CSAH 81 project proposes grading on parkland adjacent to the BNSF Railway Company right of way to lower the elevation to match that of the surrounding area to accommodate anticipated overflow from the culvert proposed to replace the ditch along CSAH 81. Impacts to the park will be temporary and the area will be restored to an equal or improved condition after construction.

Impacts from Other Actions

According to Recreation and Parks Department staff, a building was recently removed and replaced with an open-sided picnic shelter. There have been no other changes to the park and none are anticipated. The recreational portion of the park is surrounded by natural areas, including wetlands. None of the future actions anticipated that were described previously will impact Greenhaven Park.

Potential for Cumulative Impacts

Since no other projects will affect this park, no cumulative impacts to the park are anticipated.

Conclusion

Based on information reviewed to date, the proposed project has no potential for cumulative impacts to the resources directly or indirectly affected by the project.

M. Social Impacts

Impacts due to right of way acquisition, noise, access, and visual quality are addressed elsewhere in this EA. Environmental justice impacts are addressed in Section VI.N. Since the proposed project (reconstruction of CSAH 81) takes place within an existing corridor already dedicated to transportation use, the potential for adverse impacts to qualitative factors such as access to community facilities and/or jobs, separation of neighborhoods, and community cohesion is held to be relatively low. Trails are planned along the corridor wherever feasible. Intersection redesign will improve pedestrian and bicycle access and safety along and across the CSAH 81 corridor, particularly at 51st Avenue North /Corvallis for access to Cavanagh Park in Crystal and at CSAH 10 for access to Becker Park, also in Crystal. The proposed project is not expected to cause adverse impacts 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.

Community facilities directly adjacent to the project corridor include:

Churches

- Prince of Peace Lutheran Church (7217 Broadway Avenue West, Brooklyn Park)

Parks

- Graeser Park (Northwest side of TH 100 just south of Broadway Avenue and BNSF Railway Company right of way, Robbinsdale)
- Cavanagh Park (5400 Corvallis Avenue North, Crystal)
- Becker Park (6225 56th Avenue North, Crystal)
- Greenhaven Park (7880 Mount Curve Boulevard, Brooklyn Park)
- Future Park, Osseo

Schools

- Cavanagh Early Childhood Learning Center (5400 Corvallis Avenue North, Crystal)
- Osseo High School (317 2nd Avenue N.W., Osseo)

Other community facilities include:

- Robbinsdale Police Department (4101 Hubbard Avenue North, Robbinsdale)
- Crystal Airport (5800 Crystal Airport Road, Crystal)
- Park-and-Ride Lot (7100 63rd Avenue North, Brooklyn Park)
- Park-and-Ride Lot (85th Avenue at TH 169 and CSAH 81, Brooklyn Park)

Access to these facilities could be temporarily affected by construction; however, no permanent access impacts are anticipated. The park-and-ride facility at 85th is slated to be closed due to Mn/DOT work on TH 169.

As discussed in the Programmatic Section 4(f) Evaluation in Appendix E of this EA, the proposed project will result in permanent impacts to Becker Park in the City of Crystal to accommodate road widening for intersection redesign and construction. This will result in a permanent easement for use of the property but no acquisition of parkland. The City of Crystal has concurred with the proposed impacts and mitigation in a letter dated February 6, 2007 (see Appendix B). The proposed impacts to Greenhaven Park in the City of Brooklyn Park are temporary in nature. The City of Brooklyn Park has concurred with the proposed impacts and mitigation in a letter dated February 22, 2007 (see Appendix B).

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 VI.O. Although these access changes result in more circuitous travel routes for some properties, the increased travel distances are offset by improved safety and decreased delays at intersections within the study area, compared to the No Build Alternative.

N. Environmental Justice

Environmental justice in the context of highway project development began with Executive Order 12898 issued in February 1994, the purpose of which was to ensure that federal agencies "[i]dentify and address disproportionately high and adverse human health or environmental effects of federal policies, programs, and activities on minority and low-income populations." The proposed project will require federal permits 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 minority and/or low-income 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 include the following:

- Identification of the location of low-income population and/or minority population in the project area;
- Identification of the impacts of the project area upon the identified low-income population and/or minority population; and
- Determination of whether or not the impacts are disproportionately high or adverse.

Step 1: Minority and Low-Income Population Determination

The first step in the environmental justice process is to determine whether any population of minority or low-income persons is present in the project area. A "population" as such is broadly defined in the Federal Rules as "readily identifiable groups of low-income or minority persons who live in geographical proximity." In practice, there is no quantifiable rule for what constitutes a "population" which reinforces the need for participation and coordination in making this finding.

To assess the potential for the presence of environmental justice populations within the project area, Census data were examined to determine demographic conditions within the project area and the broader community (see Tables 23 and 24). A minority population was found to be present in the City of Brooklyn Park along the east side of CSAH 81 between 62nd Avenue North and I-694, (Census Tract 268.09). Figure 16 in Appendix A shows the location of the Census tract.

TABLE 23
POPULATION AND RACE - 2000 CENSUS

Municipality	Track (Block)	Total Population	White	% White	Black	% Black	American Indian or Alaska Native	% American Indian or Alaska Native	Asian	% Asian	Native Hawaiian & Other Pacific Islander	% Native Hawaiian & Other Pacific Islander	Other Race	% Other Race	Two or More Races	% Two or More Races	% Total Minority
Hennepin County	-----	1,116,200	900,068	80.6%	98,138	8.8%	10,659	1.0%	53,136	4.8%	583	0.1%	22,890	2.1%	30,731	2.8%	19.4%
City of Brooklyn Park	-----	67,388	48,533	72.0%	9,025	13.4%	448	0.7%	6,200	9.2%	16	0.0%	741	1.1%	2,425	3.6%	28.0%
City of Crystal	-----	22,848	20,225	88.5%	828	3.6%	180	0.8%	730	3.2%	13	0.1%	228	1.0%	644	2.8%	11.5%
City of Maple Grove	-----	50,343	47,569	94.5%	738	1.5%	109	0.2%	1,117	2.2%	48	0.1%	173	0.3%	589	1.2%	5.5%
City of New Hope	-----	20,852	18,114	86.9%	1,221	5.9%	128	0.6%	545	2.6%	52	0.2%	339	1.6%	453	2.2%	13.1%
City of Osseo	-----	2,434	2,368	97.3%	20	0.8%	4	0.2%	0	0.0%	0	0.0%	6	0.2%	36	1.5%	2.7%
City of Robbinsdale	-----	14,117	12,393	87.8%	946	6.7%	48	0.3%	308	2.2%	0	0.0%	203	1.4%	219	1.6%	12.2%
City of Brooklyn Park	268.07 (1)	737	650	88.2%	0	0.0%	11	1.5%	0	0.0%	0	0.0%	76	10.3%	0	0.0%	11.8%
City of Brooklyn Park	268.07 (2)	934	798	85.4%	105	11.2%	0	0.0%	0	0.0%	0	0.0%	6	0.6%	25	2.7%	14.6%
City of Brooklyn Park	268.07 (3)	848	796	93.9%	35	4.1%	0	0.0%	0	0.0%	0	0.0%	8	0.9%	9	1.1%	6.1%
City of Brooklyn Park	268.07 (6)	882	748	84.8%	54	6.1%	0	0.0%	80	9.1%	0	0.0%	0	0.0%	0	0.0%	15.2%
City of Brooklyn Park	268.09 (1)	1,514	644	42.5%	618	40.8%	5	0.3%	163	10.8%	0	0.0%	38	2.5%	46	3.0%	57.5%
City of Brooklyn Park	268.09 (3)	1,640	846	51.6%	540	32.9%	106	6.5%	34	2.1%	0	0.0%	17	1.0%	97	5.9%	48.4%
City of Brooklyn Park	268.12 (4)	336	307	91.4%	17	5.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	12	3.6%	8.6%
City of Brooklyn Park	268.16 (3)	1,383	1,070	77.4%	86	6.2%	32	2.3%	69	5.0%	0	0.0%	37	2.7%	89	6.4%	22.6%
City of Brooklyn Park	268.18 (1)	1,186	922	77.7%	73	6.2%	41	3.5%	120	10.1%	0	0.0%	8	0.7%	22	1.9%	22.3%
City of Brooklyn Park	268.18 (2)	997	760	76.2%	67	6.7%	0	0.0%	91	9.1%	0	0.0%	0	0.0%	79	7.9%	23.8%
City of Brooklyn Park	268.18 (3)	950	787	82.8%	80	8.4%	0	0.0%	0	0.0%	0	0.0%	40	4.2%	43	4.5%	17.2%
City of Crystal	207 (1)	1,178	1,031	87.5%	53	4.5%	41	3.5%	0	0.0%	0	0.0%	14	1.2%	39	3.3%	12.5%
City of Crystal	207 (2)	1,094	962	87.9%	15	1.4%	5	0.5%	31	2.8%	13	1.2%	29	2.7%	39	3.6%	12.1%
City of Crystal	207 (3)	1,063	841	79.1%	70	6.6%	0	0.0%	99	9.3%	0	0.0%	0	0.0%	53	5.0%	20.9%
City of Crystal	207 (4)	1,116	1,075	96.3%	18	1.6%	0	0.0%	23	2.1%	0	0.0%	0	0.0%	0	0.0%	3.7%
City of Crystal	208.01 (1)	1,264	992	78.5%	65	5.1%	22	1.7%	15	1.2%	0	0.0%	88	7.0%	82	6.5%	21.5%
City of Crystal	208.04 (1)	734	576	78.5%	81	11.0%	6	0.8%	50	6.8%	0	0.0%	0	0.0%	21	2.9%	21.5%
City of Crystal	208.04 (2)	1,106	897	81.1%	0	0.0%	0	0.0%	147	13.3%	0	0.0%	18	1.6%	44	4.0%	18.9%
City of Maple Grove	267.07 (5)	884	867	98.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	17	1.9%	1.9%
City of Maple Grove	267.07 (6)	595	584	98.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	11	1.8%	0	0.0%	1.8%
City of Maple Grove	267.10 (4)	1,700	1,602	94.2%	18	1.1%	0	0.0%	27	1.6%	0	0.0%	0	0.0%	53	3.1%	5.8%
City of New Hope	215.01 (1)	1,336	1,165	87.2%	100	7.5%	7	0.5%	6	0.4%	0	0.0%	34	2.5%	24	1.8%	12.8%
City of Osseo	267.02 (1)	1,244	1,195	96.1%	12	1.0%	4	0.3%	0	0.0%	0	0.0%	6	0.5%	27	2.2%	3.9%
City of Osseo	267.02 (2)	1,190	1,173	98.6%	8	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	0.8%	1.4%
City of Robbinsdale	209.03 (1)	846	790	93.4%	46	5.4%	0	0.0%	0	0.0%	0	0.0%	10	1.2%	0	0.0%	6.6%
City of Robbinsdale	209.03 (2)	810	672	83.0%	44	5.4%	74	9.1%	0	0.0%	0	0.0%	0	0.0%	20	2.5%	17.0%
City of Robbinsdale	211 (1)	616	505	82.0%	70	11.4%	9	1.5%	32	5.2%	0	0.0%	0	0.0%	0	0.0%	18.0%
City of Robbinsdale	211 (2)	1,247	1,101	88.3%	126	10.1%	0	0.0%	0	0.0%	0	0.0%	5	0.4%	15	1.2%	11.7%
City of Robbinsdale	212 (2)	845	747	88.4%	61	7.2%	0	0.0%	37	4.4%	0	0.0%	0	0.0%	0	0.0%	11.6%
City of Robbinsdale	212 (4)	731	690	94.4%	24	3.3%	0	0.0%	17	2.3%	0	0.0%	0	0.0%	0	0.0%	5.6%
City of Robbinsdale	212 (5)	940	754	80.2%	63	6.7%	0	0.0%	10	1.1%	0	0.0%	113	12.0%	0	0.0%	19.8%
City of Robbinsdale	213 (1)	1,384	1,182	85.4%	143	10.3%	4	0.3%	10	0.7%	0	0.0%	6	0.4%	39	2.8%	14.6%
City of Robbinsdale	213 (4)	832	722	86.8%	76	9.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	34	4.1%	13.2%

TABLE 24
POPULATION AND POVERTY - 2000 CENSUS

Municipality	Track (Block)	Total Population	Population for Whom Poverty is Determined (Income in 1999 Below Poverty Level)	% for Whom Poverty is Determined (Income in 1999 Below Poverty Level)
Hennepin County	-----	1,092,571	90,384	8.3%
City of Brooklyn Park	-----	67,071	3,421	5.1%
City of Crystal	-----	22,585	987	4.4%
City of Maple Grove	-----	50,277	696	1.4%
City of New Hope	-----	19,955	1,296	6.5%
City of Osseo	-----	2,277	59	2.6%
City of Robbinsdale	-----	14,033	662	4.7%
City of Brooklyn Park	268.07 (1)	737	74	10.0%
City of Brooklyn Park	268.07 (2)	934	58	6.2%
City of Brooklyn Park	268.07 (3)	848	19	2.2%
City of Brooklyn Park	268.07 (6)	882	71	8.0%
City of Brooklyn Park	268.09 (1)	1,505	179	11.9%
City of Brooklyn Park	268.09 (3)	1,640	265	16.2%
City of Brooklyn Park	268.12 (4)	336	0	0.0%
City of Brooklyn Park	268.16 (3)	1,383	105	7.6%
City of Brooklyn Park	268.18 (1)	1,181	61	5.2%
City of Brooklyn Park	268.18 (2)	985	22	2.2%
City of Brooklyn Park	268.18 (3)	950	25	2.6%
City of Crystal	207 (1)	1,157	118	10.2%
City of Crystal	207 (2)	1,082	68	6.3%
City of Crystal	207 (3)	1,063	83	7.8%
City of Crystal	207 (4)	1,116	84	7.5%
City of Crystal	208.01 (1)	1,264	0	0.0%
City of Crystal	208.04 (1)	734	53	7.2%
City of Crystal	208.04 (2)	1,106	22	2.0%
City of Maple Grove	267.07 (5)	884	6	0.7%
City of Maple Grove	267.07 (6)	595	12	2.0%
City of Maple Grove	267.10 (4)	1,700	5	0.3%
City of New Hope	215.01 (1)	1,328	148	11.1%
City of Osseo	267.02 (1)	1,087	39	3.6%
City of Osseo	267.02 (2)	1,190	20	1.7%
City of Robbinsdale	209.03 (1)	846	0	0.0%
City of Robbinsdale	209.03 (2)	807	53	6.6%
City of Robbinsdale	211 (1)	616	27	4.4%
City of Robbinsdale	211 (2)	1,244	15	1.2%
City of Robbinsdale	212 (2)	845	19	2.2%
City of Robbinsdale	212 (4)	731	0	0.0%
City of Robbinsdale	212 (5)	940	46	4.9%
City of Robbinsdale	213 (1)	1,384	157	11.3%
City of Robbinsdale	213 (4)	832	9	1.1%

In addition to the analysis of Census data, telephone conversations were also conducted in Spring 2006 with City staff from Maple Grove, Osseo, and Robbinsdale, and in-person meetings were held with staff from Brooklyn Park and Crystal to help determine whether environmental justice populations are present in the project area. Additional telephone conversations with staff from Robbinsdale and Crystal were also conducted in Fall 2007. Several public open house meetings for the project have also been held in the Cities of Robbinsdale, Crystal, Brooklyn Park, and Osseo. Aside from the minority population identified in the Census tract noted above, no identifiable populations of minority persons were identified in other parts of the project area from either the 2000 Census or from conversations with City staff familiar with the demographics of the project area.

Area school districts (Robbinsdale Area Schools and Osseo Area Schools) were also contacted to obtain information about the percentage of students receiving free or reduced-price meals at selected schools in proximity to CSAH 81 as well as district-wide. Results of this inquiry indicate that for schools in Robbinsdale and Crystal the percentage of students receiving free or reduced-price lunches is similar to the district percentage (28 percent free and nine percent reduced-price), in some instances slightly below the district benchmark and in some instances slightly above. For schools in Brooklyn Park, Osseo, and Maple Grove the percentages varied substantially. The district percentages were 24 percent for free meals and seven percent for reduced-price meals. In Brooklyn Park all of the schools surveyed were above the district percentage and ranged from 35 to 65 percent free meals and seven to 15 percent reduced-price meals. Schools in Osseo and Maple Grove were slightly or substantially below the district percentages.

- **Minority Populations:** The conclusion, based on Census data and confirmed by City staff, is that there is a minority population present in the City of Brooklyn Park along the east side of CSAH 81 between 62nd Avenue North and I-94/I-694, (Census Tract 268.09). No identifiable populations of minority persons were identified in other parts of the project area from either the 2000 Census or from conversations with City staff familiar with the demographics of the project area.

- **Low-Income Populations:** For the purposes of conducting an environmental justice analysis, low-income is defined as being at or below the federal poverty threshold, which is set by the federal government annually. The responses of households reporting income data are weighted to reflect the entire population. The disadvantage of this approach is that estimates for small groups such as Block Groups are less exact. The result for this analysis is that the weighted total population numbers do not match those numbers used in determining minority populations, where the sample was an absolute rather than a weighted count.

Similar to the process used for identifying the potential for minority populations, Census data were examined initially with follow-up contact with City staff to discuss initial findings and to discover new information. Based on Census data, conversations with the cities, and review of school district information regarding free and reduced-price meals, the presence of a low-income population was identified in the City of Crystal along the east side of CSAH 81 between Wilshire Boulevard and 62nd Avenue

North, Census Tract 207(1). A low-income population was also identified in Brooklyn Park, coincident with the previously identified minority population along the east side of CSAH 81 between 62nd Avenue North and I-694, Census Tract 268.09.

Additional information about the area in Brooklyn Park, described above as likely to contain an environmental justice population and shown in Figure 16, is provided in the *Stable Neighborhood Action Plan* (SNAP) completed by the City in 2005. The study looked in depth at socio-economic and other conditions that distinguished this area from other parts of Brooklyn Park and of surrounding communities. This analysis included an identification of all rental housing stock within the area and an exhaustive analysis of rental housing characteristics, including whether the housing was market rate or subsidized. All units in the two rental housing complexes located in Census Tract 268.09 in Brooklyn Park, The Groves and The Willows, rent at market rate ($695 per month at The Groves and $550 per month at The Willows). The study also included a detailed look at the existing commercial space in the area and a brief assessment of consumer buying power to determine the potential demand for commercial space in the area. The information provided indicates that annual consumer expenditures for the SNAP neighborhood are approximately $9,000 less per household than Brooklyn Park as a whole ($36,000 versus $45,000)

Minority and Low-Income Population Findings

1. A minority population is present in a portion of the project area in the City of Brooklyn Park.

2. Low-income populations are present in portions of the project area in the Cities of Crystal and Brooklyn Park.

Step 2: High, Adverse, and Disproportionate Impacts to Minority and Low-Income Populations

The second step in the environmental justice determination process is to determine whether any high or adverse environmental impacts disproportionately borne by the identified environmental justice populations (minority and/or low-income) would occur as a result of the proposed project. Since the identified populations reside only in portions of the project area, the following discussion applies only to those portions of the Cities of Crystal and Brooklyn Park in which populations were identified (as described above and illustrated in Figure 16 and hereafter referred to as "environmental justice population area").

High Impacts: High impacts, as defined in Mn/DOT's *Environmental Justice Guidance* are considered to be "[a]ny impact which exceeds a state or federal standard." Based on the results of noise analysis, "high" impacts are anticipated to result under Build conditions. Under 2030 Build conditions, five receptors approach or exceed the federal noise abatement criteria for residential land uses. Three of these receptors (R25 R27, and R28) are located within the identified environmental justice population area in Brooklyn Park. Under 2030 Build conditions, 37 receptors exceed state standards. While the comparison of the Build Alternative and the No Build Alternative

was not used in the determination of traffic noise impacts, it is important to note that traffic noise levels will increase along the corridor with or without construction of the proposed CSAH 81 project, as background traffic volumes increase over time. Under 2030 No Build conditions, six receptors approach or exceed the federal noise abatement criteria for residential land uses.

According to the results of the air quality analysis conducted for the CSAH 81 project, detailed in Section VI.F, the proposed project is anticipated to result in no exceedance of air quality standards in the entirety of the project area.

Adverse Impacts: Adverse impacts can generally be understood as all those impacts, such as relocation, economic or social impacts, for which standards are not set but that may be understood as "adverse" by the affected population. Since the proposed project takes place within a corridor already dedicated to transportation use, the potential for adverse impacts to such qualitative factors as access to community facilities and/or jobs, separation of neighborhoods, and community cohesion is held to be relatively low. Right of way impacts and property acquisition impacts, both of which are summarized in detail for the project area in Section VI.O and VI.P of the EA, were examined to determine the potential for adverse impacts on environmental justice populations in the project area.

The proposed project would require the total acquisition of 25 residential properties (24 households); this includes one vacant residential lot. There are no total acquisitions of residential properties within the environmental justice population area in the City of Crystal. There are two total acquisitions of residential property within the environmental justice population area in the City of Brooklyn Park (two households). The majority of residential total acquisitions, 23 of 25, occur outside of the identified environmental justice population areas for the proposed project.

The proposed project would also impact commercial properties through total acquisition. There are seven commercial parcels in the City of Crystal requiring total acquisition, four of which are within the environmental justice population area. There are 11 commercial properties in the City of Brooklyn Park requiring total acquisition, all of which are within the environmental justice population area.

Disproportionate Impact Assessment

An assessment of the proposed project was completed to determine if there are any adverse social, economic, or environmental impacts associated with the proposed project, and to what extent, if any, they would be borne disproportionately by the environmental justice populations in the project area. This determination was balanced against potential mitigation and enhancements that may be introduced with the project and all other offsetting benefits to the affected minority and/or low-income populations. Potential impacts to environmental justice populations are defined as either direct or indirect effects. Examples of possible effects associated with this proposed project include: air quality, noise, aesthetic values, destruction or disruption of community cohesion, destruction or disruption of the availability of community services or

facilities, displacement of persons and businesses, increased traffic congestion, and isolation. The potential effects that are applicable to minority and/or low-income populations for the proposed project are discussed below.

Air Quality: No adverse impacts associated with air quality are anticipated (see discussion in Section VI.F) therefore, the project will not create disproportionately high or adverse impacts to any population in the study area.

Noise: Section VI.G presents the anticipated noise impacts for the proposed project. Noise levels were modeled for 47 receptors along the project corridor. Under Build (2030) conditions, noise levels are predicted to approach or exceed Federal noise abatement criteria for residential uses at 5 receptors that together represent 14 households along the project corridor. The project corridor includes areas that have high proportions of minority and/or low-income population, as well as areas that do not.

To assess the proportionality of noise impacts, estimates were first made of the percentages of all households represented in the noise study that are minority or low-income. The percentage of minority population reported by the 2000 Census for each relevant Block Group was applied to the number of households in that Block Group represented in the noise analysis and the results were totaled for the entire CSAH 81 corridor. This methodology does not account for any variances in the number of persons per household by location, unit, type or ethnicity. This methodology provides an estimate of 17 percent of total households represented in the noise study as being minority population households. Similar methodology provides an estimate of 6 percent of total households represented in the noise analysis as being low-income households.

Second, using a similar methodology, estimates were made of the number of households affected by high noise levels (approaching or exceeding Federal noise abatement criteria) that are minority and low-income populations compared to the number of all households affected by high noise levels within the project area. This methodology provides an estimate of six out of fourteen households subject to high adverse noise impacts as being minority population households and two out of fourteen as being low-income households.

Aesthetic Values: The visual impacts of the project (more pavement viewed by travelers; two bridges over the Soo Line railroad) accrue to the population throughout the project corridor and are not disproportionate to low-income or minority populations.

Destruction or Disruption of Community Cohesion: No adverse impacts related to neighborhood or community cohesion are anticipated in the environmental justice population areas. Since the project will take place within an existing transportation corridor, the potential for adverse impacts to community facilities and/or community cohesion is held to be relatively low. The Build Alternative includes trails and intersection improvements that will result in improved safety conditions for motorists and pedestrians at the intersections along the corridor.

Destruction or Disruption of the Availability of Community Services or Facilities: No adverse impacts related to destruction or disruption of the availability of community services or facilities are anticipated in the environmental justice population areas. Minor impacts to parkland are anticipated to result from the project.

Displacement of Persons and Businesses: As noted above, the proposed project is expected to displace persons and businesses. All of the residential properties affected are single family homes, except for one vacant lot. Since 23 of the 25 residential total acquisitions would occur outside of the identified environmental justice population areas, it is found that no minority populations or low-income populations will be disproportionately impacted by direct residential acquisition impacts.

The proposed project requires the total acquisition of 21 commercial properties, (7 in Crystal, 11 in Brooklyn Park, and 3 in Osseo). Of the seven commercial acquisitions in the City of Crystal, four occur within the environmental justice population area. All 11 of the commercial acquisitions in Brooklyn Park occur within the environmental justice population area, at the CSAH 81/ 63rd Avenue North intersection. While a number of properties are impacted by the proposed intersection design, these result from efforts to avoid impacts to residential populations and minimize impacts to commercial properties. The Build Alternative results in a substantial improvement to intersection design and safety. The CSAH 81/63rd Avenue North intersection redesign presented a number of challenges and constraints: 1) the need to relocate the frontage road in close proximity to CSAH 81; 2) the need for a safer intersection design; 3) heavily used side streets; and 4) fixed location of existing BNSF rail road tracks to the west. Before selecting the Build Alternative, which impacts the businesses noted above, the County considered alternatives that would result in greater impact, including an alternative that aligned the frontage road through existing apartment buildings; this alternative was rejected because of its impact on an environmental justice population area.

To assess whether the identified populations may be disproportionately impacted by impacts of the proposed project on businesses in the environmental justice population area, the businesses in Crystal and Brooklyn Park were surveyed to gather information about the business, clientele, and employees (the businesses in Osseo were excluded because they were geographically removed from the location of identified populations). Of the 22 businesses surveyed, 20 responded. Five of the businesses are minority-owned; about one-third of the employees at responding businesses are minority; about one-quarter of the employees live in the immediate area according to business representatives; seven businesses responded that customers come primarily from the immediate area; 13 businesses responded that the product or services they provide are "important" or "very important" to customers living in the immediate area; and six businesses responded that relocation would have a "big," "huge," or "bad," impact on people living in the immediate area. The survey results were discussed with staff from the Cities of Crystal and Brooklyn Park, the County, and FHWA. According to City staff from Crystal and Brooklyn Park there are similar businesses within the area to serve the population and most of the businesses are fairly easy to relocate within the existing community (retail and office uses) and therefore would be readily available to

current customers, though some businesses that require special permitting (auto-related businesses) or distance separation from certain uses (liquor stores separated from schools) may be more difficult to relocate. After reconstruction is complete, excess right of way will be available for redevelopment under current zoning with uses similar to existing land uses.

Based on this detailed City staff discussion of the survey results, it was determined that low-income and minority populations are not disproportionately impacted by the project because businesses do not cater exclusively to local residents, businesses can be relocated in the community, there are other neighborhood retail and service options, and redevelopment after construction under current zoning allows for a similar mix of land uses that exists today. Impacts to businesses resulting from the proposed frontage road relocation and improved intersection design reflect efforts to avoid impacts to residential populations and minimize impacts to commercial properties.

Increased Traffic Congestion: Traffic operations and safety are anticipated to improve with the roadway reconstruction and will accrue to the population throughout the project corridor. No disproportionate adverse impacts from traffic congestion to any population group are expected.

Isolation: No adverse impacts related to isolation of any population are anticipated because the project will take place within corridors already dedicated to transportation use. All intersections along CSAH 81 will be reconstructed resulting in safer pedestrian environments. There are no existing or planned pedestrian bridges in the project area.

Step 3: Environmental Justice Finding

- Based on examination of Census data, conversations with City staff in Robbinsdale, Crystal, Brooklyn Park, Maple Grove, and Osseo, and conversations with staff from Robbinsdale and Osseo Area School Districts, the presence of environmental justice population areas were determined for portions of Crystal and Brooklyn Park.

- Under 2030 Build conditions, noise impacts from the project will be high but the impacts will be largely proportionate: 17 percent of the households represented in the noise study are estimated to be minority and 17 percent of the households impacted by high noise levels are estimated to be minority; 6 percent of the households represented in the noise study are estimated to be low-income and 5 percent of the households impacted by high noise are estimated to be low-income.

- Adverse impacts resulting from right of way acquisition of commercial properties are anticipated but the impacts are not disproportionate.

No disproportionate adverse impacts for which standards have not been established at the Federal level are anticipated to result from the Build Alternative.

O. 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 access changes to residential and business areas. These impacts are discussed below.

Fiscal Impacts

Based on the current design concept, the proposed roadway reconstruction would result in the complete acquisition of 25 residential and 23 commercial properties along the CSAH 81 corridor. Therefore, these properties would be permanently lost to the tax base in the Cities of Crystal, Brooklyn Park, Osseo, and Maple Grove. Taxes payable in 2006 on the affected properties and total taxes payable to the cities are shown in Table 25. Tax losses due to property acquisition for the project represent a minor amount of the total value of the Cities' tax bases. There are six publicly owned parcels, with no tax income, that would require total acquisition, five in Crystal and one in Osseo.

TABLE 25
TAXES PAYABLE FOR PROPERTIES REQUIRING TOTAL ACQUISITION

	Taxes Payable on Affected Property 2006	Taxes Payable to the City 2006	Number of Taxable Parcels to be Acquired	Number of Non-Taxable Parcels to be Acquired
Crystal	$111,000	$7.3 million	30	5
Brooklyn Park	$137,600	$23.3 million	14	0
Osseo	$13,400	$0.8 million	3	1
Maple Grove	$22,500	$22.5 million	1	0

Impacts to Commercial Businesses

The proposed project would require the acquisition of commercial land for right of way to accommodate ponding sites and intersection and frontage/backage road redesign in Crystal and Brooklyn Park. Based on the current design concept, the total acquisition of 23 commercial properties would be required (this number includes two vacant lots and 21 properties occupied by structures).

The Build Alternative would also result in changes to driveways, and access for businesses located along CSAH 81 and some of its cross streets. The proposed modifications to access will improve safety and traffic conditions along CSAH 81. Refer to the Proposed Improvements Figures (Figures 4A through 4J in Appendix A) for details.

A goal of the proposed project is to maintain business access both during construction and following project completion. Access concerns will be addressed in consultation with property owners and resolved during final design.

Reconstruction of CSAH 81 includes median landscaping and trees and possible intersection monumentation, an unfunded element within the project limits. This could result in some visibility impacts to businesses located within the project area.

Crystal Airport

Permanent and temporary easements on Crystal Airport property will be needed for trail and roadway purposes.

P. Right of Way

The proposed project would require the partial or total acquisition of 185 privately owned parcels totaling approximately 25 acres for right of way (48 parcels previously described, totaling approximately 20 acres would require total acquisition; 137 parcels totaling approximately 5 acres would require partial acquisition). There are 147 parcels totaling 16 acres that would require temporary easements. There are six publicly owned parcels that would require total acquisition totaling 1.7 acres and six publicly owned parcels that would require partial acquisition totaling 1.9 acres.

The proposed roadway reconstruction would result in relocation for 24 residential properties and 21 commercial properties to accommodate the proposed improvements including ponding sites, access management, and intersection and frontage road redesign in Crystal and Brooklyn Park, and frontage road reconfigurations in Osseo and Maple Grove. Following is a general description of the properties requiring total acquisition to accommodate the proposed improvements.

Residential Property

Of the 25 residential properties that would require total acquisition, 24 are single family homes and one is a vacant residential lot. There are 22 residential properties in the City of Crystal that would be directly impacted by ponding sites, access control, and intersection and frontage road redesign. One of these properties is a vacant lot; the remaining 21 are single family homes. Two residential properties in the City of Brooklyn Park would be directly impacted by intersection and frontage road redesign at CSAH 81 and 63rd Avenue North. It should be noted that a motel on commercial property in the City of Brooklyn Park provides housing in 30 to 40 percent of its rooms. This commercial property would require total acquisition. One residential property in the City of Maple Grove would be directly impacted by the proposed frontage road reconfiguration near Osseo High School.

Commercial Property

There are 23 commercial properties that would require total acquisition; this includes two vacant lots. Of the 21 commercial properties that would require relocation, seven are in the City of Crystal, 11 in the City of Brooklyn Park, and three in the City of Osseo. The impacted businesses include retail, office space, laundry mat, salon, liquor store, used car sales and automotive service, and motel uses. According to City staff from Crystal and Brooklyn Park, most of the businesses that would be acquired are relatively easy to relocate. However, finding suitable sites for motels and uses that require outdoor storage can be more difficult. City staff noted that there is ample space in the City of Brooklyn Park to relocate businesses, although commercial vacancies in the immediate area of the businesses in question are quite low. It should be noted that a motel on commercial property in the City of Brooklyn Park that would require total acquisition provides housing in 30 to 40 percent of its rooms.

Mitigation

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).

Residential

Of the 24 homes to be acquired, 12 are assessed between $136,000 and $175,000, and 12 of the homes are assessed between $175,000 and $226,000. To determine the availability of residential homes similar to those proposed for acquisition, a local realtor database was searched for the cities of Robbinsdale, Crystal, Brooklyn Park, and Maple Grove in December 2006. The search yielded more than 150 homes available in the $125,000 to $259,000 price range in the cities of Robbinsdale, Crystal, Brooklyn Park, and Maple Grove.

Those whose housing will be displaced are entitled to reimbursements for certain expenses such as moving costs, replacement housing costs, appraisal fees and relocation assistance services. Replacement housing units must be “decent, safe, and sanitary” and must be functionally equivalent to the present dwelling with respect to number of rooms and living space, location, and general improvements. Although an adequate supply of comparable replacement housing sites can generally be found, an administrative process called Last Resort Housing is available to address situations where the supply of replacement sites is inadequate. Last Resort Housing will be provided before the owner is required to move.

Commercial

As noted above, the proposed project would result in the acquisition of 21 commercial parcels with businesses, seven in the City of Crystal, 11 in the City of Brooklyn Park, and three in the City of Osseo. Several of these commercial properties contain more than one business. Therefore, the number of businesses requiring relocation is greater

than the number of properties to be acquired. Hennepin County will work with the business owners to find suitable relocation sites. In addition, property owners will be reimbursed for actual reasonable moving costs, reestablishment costs and costs incurred in identifying replacement sites.

To determine availability of properties and buildings similar to that proposed for acquisition, a local realtor database was searched for cities in the project area and adjacent suburban communities in December 2006. The search yielded 19 commercial properties available within similar price ranges of the properties that would be acquired. A search of available sites for automotive uses in the Twin Cities metropolitan area yielded ten properties. While the City of Brooklyn Park's *Stable Neighborhood Action Plan* discussed in Section VI.N. finds that there is an excess supply of retail space in and around the SNAP neighborhood, City staff noted that there are few commercial vacancies in the CSAH 81/63rd Avenue North area. Ideally, replacement property would be found in comparable commercial areas.

Q. Considerations Relating to Pedestrians and Bicyclists

Existing pedestrian and bicycle facilities are limited and consist of intermittent sidewalk segments along the CSAH 81 corridor. The proposed design for reconstruction of CSAH 81 provides for continuous trails wherever feasible. Pedestrian safety features, such as pedestrian refuges and crosswalk striping, are also included in the design for most intersections.

Along Segment One, on the west side of CSAH 81, a trail is proposed from 47th Avenue North to Corvallis Avenue North and a sidewalk from Corvallis Avenue North to CSAH 10. On the east side of CSAH 81, trail segments are proposed from 47th Avenue North to Airport Road; permanent and temporary easements on airport property be needed for trail purposes. Trail/sidewalk connection segments are also proposed on both sides of CSAH 10 at the CSAH 10/ CSAH 81 intersection. The trail continues north along the east side of CSAH 81 from CSAH 10 to the Crystal Airport property. These connections are important neighborhood links and also provide access to recreational destinations such as Twin Lakes, on the east side of the roadway. Proposed intersection redesign in this segment will improve pedestrian and bicycle access and safety at these crossings along the CSAH 81 corridor.

In Segment Two, a trail is proposed along the east frontage road from the south property line of the Crystal Airport to 63rd Avenue. Additionally, a trail segment is proposed on the south side of 63rd Avenue North, and on the north side of 63rd Avenue North from CSAH 81 to the east.

Along Segment Three, trails are proposed on the west side of CSAH 81 from 71st Avenue North to 85th Avenue North Trails are also proposed on the east side of CSAH 81 from I-94/I-694 to TH 169 and on both sides of CSAH 130.

Finally, along Segment Four, trails are proposed on both sides of CSAH 81 from TH 169 to CSAH 30.

The trail facilities and sidewalks associated with the project must comply with provisions set by the Americans with Disabilities Act (ADA) of 1990. The proposed project has been designed to meet ADA accessibility requirements. The design criteria for trail and sidewalk improvements associated with the project are as follows:

- The profile grade of the trails and sidewalks are less than five percent;
- The cross slope (i.e., slope that is perpendicular to the direction of travel) of the trails and sidewalks is less than two percent; and
- The trail width is 12 feet (8-foot wide trail with 2-foot wide clear zone on both sides of trail). Sidewalk width varies throughout the project area (see proposed local road typical sections in Figure 6A-6C, Appendix A). Proposed sidewalks and trails exceed the minimum 36-inch clear width standard for ADA accessibility.

R. Construction Noise and Temporary Construction Impacts

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

The following table (Table 26) shows peak noise levels monitored at 50 feet from various types of construction equipment. This equipment is primarily associated with site grading/site preparation, generally the roadway construction phase associated with the greatest noise levels.

TABLE 26
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS AT 50 FEET

Equipment Type	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA)	
			Range	Average
Backhoes	5	6	74-92	83
Front Loaders	5	30	75-96	85
Dozers	8	41	65-95	85
Graders	3	15	72-92	84
Scrapers	2	27	76-98	87
Pile Drivers	N/A	N/A	95-105	101

Source: United States Environmental Protection Agency and Federal Highway Administration

Noise impacts/mitigation to local communities during construction

Elevated noise levels are to a degree unavoidable for this type of project. Construction activities, including tree removal and grading, are likely to result in noise and dust impacts typical to construction activities. Hennepin County will require that construction equipment be properly muffled and in proper working order. It is Hennepin County's practice to require that the contractor(s) comply with applicable

local noise restrictions and ordinances to the extent that it is reasonable. Advance notice will be provided to affected communities for any abnormally loud construction activities. It is anticipated that nighttime construction may sometimes be required to minimize traffic impacts and improve safety. However, construction will be limited to daytime hours in accordance with City and County ordinances. Also, construction equipment will be properly equipped to minimize noise. Segment One improvements (TH 100 to CSAH 10; County Project No. 0118) are anticipated to be under construction for two years (2010 to 2011). The duration of construction for remaining segments has not yet been determined due to the uncertainty of the timeline for construction and funding.

Any associated high-impact equipment noise such as pile driving, pavement sawing, or jack hammering will be unavoidable with construction of the proposed project. Pile driving noise is associated with any bridge construction and sheet piling necessary for any retaining wall construction. While pile driving equipment results in the highest peak noise level as shown in Table 26, it is limited in duration to the activities (e.g., bridge construction) noted above. The use of pile drivers will be prohibited during nighttime hours.

The project as proposed is not anticipated to result in atypical earthborne vibrations. Dust generated will be minimized through standard dust control measures, such as watering. Permanent cover will be re-established as soon as practical.

Complete closure of the project corridor will be minimized to the extent possible. It is possible that bridge reconstruction over the Soo Line Railroad in Segment One may require closure of the bridge for up to nine months. If bridge closure becomes necessary, a detour route will be provided for through traffic. Access to all properties along CSAH 81 would be maintained throughout reconstruction. A Traffic Management Plan will be created for each segment of the project.

All waste created by project will be reused/recycled in the project corridor or removed and disposed of in accordance with state and federal requirements.

S. Crystal Airport

As noted at the beginning of this EA, the Crystal Airport, located at approximately 60th Avenue North on the east side of CSAH 81, operates as a reliever airport in the MAC system. The airport's runway clear zone extends over CSAH 81 and places some constraints on intersection geometry and roadway access points. Coordination is occurring with staff from MAC, Mn/DOT Aeronautics, and the FAA during development of the design for the CSAH 81 corridor. Both the MAC and the FAA will review final design plans for Segment Two of the project, CSAH 10 (Bass Lake Road) to 63rd Avenue North. In addition, a FAA 7460-1A Notice of Construction or Alteration will need to be submitted by Hennepin County for any construction equipment taller than 20 feet or lighting proposed within Segment Two. Hennepin County will coordinate with MAC and the FAA on all required actions to ensure that airport safety and security is maintained at all times.

MAC is in the process of developing a Long Term Comprehensive Plan (LTCP) for the Crystal Airport. The draft plan was released for public review in March 2008 and states that the preferred alternative recommended for adoption by the Commission for the Crystal Airport is to maintain a primary runway and a crosswind runway. The LTCP draft acknowledges the CSAH 81 project and states that the CSAH 81 project is not impacted by any of the airport LTCP alternatives.

While the City of Crystal's comprehensive plan calls for the closure and/or relocation of the airport when MAC determines that this can be done, the City's plan acknowledges that the Crystal Airport will continue to operate at its present location through 2020. The City of Crystal Zoning Code has an Airport Overlay District (AP zone). The purpose of the overlay district is to accommodate the current operations of the Crystal Airport on a temporary basis as a lawful nonconforming use. The Zoning Code serves to limit and control the construction of improvements on airport property until such time as the airport use is terminated.

The close proximity of the Crystal Airport to a portion of CSAH 81 raises a couple of issues. First, it should be noted that no lighting is proposed along the frontage of the airport, or the approach to Runway 6, due to the proximity of the project to the runway approaches. Second, ponds attract waterfowl and can increase the likelihood of a collision with aircraft, and therefore are incompatible with airports. The pond proposed to be located in the northeast quadrant of Airport Road and CSAH 81 in Segment One is a dry detention pond which drains down to less than six inches within the first hour after the design year storm event, and will completely drain within 24 hours of the conclusion of the storm event. The ponds in the vicinity of 63rd Avenue North in Segment Two are currently identified as wet ponds. These ponds are sized to meet the current stormwater quality design standards. These ponds will be evaluated during final design for other design options. The proposed storm sewer system for the project is designed for a 10-year storm. The close proximity of existing lakes, ponds, streams, and wetlands suggest that there will be minimal attraction to new wildlife in the project area.

T. Indirect Effects

Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.[10] The geographic area potentially affected by the proposed project includes the existing CSAH 81 corridor from Robbinsdale on the south to Maple Grove on the north. The project area is developed with residential, institutional, commercial, and industrial uses.

The proposed project is not anticipated to result in land use changes in the cities along the CSAH 81 corridor although some redevelopment and subsequent land use changes are planned in Brooklyn Park, Osseo, and Maple Grove. The proposed reconstruction

[10] Council on Environmental Quality (CEQ), 40 CFR 1508.7

of CSAH 81 will increase the attractiveness of commercial and industrial land uses in the corridor because it will facilitate ease of movement and trip-making between destinations.

The City of Osseo's Future Land Use Plan calls for replacement of industrial land uses north of the BNSF Railway Company property with commercial uses along both sides of CSAH 81. While the Maple Grove Comprehensive Plan indicates that no significant land use changes are anticipated in the future, the City has prepared a special area plan to guide redevelopment of a 2,000-acre gravel mining area generally located southwest of the CSAH 81: south of 85th Avenue North between approximately I-94 and TH 169. This plan recommends compact and mixed-use development, commercial office and services, neighborhood commercial nodes, and community parks and parkways. While none of this redevelopment will require direct access to CSAH 81, increased traffic in the general vicinity will have consequences on CSAH 81. Approximately 400 acres of the site have been developed to date.

The CSAH 81 corridor is already fully developed so future land use changes will result from redevelopment that occurs over time. The amount and timing of future redevelopment will determine the indirect effects on area resources. Resources that could be potentially impacted by land use changes include water quality and wetlands, through an increase in impervious surfaces.

U. Controversial Issues

Some property owners nearby the corridor have expressed concern regarding property acquisition, noise, and visual impacts. Numerous meetings have been held to provide information and answer questions. See Section VII.A for additional information.

V. State Environmental Review (MEQB)

Preparation of an Environmental Assessment Worksheet (EAW) is considered mandatory under Minnesota Rules 4410.4300 subp. 1, and under the following subsection:

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

An EAW was prepared by Hennepin County for this project. Notice of the availability of the EAW was published in the EQB *Monitor* on July 28, 2008 and public comments were received through August 27, 2008. Hennepin County made a Negative Declaration on the need for an Environmental Impact Statement on October 16, 2008. The Negative Declaration was published in the EQB *Monitor* on November 3, 2008.

VII. AGENCY COORDINATION

A. Public Involvement Meetings

The CSAH 81 roadway project developed in two phases. The first phase, which began in 2002, initially studied the entire corridor from Robbinsdale to Maple Grove, but eventually led to the development of an EAW for only the first segment of the project (Lowry Avenue to TH 100) in Robbinsdale. As no federal funding or permits were involved and independent utility of the segment was demonstrated, the environmental review for this segment was conducted through the state process only. For this phase, early coordination with agencies occurred in February of 2002. Several agency meetings and a single public open house were held in 2003 and 2004. The environmental review process for this portion of the roadway is complete and construction of roadway improvements was completed in 2008.

Evaluation of the subsequent roadway segments, from Robbinsdale to Maple Grove, was initiated in Spring of 2006 to complete the design and prepare an EA for the remainder of the CSAH 81 corridor. At that time, plans for a potential busway facility were included in the design, with a proposed busway route located within the existing BNSF Railway Company right of way. Early coordination correspondence with agencies was renewed in April 2006 for the proposed project that included a six-lane facility and proposed busway corridor along the BNSF Railway Company right of way. Subsequently, it was determined that additional transit modes should be evaluated in this corridor through a formal Federal Transit Administration Transit Alternatives Analysis, which is currently underway.

Several public information meetings were also held during this second phase of the project. Meetings were also held with staff and officials from the cities located along the corridor as well as regulatory agencies to discuss the project and specific issues of interest.

Update and Input Meetings

Meetings to update City staff and seek their input were held from April to July 2006 in the cities of Robbinsdale, Crystal, Brooklyn Park, Osseo, and Maple Grove. City and County staff and project consultants met to discuss the roadway layout. The cities discussed many issues including proposed turn lane locations and design, trails, pond placement, potential park impacts, frontage road connections, and acquisition of property.

Water Resource Meetings

Meetings to discuss water resources were held with City staff on June 1, June 7, June 21 and July 7, 2006, in the cities of Crystal, Brooklyn Park, Maple Grove, and Osseo respectively.

City Council Work Sessions and Meetings

City Council work sessions took place on May 16, June 19, and July 10, 2006, in the cities of Crystal, Brooklyn Park, and Osseo respectively. City Council meetings were held on the following dates: May 15, 2007 with the City of Robbinsdale; November 20, 2007 with the City of Crystal; December 4, 2006 with the City of Brooklyn Park; March 26, 2007 with the City of Osseo; and September 4, 2007 with the City of Maple Grove.

Public Open House Meetings

Six public open house meetings were held between June and October 2006 in the cities of Robbinsdale, Crystal (2), Brooklyn Park (2), and Osseo. These meetings provided the opportunity to present project information to interested parties, engage in discussion with them, and receive feedback on project issues. Participants were able to submit written comments on the project and design using comment forms that were distributed at the meetings. Two open house meetings were also held in January and October 2002 when the project was first initiated. Comments from all open houses are available for public review on the project website: http://www.bottineauboulevard.com.

Project Management Team

A Project Management Team (PMT) was formed to review and provide input on the proposed project consistent with the policies of the agencies which the various members represent. The PMT met monthly to review the environmental process approach, traffic analyses, preliminary design, and public involvement opportunities. Following is a list of the agencies represented on the PMT.

- Hennepin County Transportation
- Hennepin County Transit and Community Works
- Metro Transit
- City of Robbinsdale
- City of Crystal
- City of Brooklyn Park
- City of Osseo
- City of Maple Grove

Agency Meetings and Coordination

Three agency meetings were held during the early stages of the project in 2003. These meetings occurred when the project included the entire corridor from Robbinsdale to Maple Grove and before the decision was made to proceed with the Phase I portion of the project in a separate EAW.

- **Minnesota Pollution Control Agency**

  On March 11, 2003, project consultants met with MPCA staff to discuss procedures for air quality analysis.

- **Environmental Quality Board Meeting**

  On May 19, 2003, project consultants met with EQB staff to determine appropriate environmental documentation procedures and develop the scope of material that would be covered in the EA/EAW.

- **Cultural Resources Meeting**

  On May 19, 2003, project consultants met with the State Historic Preservation Office (SHPO) to discuss cultural resource issues throughout the CSAH 81 corridor. SHPO raised concerns regarding the historic integrity of Victory Memorial Parkway; issues relating to Victory Memorial Parkway were addressed in the EAW for the earlier phase of the project.

  On December 15, 2006, project consultants met with the Mn/DOT Cultural Resources Unit (CRU) to discuss the Phase I Survey recommendations. On July 16, 2007, Hennepin County and project consultants met with the Mn/DOT CRU to discuss the Phase II Survey recommendations and the effects determination. On May 2, 2008 Hennepin County and project consultants met with Mn/DOT CRU to discuss effects of the project on area resources.

- **Federal Aviation Administration (FAA), Metropolitan Airports Commission (MAC), and Mn/DOT Aeronautics**

  On February 25, 2003 representatives from FAA, MAC, Mn/DOT Aeronautics, Hennepin County, and staff consultants met to discuss plans for the project. In June 2008, layouts were provided to Mn/DOT Aeronautics.

- **Federal Funding Meeting**

  On June 29, 2003, representatives from Metro Transit, the Metropolitan Council, Mn/DOT, and Hennepin County met to discuss known and anticipated federal funding for the project and the funding's relationship to the environmental process.

  Early coordination input was solicited from several agencies in 2006. Agencies contacted include the SHPO, DNR, and Mn/DOT. A summary of the comments and input of each agency follows.

  – **Mn/DOT/SHPO –** Cultural Resources Unit (CRU) made a no adverse effects determination. The SHPO concurred with the determination. The findings of the Phase I and Phase II architectural history surveys are described in Section VI.H.

  – **DNR –** The Minnesota Natural Heritage database was reviewed and six known occurrences of rare species or native plant communities were found in the area searched. However, in a letter dated May 10, 2006, the DNR stated that it did not expect the project to affect any known occurrences of rare features based on the nature and location of the proposed project (See Appendix B).

- **Mn/DOT** – The Office of Environmental Service (OES) found that there are no potential impacts to Federally-Listed Threatened and Endangered Species. The correspondence dated June 6, 2006 (Appendix B) notes that since the proposed action is not scheduled to begin for several years, the project will need to be re-evaluated closer to the time of construction (2009).

B. Permits and Approval Requirements

Table 27 lists the permits and approvals needed for construction of the proposed project.

C. Public Comment Period and Public Hearing

Comments from the public and agencies affected by this project will be requested during the public comment period described on the transmittal letter distributing the EA. A combined public hearing/open house meeting will be held after the EA has been distributed to the public and to the required and interested federal, state and local agencies for their review.

At the public hearing/open house, preliminary design layouts for the alternative under consideration along with other project documentation will be available for public review. The public will also be given the opportunity to express their comments, ideas, and concerns about the proposed project. These comments will be received at the hearing and during the remainder of the comment period, and will become part of the official hearing record.

D. Report Distribution

Copies of this document have been sent to the appropriate agencies and local governmental units.

E. Process Beyond the Hearing

Following the comment period, Hennepin County 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) or by revising the EA, whichever is appropriate.

If an EIS is not necessary Hennepin County will prepare a request for a "Finding of No Significant Impact" (FONSI) that will be submitted to the FHWA. If the FHWA agrees that the finding is appropriate it will issue a FONSI. Hennepin County will distribute the FONSI to the EA distribution list and those who provided substantive comments.

TABLE 27
PERMITS AND APPROVALS

Permit	Agency	Action Required
Federal		
EA	FHWA	Approval
EIS Need Decision/Finding of No Significant Impact (FONSI)	FHWA	Approval
Section 4(f) determination	FHWA	Approval
Section 106 (Historic/Archeological)	FHWA	Approval
Section 404 Permit – General Permit/Letter of Permission	U.S. Army Corp of Engineers	Approval
Section 404 Permit – General Permit #1 (permits associated with DNR Public Waters Permit)	U.S. Army Corp of Engineers	Approval
FAA 7460-1A Notice of Construction or Alternation Form	Federal Aviation Administration	Approval
State		
Geometric Layout at Mn/DOT Interchanges	Mn/DOT	Approval
Interstate Access Modification Request	Mn/DOT	Approval
Right of Way Permit	Mn/DOT	Permit
Construction Plans	Mn/DOT	Approval
DNR Protected Waters Permit	DNR	Permit
Temporary Water Appropriation Permit (if needed)	DNR	Permit
Section 401	MPCA	Certification
National Pollutant Discharge Elimination System (NPDES)	MPCA	Permit
Asbestos and Regular Waste Assessment for Bridge Removal	MPCA	Approval
Section 106(Historic/Archeological)	SHPO	Concurrence
Section 106	Mn/DOT CRU	Determination of Effect
Regional		
Controlled Access	Metropolitan Council	Approval
Final Design Plans	Metropolitan Airports Commission	Approval
Airport Land Use and Right-of-Entry	Metropolitan Airports Commission	Agreement
Local		
EA	Hennepin County	EIS Need Decision
Municipal Approval	Cities of: Robbinsdale, Crystal, Brooklyn Park, Osseo, Maple Grove	Approval
Wetland Conservation Act	Cities of Robbinsdale, Crystal, Brooklyn Park, Osseo, Maple Grove. Shingle Creek WMC, and Elm Creek WMC, with review by BWSR and MnDNR	Approval
Flood Plain Permit	Shingle Creek Watershed Management Commission	Permit
Watershed Management Organization	Watershed Management Organizations: Shingle Creek, West Mississippi, and Elm Creek	Consultation

APPENDICES

APPENDIX A

Figures 3 through 16

APPENDIX B

Correspondence

APPENDIX C

Photographs of Roadway Conditions

APPENDIX D

Technical Memorandum of
Bus Rapid Transit

APPENDIX E

Programmatic Section 4(f) Evaluation