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Stillwater-Houlton Draft Environmental Impact Statement and Section 4(f) Evaluations

State Trunk Highway 36
Minnesota S.P. 8214-92
Minnesota S.P. 8217-10

State Trunk Highway 64
Wisconsin S.P. I.D. 1550-0-0220

From Jct. T.H. 36 and Co. Rd. 15
in Washington County, Minnesota
to
A point on S.T.H. 64 two and one-half miles east of the
St. Croix River, in St. Croix County, Wisconsin

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Prepared by:

Metro District

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FHWA-MNWI-EIS-90-02-D
Federal Highway Administration

Minnesota Project BRF 064-1 (69)
Wisconsin Project BRF 11 ( )
Minnesota State Projects 8214-92 and 8217-10
Wisconsin State Project I.D. 1550-0-02

Trunk Highway 36 in Washington County, Minnesota and State Trunk Highway 64 in St. Croix County, Wisconsin. From the junction of Trunk Highway 36 with Washington County State-Aid Highway 15 to a point on State Trunk Highway 64 in St. Croix County, two and one-half miles east of the existing bridge over the St. Croix River.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

and

DRAFT SECTION 4(f) EVALUATIONS

Submitted pursuant to 42 U.S.C. [4332[2][c], 49 U.S.C. 303, 23 U.S.C. 128[A] and Minnesota Statutes 116.01D et seq.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

and the

MINNESOTA DEPARTMENT OF TRANSPORTATION

with the

WISCONSIN DEPARTMENT OF TRANSPORTATION

COOPERATING AGENCIES

U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Fish and Wildlife Service, National Park Service, Minnesota and Wisconsin Departments of Natural Resources.

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Date of Approval

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Table of Contents

STUDY SUMMARY i

INTRODUCTION i
PROCESS OVERVIEW i
DESCRIPTIONS OF THE STUDY ALTERNATIVES ii
- BUILD ALTERNATIVE ii
- NORTH CORRIDOR ii
- CENTRAL CORRIDOR iii
- SOUTH CORRIDOR iii
- NO-BUILD ALTERNATIVES iii

SUMMARY OF MAJOR BENEFICIAL AND ADVERSE IMPACTS iv
POTENTIAL AREAS OF CONTROVERSY AND UNRESOLVED ISSUES iv
PRELIMINARY RECOMMENDATIONS BASED ON DRAFT EIS ANALYSIS v

PURPOSE AND NEED FOR STUDY 1

HISTORY/STUDY STATUS 1
SYSTEM LINKAGE 2
MODAL INTERRELATIONSHIPS 4
ROADWAY DEFICIENCIES/CAPACITY 4
SAFETY 7
FUTURE TRAFFIC DEMAND 10
SOCIAL DEMANDS/ECONOMIC DEVELOPMENT 11

ALTERNATIVES 13

DISMISSED ALTERNATIVES AND REASONS FOR DISMISSAL 13
DESCRIPTIONS OF THE STUDY ALTERNATIVES 15

AFFECTED ENVIRONMENT 39

TOPOGRAPHY AND GENERAL LAND USE 39
POLITICAL GEOGRAPHY, POPULATION, AND PLANNING 39
GENERAL SOCIAL CHARACTERISTICS 48
HISTORIC AND ARCHAEOLOGICAL RESOURCES 50
PARKS AND RECREATION AREAS 52
HYDROLOGY 52
WILDLIFE 53

ENVIRONMENTAL CONSEQUENCES 54

LAND USE IMPACTS 54
- NORTH CORRIDOR 54
- CENTRAL CORRIDOR 54
- SOUTH CORRIDOR 55
- NO-BUILD 55

FARMLAND IMPACTS 55
- IMPACTS 56
- MITIGATION 57

SOCIAL IMPACTS 58
- SUMMARY 58
- COMMUNITY COHESION 59
- CHANGES IN TRAVEL PATTERNS AND ACCESSIBILITY 63
- IMPACTS ON COMMUNITY SERVICES AND FACILITIES 66

IMPACTS ON SAFETY 69
SOCIAL GROUPS SPECIALLY HARMED OR BENEFITED 69
RELOCATION 70
AFFECTED HOUSEHOLDS AND BUSINESSES 70
SPECIAL CHARACTERISTICS OF THE RELOCATED POPULATION 71
RELOCATION ASSISTANCE 72
ECONOMIC IMPACTS 73
COMMERCIAL IMPACTS 74
FISCAL IMPACTS 77
JOINT DEVELOPMENT 80
CONSIDERATIONS RELATING TO PEDESTRIANS AND BICYCLISTS 81
AIR QUALITY IMPACTS 83
OVERVIEW 83
CONSTRUCTION IMPACTS 83
OPERATIONAL IMPACTS 84
SUMMARY AND CONCLUSIONS 85
NOISE IMPACTS 88
INTRODUCTION AND OVERVIEW 88
NOISE LEVEL STANDARDS AND CRITERIA 88
NOISE PREDICTION MODEL 88
NOISE IMPACTS IN THE STUDY CORRIDORS 89
SUMMARY AND CONCLUSIONS 92
WATER QUALITY AND FISHERIES 93
IMPACTS ON WATER QUALITY AND AQUATIC LIFE 93
MITIGATION 94
NO-BUILD DECISION 94
PERMITS AND APPROVALS 95
FEDERAL 95
STATE OF MINNESOTA 95
STATE OF WISCONSIN 95
LOCAL 95
WETLAND IMPACTS 95
THE UTILITY AND PROTECTION OF WETLANDS 95
WETLAND IMPACTS IN THE STUDY AREA 96
MITIGATION 96
WATER BODY MODIFICATION AND WILDLIFE IMPACTS 99
WILDLIFE IMPACTS 99
WILDLIFE HABITAT AND IMPACTS 100
MITIGATION 100
FLOODPLAIN IMPACTS 101
WILD AND SCENIC RIVER IMPACTS 104
NO-BUILD 104
BUILD 105
THREATENED AND ENDANGERED SPECIES 107
FEDERALLY THREATENED AND ENDANGERED SPECIES 107
SPECIAL STATE-LEVEL CONCERNS 109
HISTORIC AND ARCHAEOLOGICAL IMPACTS 110
OVERVIEW OF STILLWATER-HOULTON AREA HISTORY 110
HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN THE STILLWATER-HOULTON AREA 111
HISTORIC SITES/STANDING STRUCTURES CURRENTLY LISTED ON THE NATIONAL REGISTER 112
KNOWN ARCHAEOLOGICAL SITES 113
POTENTIAL IMPACTS 113
MITIGATION 114
CONTAMINATION SITES 114

LIST OF POTENTIAL/EXISTING HAZARDOUS WASTE SITES 115
LEAK/SPILL SITES 115
VISUAL IMPACTS 117
NORTH CORRIDOR 117
CENTRAL CORRIDOR 118
SOUTH CORRIDOR 119
NO-BUILD 119
MITIGATION 119
ENERGY USE 120
CONSTRUCTION IMPACTS 122
NOISE 122
AIR 122
WATER QUALITY 122
VISUAL 123
TRAFFIC 123
THE RELATION BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY 123
SHORT-TERM EFFECTS 123
LONG-TERM EFFECTS 124
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS WHICH WOULD BE INVOLVED IN THE SELECTION OF A BUILD ALTERNATIVE 125

LIST OF PREPARERS 126

LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS DRAFT EIS ARE SENT 128

COMMENTS AND COORDINATION 129

SCOPING ACTIVITIES 129
STILLWATER-HOULTON BRIDGE TASK FORCE 129
COMMUNITY RESOLUTIONS 129
PETITIONS AND MAIL-IN COMMENTS 130
NEWSLETTERS AND PUBLIC INFORMATION MEETINGS 131
COOPERATING AGENCIES AND THE ENVIRONMENTAL REVIEW PROCESS 131

INDEX 132

APPENDIX 135

SECTION 4 (F) EVALUATIONS 199

LIST OF FIGURES

1. Lower St. Croix River Crossings 2

2. Key Regional Highway Corridors 3

3. Opening Schedule: Stillwater Bridge 5

4. Capacity Reduction Resulting From Lift Opening 6

5. Study Area and State-wide Accident Rates 7

6. Early Corridor Alternatives 13

7. Present Study Corridors 15

8. North Corridor Bridge Profile 22

9. North Corridor Tunnel Profile 23

10. Central Corridor Bridge Profile 25

11. Central Corridor Bridge Profile 25

12. Central Corridor Bridge Profile 25

13. Central Corridor Bridge Profile 25

14. South Corridor Bridge Profile (North Alignment) 27

15. South Corridor Bridge Profile (North Alignment) 27

16. South Corridor Bridge Profile (Central Alignment) 29

17. South Corridor Bridge Profile (Central Alignment) 29

18. South Corridor Bridge Profile (Central Alignment) 29

19. South Corridor Bridge Profile (South Alignment) 31

20. South Corridor Bridge Profile (South Alignment) 31

21. South Corridor Bridge Profile (South Alignment) 31

22. South Corridor Tunnel Profile 32

23. Downtown Stillwater 34

24. Residence of Andersen Corporation Employees 38

25. Steep Slopes in Study Area 40

26. Corridor and Jurisdictional Locations 41

27. Metropolitan Council's Geographic Policy Areas 47

28. Census Tracts in Study Area (1980) 49

29. Major Affected Neighborhoods: Houlton and Oak Park Heights 51

30. Community Cohesion Between Study Area Census Tracts 59

31. Rural and Urban Population Trends in St. Croix County: 1960-1980 61

32. 1980 Minneapolis-St. Paul Commutershed: St. Croix County 64

33. Selected Community Facilities 68

34. Major Business Concentrations in Study Area 74

35. Interstate, Federal, and State Highways Entering Twin Cities Metro Area 76

36. Corridor Alternatives 90

37. Bridge Sound Envelope 91

38. Residential Noise Impacts By Alternative 92

39. Wetland Location Map 98

40. Floodplain Boundaries 103

41. Selected Riverway Recreation Areas 106

42. Historical and Archaeological Sites 112

43. Contamination Sites 116

LIST OF TABLES

1-4. Accident Types By Year 9

5. STH 35/64 Commutershed into the Twin Cities 11

6. Study Area Population Change, 1970-2000 42

7. Changes in Study Area Households, 1970-2000 43

8. Young and Old Age Groups in the Study Area 50

9. Estimated Relocations, By Corridor 70

10. Estimated Fiscal Impacts in Minnesota and Wisconsin Combined 80

11. CO Emission Rates in Grams per Vehicle Mile 84

12. Background (Ambient) CO Concentrations (PPM) 84

13. State and Federal CO Air Quality Standards 85

14. Year 1994: Predicted CO Concentrations (Peak Hour) 86

15. Year 1994: Predicted CO Concentrations (Eight Hour) 86

16. Year 2004: Predicted CO Concentrations (Peak Hour) 87

17. Year 2004: Predicted CO Concentrations (Eight Hour) 87

18. MPCA and FHWA Noise Standards and Criteria 88

19. Wetlands in Study Area By Type and Size 97

20. Wetlands Characteristics By Corridor 99

21. Potential Floodplain Crossings 102

22. Fuel Use Summary 121

STUDY SUMMARY

INTRODUCTION

This study examines the reconstruction of Trunk Highway (TH) 36 in Washington County, Minnesota, functional replacement of the existing drawbridge over the St. Croix River, and reconstruction of approach highways leading to the bridge in St. Croix County, Wisconsin. The study area termini are the vicinity of County Road 15 in Minnesota, and a point on State Trunk Highway (STH) 64 approximately two and one half miles east of the state line in Wisconsin.

The Wisconsin Department of Transportation (Wisc/DOT) is currently studying the possibility of improving the existing highway from Houlton to New Richmond, 15 miles to the east. This is a separate study, and is based on transportation needs independent of the river crossing analysis. Considerations include expanding the facility to four lanes, and bypassing the central business districts of Somerset and New Richmond. There are no other major transportation actions by other governmental agencies proposed in the same geographic area.

The function of these interstate highways within the state transportation systems is to serve long distance trips between regions. The type of highway improvements being considered involve extending and/or upgrading existing roadways to four lanes, and replacing existing high volume intersections with grade-separated interchanges. The length of the potential improvements vary between 6.7 and 7.1 miles, depending on corridor and alignment.

Cities and communities that could be directly or indirectly affected by these improvements include the following: the Minnesota cities of Stillwater, Bayport, and Oak Park Heights; Baytown, Grant, and Stillwater Townships in Minnesota; and the unincorporated community of Houlton, and St. Joseph and Somerset Townships in Wisconsin.

The purpose of this study process is to evaluate alternative solutions which would improve the existing and future safety and congestion problems in downtown Stillwater, in the vicinity of Houlton, and along the approach highways leading into these areas. The existing drawbridge over the St. Croix River is also the cause of increasing river traffic congestion and safety concerns, in addition to contributing to the highway traffic problems. In this draft EIS, the effects of the transportation solutions (BUILD Alternative options) will be compared to the effects of not implementing transportation solutions (NO-BUILD Alternatives).

In addition to these transportation concerns, there are existing area-wide social, economic, and environmental planning problems that have resulted from the above. The future area transportation network needs to be identified in a timely manner so that the surrounding communities and governmental jurisdictions and agencies can plan effectively for the future.

PROCESS OVERVIEW

The previous document in the evaluation process, the Scoping Decision Document/Final Study Outline, dated January 15, 1987, identified the study alternatives and important local concerns that are included among the evaluation criteria.

The purpose of this document, the draft Environmental Impact Statement (EIS), is to facilitate an informed BUILD location or NO-BUILD decision. The document contains discussions of the location alternatives being considered, and their environmental effects.

Attached to and considered a part of the draft EIS are three additional environmental reports, called Section 4(f) Evaluations. The purpose of these reports is to provide special attention to important publicly owned properties which could be affected by the study alternatives. These properties include the St. Croix River as a designated recreational

component of the National Scenic Riverway system, Mile Long Island, and Kolliner Park. According to the Federal Register, responsibility in dealing with these properties is as follows:

> 1. The (Federal Highway) Administration may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:
>
> A.) There is no feasible and prudent alternative to the use of land from the property; and
>
> B.) The action includes all possible planning to minimize harm to the property resulting from such use.
>
> 2. Supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the cost, social, economic, and environmental impacts, or community disruption resulting from such alternatives reach extraordinary magnitudes.[1]

Following publication of the draft EIS, informational meetings will be held in both Minnesota and Wisconsin, followed by formal public hearings to solicit public comments and recommendations. After the comments and recommendations are reviewed and addressed, the Commissioner of the Minnesota Department of Transportation, and the Secretary of the Wisconsin Department of Transportation will make the BUILD/NO-BUILD decision. Their charge is that:

> Alternative courses of action be evaluated and decisions be made in the best overall public interest based upon a balanced consideration of the need for safe and efficient transportation; of the social, economic, and environmental impacts of the proposed transportation improvement; and of national, state, and local environmental protection goals.[2]

If the decision is BUILD, then the location of a preferred corridor will also be identified for continued detailed development and analysis.

The report that will follow, the final EIS, will discuss substantive comments received on the draft EIS, and document the decision. If a BUILD decision is reached, the final EIS will also provide detailed design level information pertaining to the preferred corridor alternative, and describe mitigation measures that are to be incorporated into the proposed action.

Before any construction could begin on a new river crossing, the following Federal permits would need to be obtained:

* Section 9, U.S. Coast Guard
* Section 10, U.S. Army Corps of Engineers
* Section 404, U.S. Army Corps of Engineers

DESCRIPTIONS OF THE STUDY ALTERNATIVES

BUILD ALTERNATIVE

There are three basic BUILD location alternatives under consideration in the draft EIS: the North Corridor, which bypasses the city of Stillwater, Minnesota and Houlton, Wisconsin to the north; the Central Corridor, which uses existing approach roadways in Minnesota and Wisconsin, but bypasses the Stillwater central business district; and the South Corridor, which bypasses Stillwater and Houlton to the south. The following concept design descriptions are provided as general information to illustrate the range of river crossing variations that are available within each corridor.

NORTH CORRIDOR

The North Corridor BUILD Alternative contains two potential river crossing construction options on different alignments. They consist of a 2,500 foot long river bridge with a clearance of 185 feet over the St. Croix, and an estimated construction cost of $56 million, including approach highways; and an 8,200 foot long tunnel under the St. Croix at an estimated construction cost of $129-179 million, including approach highways, but not including tunnel support facilities.

1 Federal Register, Vol. 52, No. 167, August 28, 1987.

2 Ibid.

CENTRAL CORRIDOR

The Central Corridor BUILD Alternative consists of a single river crossing construction option involving a bridge, with four potential design variations:

1.) a 3,300 foot long river bridge with a 2,990 foot long elevated roadway section over TH 95 in Minnesota, a river clearance that varies between 60 and 70 feet, and an estimated cost of $86 million;

2.) a 2,975 foot long river bridge with a 3,100 foot long elevated roadway section over TH 95 in Minnesota, a river clearance that varies between 41 and 74 feet, and an estimated cost of $83 million;

3.) a 2,650 foot long river bridge with a 3,100 foot long elevated roadway section over TH 95 in Minnesota, a 3,050 or a 4,600 foot long land tunnel beneath the Wisconsin bluff, a river clearance that varies between 19 and 41 feet, and an estimated cost of $109 to 126 million; and

4.) a 4,175 foot long combination river and approach bridge with an integrated TH 95 roadway design in Minnesota, a river clearance that varies between 52 and 65 feet, and an estimated cost of $68 million.

SOUTH CORRIDOR

The South Corridor BUILD Alternative consists of three potential bridge crossing alignments, involving eight different design variations. An additional South Corridor alignment consists of an 8,800 foot long tunnel under the St. Croix River. With approach highways, this option would cost an estimated $123-173 million, not including tunnel support facilities.

The various South Corridor bridge options include the following:

South Corridor, Northern Alignment:

1.) a 4,900 foot long bridge with a river clearance that varies between 53 and 105 feet, and estimated cost of $76 million; and

2.) a 4,900 foot long bridge, a 900 foot long land tunnel beneath the Wisconsin bluff, a river clearance that varies between 53 and 105 feet, and an estimated cost of $86 million.

South Corridor, Central Alignment:

1.) a 5,100 foot long bridge with a river clearance that varies between 70 and 157 feet, and an estimated cost of $79 million;

2.) a 4,925 foot long bridge with a river clearance that varies between 45 and 113 feet, and an estimated cost of $78 million; and

3.) a 4,925 foot long bridge, a 920 foot long land tunnel beneath the Wisconsin bluff, a river clearance that varies between 45 and 113 feet, and an estimated cost of $88 million.

South Corridor, Southern Alignment:

1.) a 5,900 foot long bridge with a river clearance that varies between 60 and 100 feet, and an estimated cost of $87 million;

2.) a 5,900 foot long bridge with a river clearance that varies between 31 and 108 feet, and an estimated cost of $86 million; and

3.) a 6,200 foot long bridge with a river clearance that varies between 126 and 143 feet, and an estimated cost of $98 million.

NO-BUILD ALTERNATIVES

There are three basic variations of the NO-BUILD Alternative under consideration in the draft EIS:

1.) No-Action:

The No-Action option consists of allocating no resources to address the existing or future transportation problems, other than continued maintenance of the highway facility. It is used as basis of comparison for all of the BUILD alternative options. It projects existing conditions and their effects to a point in time 20 years into the future.

2.) Transportation System Management (TSM):

The TSM option describes a range of partial solutions designed to optimize the safety and service capabilities of the existing roadway system at relatively low cost.

3.) Replacement-On-Site:

The Replacement-On-Site option is, in essence, a location decision without action. Selection of this NO-BUILD option would defer replacement or rehabilitation of the existing river crossing until the bridge becomes unsafe for continued transportation use. Since the remaining useful life of the bridge is estimated to be 5 to fifteen years, this option lies outside the scope of this environmental documentation process. Therefore, when the bridge becomes unsafe, an additional environmental process will be initiated that will evaluate bridge replacement and rehabilitation options at its existing location.

SUMMARY OF MAJOR BENEFICIAL AND ADVERSE IMPACTS

In addition to major transportation service, safety, and congestion improvements that will occur with the construction of any of the BUILD Alternatives, there are several beneficial social, economic, and environmental impacts which will also result. The most important of these is resolving what the future area transportation network consists of, and where it will be located. Eleven study area communities and political jurisdictions are seeing the results of outdated and overcrowded transportation facilities causing haphazard and misdirected growth and development in many parts of the area. With a BUILD decision and timely commitment of capital investment funds in the regional transportation infrastructure, the St. Croix Valley communities will be able to plan and design their integrated futures in an informed and meaningful manner.

The selection of a BUILD decision is especially important to the city of Stillwater, the most populated community and urban hub of the region. The city has depended on the existing highway for continued social and economic viability from the early 1900s until about the late 1960s, when increasing congestion precipitated the first major study to examine replacement river crossing locations. Now, through the Stillwater Downtown Plan, adopted in October, 1988, the city has identified that its future viability is connected to removing interstate traffic from its downtown streets and concentrating efforts on reviving its historic connections.

A number of environmental benefits will occur as a result of constructing new facilities to handle the large volumes of interstate traffic. Included among the advantages are improved air quality, less energy use, reduced traffic noise, and better water quality as a result of constructed sedimentation ponds to filter out pollutants before entering the river.

There are also adverse effects that will occur with the selection of a BUILD Alternative. In addition to the commitment of a large amount of public funds, there will also be negative social and environmental consequences.

The most important negative social consequence will result from the displacement of between 30 and 60 households, depending on the corridor selected and final roadway alignment. There will also be a substantial loss of productive agricultural land.

The most important negative environmental consequence will result from the addition of a new bridge or tunnel in the St. Croix River Valley, a component of the national Wild and Scenic Rivers program. A North Corridor bridge would pass over Mile Long Island, a popular recreation site on the Lower St. Croix. The tunnel alternatives would result in short-term water quality impacts in the St. Croix River. A North Corridor tunnel would also have a serious adverse impact on the lower portion of Brown's Creek, which flows through a scenic valley north of Stillwater. An additional concern with all the alternatives is the Higgins' Eye Pearly Mussel, a species of clam found in the St. Croix River which is included on the Federal Threatened and Endangered Species List.

POTENTIAL AREAS OF CONTROVERSY AND UNRESOLVED ISSUES

During the EIS study process, considerable concern has been expressed by several agencies, environmental and historic preservation concern groups, and individuals regarding the potential construction of a new major river crossing of the St. Croix River. Primarily, these concerns involve potential conflicts among national and state transportation, environmental, and historic preservation goals. The focus of the transportation goal is to provide safe and efficient interstate transportation services between Minnesota and Wisconsin. The focus of the environmental goal is to preserve the St. Croix River and its environs, as a component of the National Scenic Riverway System. The focus of the historic preservation goal is to preserve historic structures and archaeological sites located in the Stillwater and Houlton area, including the existing drawbridge,

which was recently listed on the National Register of Historic Places.

No study alternatives are being considered which would require the removal of historic structures, although a North Corridor bridge could affect at least one archaeological site. The transportation agencies are not proposing to remove the existing bridge as a part of this EIS process; the future of the draw bridge is a separate issue which will be decided when the structure becomes unsafe for further transportation use.

Alternatives which comprehensively address the transportation problem without constructing a new crossing of the St. Croix River have not been identified. The BUILD Alternatives will cause varying degrees of negative riverway impacts. Therefore, the transportation agencies have proposed mitigation to be included with any of the BUILD Alternatives. The mitigation includes a commitment to initiate a participatory process to select a compatible and cost effective river crossing type and design which will minimize aesthetic and recreational impacts.

None of the potentially conflicting goals have absolute precedence over the others. It is the responsibility of the process decision-makers to arrive at a solution which reflects a reasonable balance of these important public goals. Coordination and discussion with concerned environmental agencies, groups, and individuals will continue throughout the remainder of the EIS process.

PRELIMINARY RECOMMENDATIONS BASED ON DRAFT EIS ANALYSIS

1.) No TSM option, or combination of TSM options that have not previously been incorporated into the existing system, has been identified that would adequately address the transportation problems.

2.) A BUILD/NO-BUILD decision has not been made, and will not be made until after public and agency reviews, additional informational meetings, formal public hearings, and after all written and oral comments presented at the hearings are addressed. However, the transportation agencies feel that the information analyzed for the preparation of the draft EIS indicates that the North Corridor bridge and tunnel options, the Central Corridor land tunnel options, and the South Corridor river tunnel would not represent reasonable selections for further development. Significant new information would have to be presented during the remaining public and agency review period before these options would be selected for further development.

PURPOSE AND NEED FOR STUDY

HISTORY/STUDY STATUS

Preliminary planning for a new St. Croix river crossing at Stillwater-Houlton began in the late 1960s. Both Mn/DOT and Wisc/DOT began studies to identify feasible locations for a new, upgraded facility. By 1972, Mn/DOT had prepared a rough draft corridor study, and Wisc/DOT finished a corridor location study. However, funding was unavailable and the studies were discontinued; no documents were ever published.

Congestion at the bridge continued to increase, and citizens and elected officials in St. Croix and Washington Counties voiced their concern to their legislators and respective DOTs about the need for a new river crossing and improved highway corridors. As a result, the current studies on a new river crossing were initiated in 1984. The project is a cooperative effort between Minnesota and Wisconsin, with Mn/DOT assuming lead agency responsibilities.

In October, 1985, the Draft Study Outline and Scoping Document was released. This report discussed the justification for the project, and outlined its proposed schedule and development path. Additionally, it introduced potential location alternatives, as well as environmental concerns which might require further study. Scoping meetings were held shortly after the report was released.

This activity was followed by the release of the Scoping Decision Document Final Study Outline in January, 1987. This report represented a record of the decisions which had been reached (through the previously discussed process) about the scope of the draft EIS. Since then, special reports have been completed on major social, economic, and environmental issues related to the three major river crossing corridors which were selected for study. These studies form the basis for much of the information which is in this document; in general, the analysis in the special studies is more technical and detailed than that which is presented here. In addition to the special studies, three Section 4 (f) documents have been completed, and are included as part of this draft EIS.

All of the special studies have been reviewed by the Stillwater-Houlton Bridge Task Force, a citizens' committee appointed by communities which could be directly affected by a BUILD decision. After meeting at various intervals over a several year period, the Task Force recommended a South Corridor bridge BUILD decision. In addition, the City of Stillwater, the Town of St. Joseph, the St. Croix County Board of Supervisors, and the West Central Wisconsin Regional Planning Commission (WCWRPC) have passed resolutions supporting a new river crossing and/or approach corridors.

A number of state and Federal governmental bodies with special interest in and/or jurisdiction over particular facets of the project have acted as cooperating agencies during the environmental study process. These agencies have reviewed project documents, and provided comments and information in their areas of expertise. Cooperating agencies include the following: the U.S. Fish and Wildlife Service; the National Park Service; the U.S. Army Corps of Engineers; the U.S. Coast Guard; the Minnesota Department of Natural Resources; and the Wisconsin Department of Natural Resources. Of these, the National Park Service and the two State Departments of Natural Resources have been the most active in their participation. In addition to these agencies, a large number of other Federal, state, regional, and local governmental bodies, as well as various private organizations, have played roles in the study process.

Public hearings and informational meetings will be scheduled for early in 1990, with a BUILD/NO-BUILD decision expected from the two Transportation Departments later in the year. Should a BUILD decision be the preferred alternative, a Final EIS will be produced in order to more thoroughly analyze specific corridor impacts. After publication of the Final EIS, the remaining steps of the process will include the following: Final EIS/type and design public hearing; Record of Decision; Design Report publication; final design approval; right-of-way acquisition; contract letting; and construction.

SYSTEM LINKAGE

The Stillwater-Houlton drawbridge is one of five crossings on the lower 52 mile reach of the St. Croix River. The other bridges are located between Taylors Falls, Minnesota and St. Croix Falls, Wisconsin; at Osceola, Wisconsin; between Lakeland, Minnesota and Hudson, Wisconsin; and between Point Douglas, Minnesota and Prescott, Wisconsin. Lower St. Croix crossing locations are illustrated in figure 1.

The five crossings function interdependently in terms of the traffic volumes that each carries. Loss of the Stillwater-Houlton bridge, or its diminished attractiveness during peak congestion times, would result in increased traffic pressure at other crossings; this would be especially true for the I-94 bridge. To maintain interstate mobility and a healthy economy in the region, it is important that the interrelationship among the river crossings not be dramatically distorted.

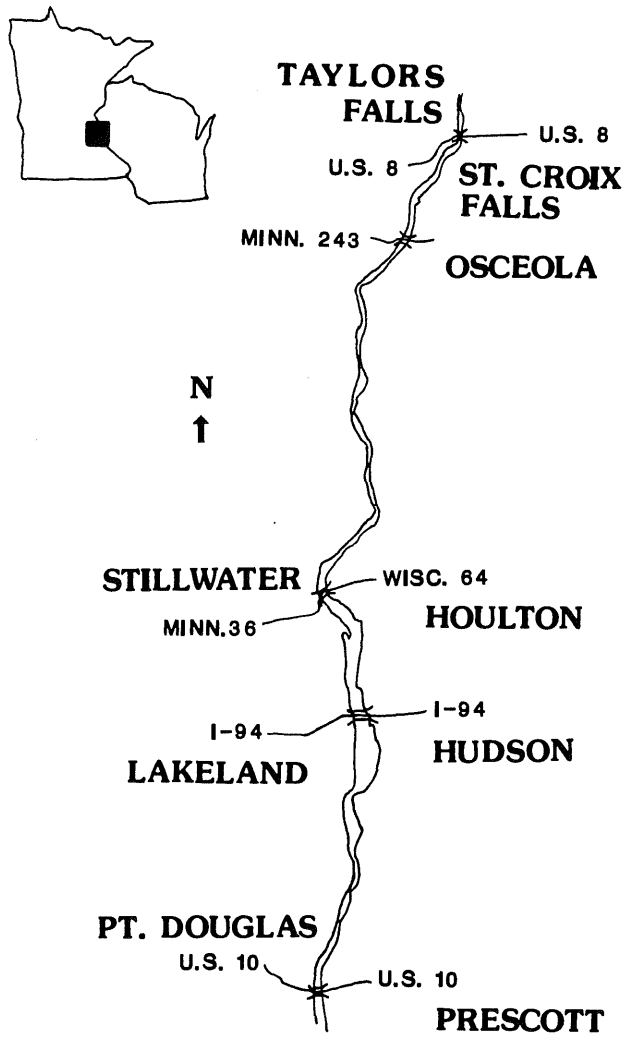


Figure 1

Lower St. Croix River Crossings

The existing Stillwater-Houlton bridge was built in 1931, and connects Minnesota's TH 36 with STH 64 in Wisconsin. The crossing is a 1,053 feet long Parker through-truss bridge, with a 760 foot earthen causeway connecting it to the Wisconsin shoreline. The bridge provides one lane of traffic in each direction, has a vertical clearance of 12.7 feet, and includes a lift span which can be raised. There is a sidewalk cantilevered outside the main truss structure on the south side.

There are a number of key highway corridors which link the study area to the larger regional transportation system (see figure 2). Minnesota TH 36 is a major four-lane, east-west thoroughfare going from the northern suburbs of St. Paul east to Stillwater. At the south end of Stillwater, TH 36 merges with TH 95 and becomes a two-lane road until it reaches the bridge. TH 36 is part of the Metropolitan Council's Metro Highway System, and is classified as a major arterial, meant to serve medium to long distance trips at moderate to high speeds.

TH 36 functions as an important recreational gateway for Twin Cities residents traveling to the St. Croix River. In conjunction with STH 35/64, TH 36 also provides access to recreational opportunities on the Apple River near Somerset, and the numerous lakes in northwest Wisconsin. Furthermore, TH 36 serves as an interregional and interstate commuter route, with most workers headed west in the morning and east in the evening. In addition to the above functions, TH 36 plays a major role in the distribution of commercial goods between the Twin Cities, Stillwater, New Richmond, and points beyond. Mn/DOT classifies TH 36 as part of its Market Artery System, a network of high priority truck routes.

TH 95 is a two-lane, north-south highway which generally follows the western shore of the Lower St. Croix, and functions as an important connecting link between communities scattered along the Minnesota side of the river. Together with other high-

ways in the area, TH 95 serves as a commuter road and as a route for local shopping or service-related trips. The highway is also a popular route for sightseers and people headed to various state parks along the river. TH 95 is classified as a Minor Arterial, meant to complement and support the Interstate and Major Arterial systems, and oriented toward travel within a sector of a larger region

STH 64 is a two-lane, east-west highway which traverses Wisconsin; beginning at Houlton in the east, the road runs east as far as Marinette, Wisconsin, on the shore of Lake Michigan. Although Wisconsin classifies STH 64 as a Principal Arterial-Expressway (designed for long trips, with full or partial control of private access), it mainly serves shorter excursions between rural communities, and has numerous access points in the study area. The stretch of STH 64 from Houlton to New Richmond has been designated a multi-lane connector under Wisc./DOT's recently introduced Corridors 2020 Highway Economic Development Plan.

Approximately 23 miles east of the existing St. Croix drawbridge, STH 64 joins U.S.H. 63, which serves the northwestern Wisconsin lakes area. West of this juncture, STH 64 plays a major role as an interstate transportation corridor, functioning jointly with TH 36 in Minnesota. Because of growing exurban development in western St. Croix County, STH 64 has become an important commuter route to jobs in the Twin Cities and the Lower St. Croix Valley.

STH 35 is a two-lane, north-south Minor Arterial extending from the Illinois-Wisconsin state line to the City of Superior in northern Wisconsin. Following the Mississippi and St. Croix Rivers for much of its length, STH 35 serves short trips between neighboring communities, recreational excursions, and commuting. Within the vicinity of the study area, STH 35 provides access to recreational opportunities along the Wisconsin shore of the St. Croix, serves as a route from Houlton to Hudson, and funnels traffic toward the lift bridge into Minnesota.

TH 36, TH 95, STH 64, and STH 35 work together as important parts of a regional transportation system. Because they are closely interdependent, any changes in one component must be viewed from the perspective of the entire system.

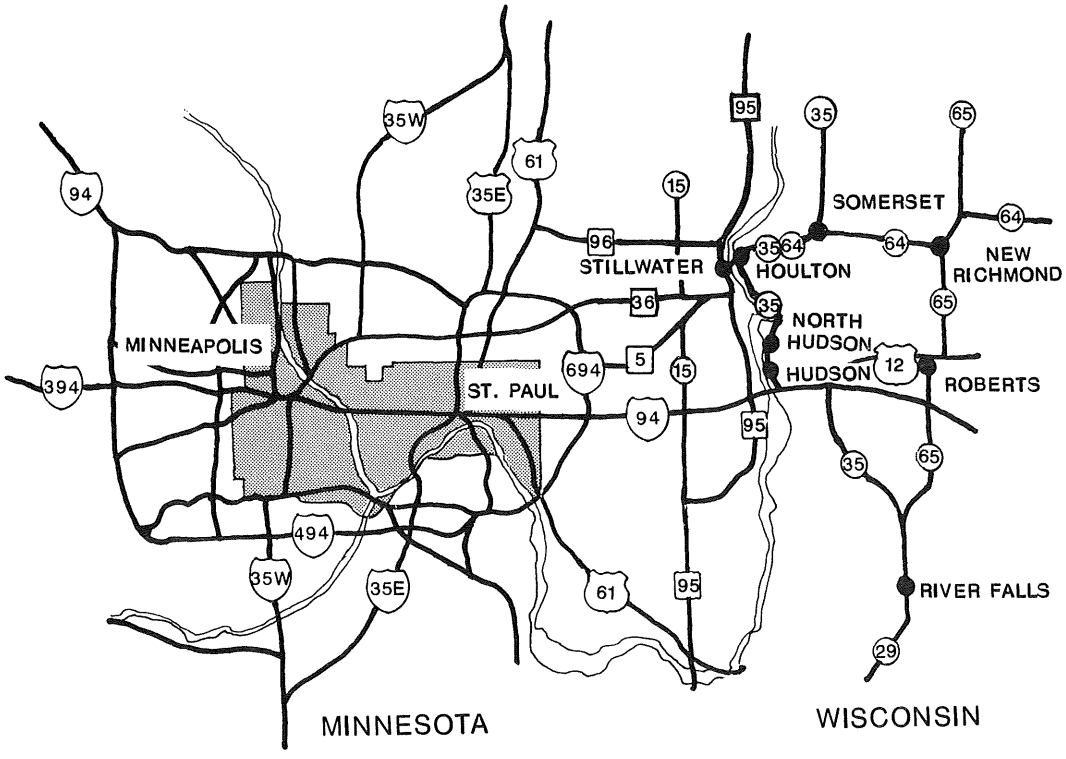


Figure 2
Key Regional Highway Corridors

MODAL INTERRELATIONSHIPS

There are a number of limited interrelationships between private vehicular transportation on TH 36/STH 64 and other modes of transportation in the area.

The Metropolitan Transit Commission (MTC) provides scheduled bus service between St. Paul and Stillwater, with 17 return trips on weekdays. The buses arrive in Stillwater on TH 5 and segments of TH 36; they complete their journey in downtown Stillwater, and turn around at the block defined by Chestnut, Water, Myrtle, and Main Streets, near the existing bridge.

In addition to MTC, the St. Croix Valley Transit Company provides bus service within Stillwater, Oak Park Heights, and Bayport, with 18 trips every weekday. Combined with MTC service, there are 35 scheduled weekday bus trips within 1 block of the lift bridge, with 18 more on Saturday and 4 on Sunday.

The potential exists for a relationship between mass transit and local interstate highway transportation. Conceivably, residents of the Houlton area could arrive at a Stillwater bus stop by foot, bike, or shuttle; Wisconsin car commuters could leave their vehicles in a special lot in Stillwater and catch a bus to the Twin Cities or other communities. Mn/DOT currently operates a park-and-ride lot at the junction of TH 36 and County Road 15, several miles west of downtown Stillwater.

Presently, there are no scheduled commercial bus routes over the existing lift bridge, either long-distance or local. Intercity highway buses operate on I-94 seven miles to the south, and have a terminal in Hudson.

Commercial railroad operations near the river in Minnesota are limited, and not closely related to interstate highway transportation. In addition to commercial tracks between Main Street and the waterfront, a privately owned "dinner train" is located several blocks north of the lift bridge. After pulling out of downtown Stillwater, the dinner train proceeds north along TH 95, then follows TH 96 west to the city of Mahtomedi; it returns along the same route.

Privately owned excursion boats also operate from Stillwater. Two sternwheelers and a smaller boat are moored at docks just south of Lowell Park; they cruise under the lift bridge and proceed upstream before returning to the docks. Like the train, the excursion boats indirectly affect vehicle transportation in the area in that they are tourist attractions which draw people into Stillwater. In addition, the boats affect vehicular traffic by going under the lift bridge.

There is a very limited amount of commercial barge traffic in the study area. The Stillwater Barge Terminal is located downstream from Lowell Park and receives about two barges a year. These barges interact with the area's interstate transportation network only because the fertilizer which is shipped in is distributed by truck over the TH 36/STH 64 corridors.

Finally, the City of Stillwater provides a seawall with boat moorings in Lowell Park, as well as a municipal courtesy dock. Business from recreational watercraft moored at Stillwater provides an important source of revenue for some local businesses. There is a minor relationship between this recreational water traffic and local highway transportation to the extent many watercraft owners use roads in the study area to get to marinas or launches. In addition, the presence of Stillwater and its docking facilities attracts watercraft to the area around the lift bridge.

ROADWAY DEFICIENCIES/CAPACITY

The existing lift bridge and approach roadways in Minnesota and Wisconsin do not provide sufficient capacity to accommodate current traffic during peak periods. Major deficiencies affecting traffic flow on the existing bridge and approach corridors include a traffic light and other impediments in downtown Stillwater, the bridge lift and the narrowness of its roadway, and numerous intersections and access points along TH 36 and STH 35/64 in Wisconsin. An additional problem results from the merging of the four-lane TH 36 with the two-lane TH 95; the result is a heavily used two-lane facility squeezed through a narrow stretch of land between the Stillwater bluffs and the river.

According to a survey done by the West Central Wisconsin Regional Planning Commission in April, 1984, nearly 90 percent of the traffic flowing over the bridge between 6:00 and 7:00 a.m. on a weekday morning was westbound; between 3:00 and 6:00 p.m., at least 70 percent of the bridge traffic was eastbound. On weekends, eastbound traffic predominates in the morning, while westbound vehicles dominate by late afternoon. Peak flows in both directions throughout the week are higher during the summer than they are in winter.

One of the most serious problems with the existing traffic flow system in the study area is that all vehicles using the lift bridge must pass through crowded downtown Stillwater, whether they have business there or not. In particular, through traffic is slowed by the red phase of the signal at the intersection of Chestnut and Main; in addition there are conflicts with pedestrians and local traffic.

The major geometric problems and heaviest traffic flows at this intersection involve northbound traffic attempting to turn right on Chestnut towards the bridge, and westbound traffic coming off the bridge trying to turn south on Main. Although there is a special lane for both of these turns, the utility of each is limited by their short length. On Main Street, on-street parking begins 175 feet south of Chestnut, eliminating the turn lane. Traffic which is backed up beyond the point where on-street parking begins can not utilize the turn lane.

The problem is similar for motorists coming from Wisconsin who wish to make a left turn at the intersection. The lift bridge--which carries only one lane in each direction--is located 420 feet east of the intersection, eliminating the turn lane. As a result, only those cars between the intersection and the bridge are able to use the turn lane.

Through the years, various Traffic System Management (TSM) initiatives have been tried in order to facilitate the flow of traffic through the intersection, but the basic difficulty remains. Compounding the problem is the large amount of pedestrian traffic in downtown Stillwater, along with motorists attempting to sightsee or locate scarce parking.

The lift schedule on the existing bridge creates an additional bottleneck for interstate traffic. From May 15 through October 15, an established lift schedule is in effect. As illustrated in figure 3, the lift goes up every half-hour or hour from 8 a.m. to 10 p.m. on weekdays, and from 8 a.m. to 12 midnight on holidays and weekends. During the night

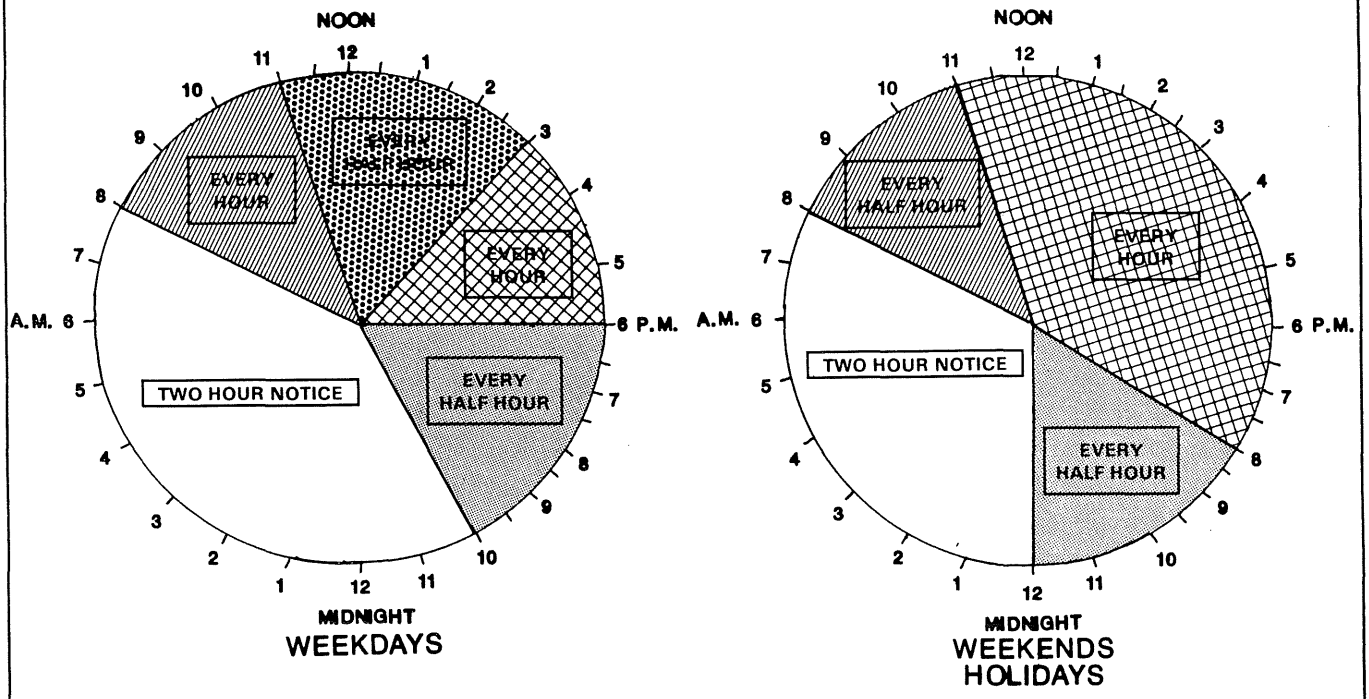


Figure 3
Opening Schedule: Stillwater Bridge

hours when the schedule is not in effect, a 2 hour notice is required.

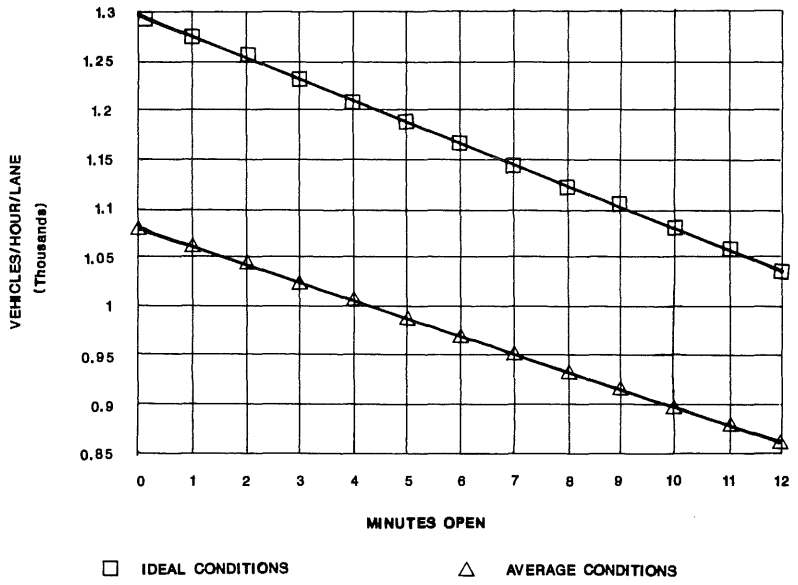
Unfortunately, peak use of both the bridge and the river often occur simultaneously, generally on summer weekends and holidays. This is especially true during Sunday afternoons and evenings, when a large number of motorists return home to the Twin Cities after recreational trips to Wisconsin, and watercraft operators are heading back to marinas or public launches. It is during these peak periods that the longest lift times tend to occur, averaging eight to ten minutes instead of five minutes, which is more typical.

In addition to the sheer volume of watercraft, lift duration is affected by water levels and the height required by the waiting vessels; the higher the vessels, the longer it will take the lift to open and close. At normal water elevations there is an available vertical clearance of 57 feet with the draw fully raised, while approximately 10 feet of freeboard is available when the draw is closed.

According to Mn/DOT data, the number of lift openings grew from 621 in 1980 to 1,473 in 1985, with considerable variation in between depending on weather. The number of vessels passing under the bridge increased from 936 in 1980 to over 3,800 in 1985. Since 1970, boating traffic on the Lower St. Croix National Scenic Riverway as a whole has more than doubled.

In addition to the lift, a key factor restricting the capacity of the existing bridge is the limited lateral clearance caused by bridge trusses on both sides of the roadway. The current bridge has two twelve foot lanes. According to a 1985 study by the West Central Wisconsin Regional Planning Commission (WCWRPC), having no clearance on either side of road reduces the capacity to 72 percent of what it would be with no lateral obstructions. Assuming that each lane of a two-lane highway with adequate lateral clearance can handle 1,800 vehicles per hour (VPH) per lane under ideal conditions, the lift bridge's maximum one-way capacity would be approximately 1,296 VPH per lane. Under average to good conditions, a normal two-lane highway's capacity is reduced to 1,500 VPH per lane; for the lift bridge, capacity under these conditions would be 1,080 VPH per lane.

These estimates do not include the impact of a raised lift on the bridge's capacity. As illustrated in figure 4, one five minute lift opening per hour would reduce the bridge's capacity to 1,180 VPH per lane



DOES NOT INCLUDE DELAYS IN STILLWATER

SOURCE: CONGESTION AT THE STILLWATER BRIDGE, WEST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION, JULY, 1985

Figure 4

Capacity Reduction Resulting from Lift Opening

under ideal conditions, and 990 VPH per lane under average conditions. This capacity would be further reduced by the effect of the traffic signal at Chestnut and Main, which has the greatest impact on westbound traffic attempting to turn left at the signal.

As a result of these factors, maximum capacity of the eastbound lane on the bridge is somewhat over 850 VPH, while the westbound lane is 650 VPH. Demand often exceeds capacity, particularly during the summer months; the result can be severe congestion on and around the bridge. For a more detailed analysis of this data, consult Congestion at the Stillwater Bridge, a report published by the WCWRPC in July, 1985.

Smooth traffic flow on both TH 36 in Minnesota and STH 64 in Wisconsin is impeded by numerous intersections, access points, and other geometric factors. The traffic signals which line the east-west section of TH 36 in Oak Park Heights and Stillwater, for example, detract from the road's ability to serve as a Major Arterial for medium to long-range trips. In Wisconsin, traffic projections indicate that the capacity of a two-lane STH 64 from Houlton to New Richmond will be exceeded by the demand in the near future. Wisc/DOT is currently studying the feasibility of upgrading this stretch of STH 64 to four lanes so that it can meet its designation as a multi-lane connector.

SAFETY

According to data collected during the seven year period from 1980 to 1986, study area segments of TH 36 in Minnesota and STH 64/35 in Wisconsin have higher accident rates than roadways with similar designs (see figure 5). On the four-lane stretch of TH 36 (from TH 15 to TH 95), the rate was

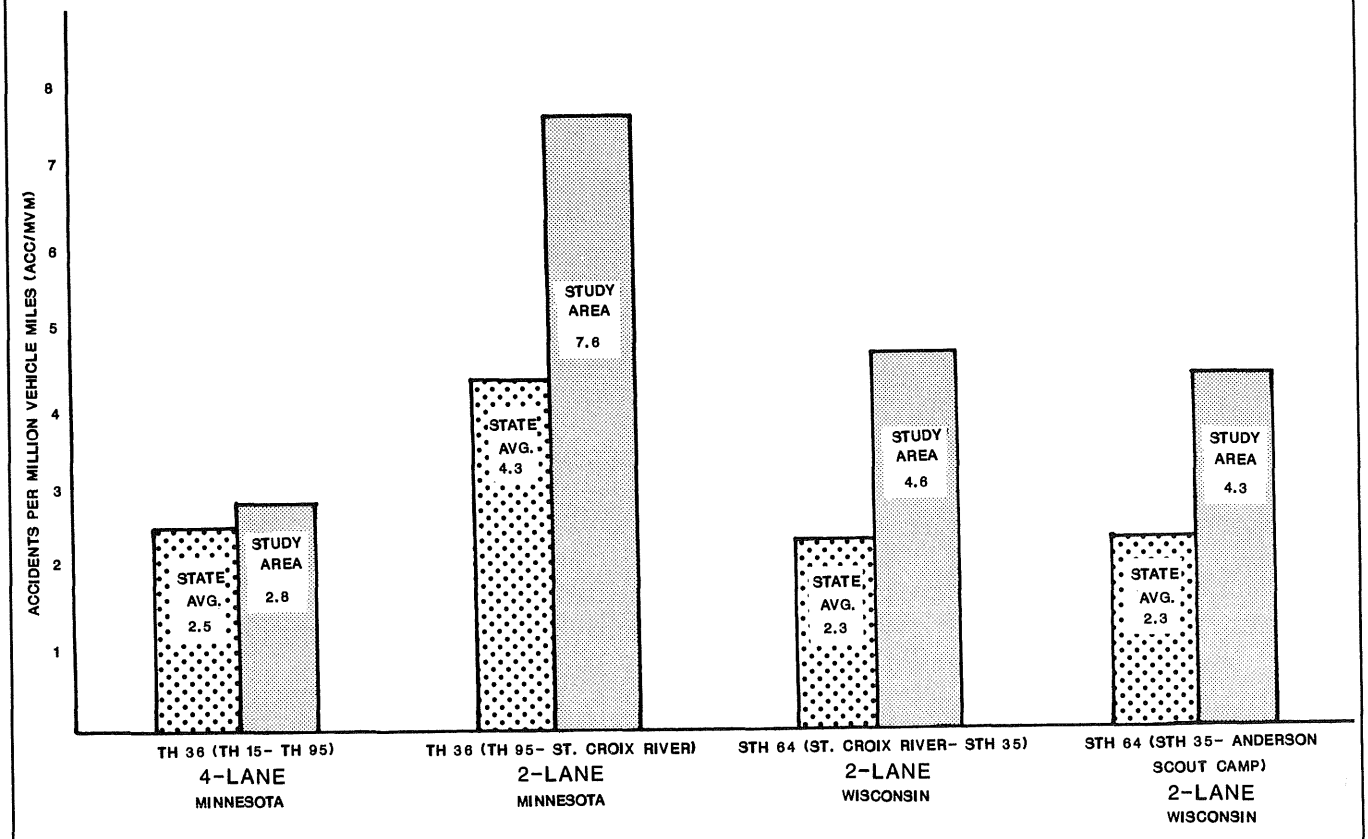


Figure 5
Study Area and State-wide Accident Rates

2.8 accidents per million vehicle-miles (acc/mvm), compared to a statewide average of 2.5 acc/mvm for suburban expressways. On the stretch of TH 36 from TH 95 to the lift bridge, the accident rate was 7.6 acc/mvm, compared to a statewide average of 4.3 acc/mvm for two lane urban/suburban roadways.

In the Wisconsin portion of the study area, STH 64 and STH 35/64 also have higher accident rates than the respective state average for rural state trunk highways. From the lift bridge to the junction of STH 35, the accident rate on STH 64 was double the state average, 4.6 acc/mvm compared to 2.3 acc/mvm. On the stretch of STH 35/64, from the junction of STH 35 to the Anderson Scout Camp intersection, the accident rate for the seven year period was 4.3 acc/mvm, compared to the statewide average of 2.3 acc/mvm.

Tables 1-4 illustrate fatalities, personal injuries, property damage, and average daily traffic (ADT) for the four stretches of road discussed above. During the period from 1980 to 1986, there were ten fatalities on the existing study area river crossing corridor. As indicated by the tables, traffic along all of the stretches has grown substantially, with increases ranging from 20.4% to 54.7%. It is interesting to note that, in general, the high accident rates along these roads did not increase during this period. In fact, in many cases, accident rates declined between 1980 and 1986. Accident rates on a given stretch of road are affected by a number of factors in addition to traffic volumes, including speed limits, geometric design/safety features, weather, and chance; these and other factors interact in a complex fashion to produce a given accident rate in a certain year.

Between 1986 and the year 2014, ADT over the existing bridge is expected to more than double under a NO-BUILD situation. It is impossible to know for certain how traffic increases on and around the bridge are going to affect future accident rates, but it is reasonable to assume that the already high rates are unlikely to improve substantially as the transportation system is placed under further stress.

An important factor in accident generation are the summer backups which occur on either side of the existing bridge when the lift is up. On warm Sunday afternoons, traffic can backup from 3 to 5 miles on the Wisconsin side of the bridge, sometimes extending halfway from Houlton to Somerset. Motorists caught in these long lines can wait from one to two hours to get across the river; impatient drivers are often seen jumping the queue and swerving around waiting vehicles. The abrupt stopping of traffic can generate a high number of rear-end accidents, particularly around curves and on the steep hill leading down to the St. Croix. Numerous access points and limited passing opportunities also contribute to the high accident rate along this stretch. According to a 1988 report by the WCWRPC, 63 percent of STH 35/64 between the bridge and Somerset (8.7 miles) is marked for no passing.

Because of the high accident potential along this stretch, the St. Croix County Sheriff's Department assigns one officer along STH 35/64 in the vicinity of the lift bridge on summer holidays and Sundays. This constrains the resources the Department can devote to other areas of the County.

Long lines of traffic waiting to get over the lift bridge also frequently occur on the Minnesota side of the river, especially during shift changes at Bayport's Andersen Corporation on weekday afternoons, and on Friday evenings and Saturdays during the summer. Special events in Stillwater can also cause considerable traffic jams. This congestion increases the risk that accidents will occur.

An additional safety issue which is discussed in the social impacts section of the draft EIS is the problem the lift and resulting traffic jams cause for emergency vehicles. Emergency medical service in the Wisconsin portion of the study area often comes from Lakeview Memorial Hospital in Stillwater; congestion at the lift bridge can prolong the time it takes to pick up patients in Wisconsin and bring them to the Hospital.

ACCIDENT TYPES BY YEAR

MINNESOTA

TABLE 1

TH 36 FROM CSAH 15 TO TH 95

		OCCURRENCE YEAR						
		1980	81	82	83	84	85	86
ACC. TYPE	FATAL	2	1	0	0	1	0	0
	PERSONAL INJURY	27	19	22	28	22	15	12
	PROPERTY DAMAGE	49	37	45	46	44	38	50
	TOTAL	78	57	67	74	67	53	62
TRAFFIC VOLUME (ADT)		13,800	14,380	15,060	15,990	16,970	17,640	19,400

TABLE 2

TH 36 FROM TH 95 TO THE ST. CROIX RIVER

		OCCURRENCE YEAR						
		1980	81	82	83	84	85	86
ACC. TYPE	FATAL	0	2	0	0	0	0	0
	PERSONAL INJURY	15	11	9	13	14	17	7
	PROPERTY DAMAGE	30	44	28	32	24	27	33
	TOTAL	45	57	37	45	38	44	40
TRAFFIC VOLUME (ADT)		10,740	11,720	12,700	13,870	15,110	15,710	16,620

WISCONSIN

TABLE 3

STH 64 FROM THE ST. CROIX RIVER TO THE JUNCTION WITH STH 35

		OCCURRENCE YEAR						
		1980	81	82	83	84	85	86
ACC. TYPE	FATAL	0	0	0	0	0	0	0
	PERSONAL INJURY	18	4	11	8	5	3	1
	PROPERTY DAMAGE	14	6	3	12	8	8	5
	TOTAL	32	10	14	20	13	11	6
TRAFFIC VOLUME (ADT)		10,216	10,563	10,910	11,256	11,603	11,450	12,297

TABLE 4

STH 35/64 FROM THE JUNCTION WITH STH 35 TO THE ANDERSEN SCOUT CAMP ROAD

		OCCURRENCE YEAR						
		1980	81	82	83	84	85	86
ACC. TYPE	FATAL	1	1	0	0	0	0	2
	PERSONAL INJURY	11	6	5	7	5	5	6
	PROPERTY DAMAGE	11	13	10	5	12	9	8
	TOTAL	23	20	15	12	17	14	16
TRAFFIC VOLUME (ADT)		6,116	6,593	7,070	7,546	8,023	8,500	8,977

FUTURE TRAFFIC DEMAND

Traffic forecasts for the area indicate that the congestion will continue to increase in the future if no improvements are made. During the past two decades, traffic on the bridge and approach corridors has been steadily mounting. According to Wisc/DOT, for example, traffic on STH 35/64 on the Houlton Hill east of the lift bridge increased by 123 percent between 1970 and 1985. On the stretch west of Somerset, the increase for this time period was 83 percent.

In the 1980s St. Croix County has had one of the fastest growth rates of any county in Wisconsin, a trend which is likely to continue. Population forecasts project an increase from 48,655 people in 1988 to 59,250 in the year 2000, a jump of nearly 22 percent. Many of these new residents will be commuting to jobs in Minnesota. In addition, growing numbers of Minnesotans are likely to utilize recreational areas in Wisconsin which are accessible by using the current lift bridge. Furthermore, since the 1970s boat traffic on the Lower St. Croix has been increasing at an average rate of over 5 percent a year. This growth rate is expected to continue in the future, increasing conflicts with vehicle traffic at the lift bridge.

Mn/DOT has calculated current (1986) average daily traffic volumes (ADT) for the study area (see appendix 1). In addition, it has used the Metropolitan Council's Regional Traffic Forecasts Model to estimate average weekday daily traffic (AWDT) volumes for the design year 2014. (Traffic volume forecasts which are based on a seven-day week are not available from the Regional Traffic Forecasts Model, although it is anticipated that AWDT forecasts for the study area would be very similar to ADT predictions.)

In 1986, the ADT over the lift bridge was 12,400 vehicles. Under a NO-BUILD scenario, AWDT levels for the design year 2014 are predicted to more than double, with traffic demand rising to 28,200 vehicles. One consequence of this would be an increase in the duration and frequency of the times when traffic demand exceeds the capacity of the bridge, resulting in growing congestion in both Stillwater and Houlton. In order to avoid increasing congestion levels at Stillwater-Houlton, some motorists would choose new destinations and/or decide to take different routes. This would result in economic impacts in certain areas and increased demand on other highway facilities (e.g., the I-94 bridge).

If a new river crossing is constructed in the North Corridor and the current bridge is retained, the new crossing would have a AWDT level of 15,725 vehicles in design year 2014, while the old bridge would carry an AWDT volume of 12,475. If the existing bridge is removed, the AWDT level in the North Corridor would rise to 28,200 vehicles.

Assuming that the old bridge is retained with a Central Corridor BUILD decision, there would be an AWDT volume of 22,250 on the new crossing and a 10,575 AWDT level on the lift bridge in the design year 2014. If the existing bridge was removed, the AWDT estimate for the new Central crossing would be 32,825.

If a South Corridor BUILD decision becomes the preferred alternative, AWDT volumes in 2014 are forecast to be 23,250, with a 10,575 vehicle level on the lift bridge. Should the existing structure be removed, AWDT projections for the new structure would rise to 33,825.

As indicated by the estimates in the appendix, traffic levels on a number of road stretches in the vicinity of the existing bridge will roughly double between 1986 and the year 2014. Under the NO-BUILD scenario, for example, traffic on TH 36/95 south of the lift bridge in downtown Stillwater will rise from 17,400 ADT in 1986 to 31,250 AWDT in 2014. On STH 64 just east of the lift bridge, traffic will increase from 7,800 ADT in 1986 to an estimated 18,920 AWDT in 2014 under a NO-BUILD decision. On TH 95 immediately south of the TH 96 intersection, the 1986 ADT of 5,000 vehicles will rise to 10,000 AWDT by 2014 with the NO-BUILD option. Traffic on TH 95 just north of the lift bridge will jump from 7,100 ADT in 1986, to 18,750 AWDT under NO-BUILD in design year 2014.

SOCIAL DEMANDS/ECONOMIC DEVELOPMENT

The social and economic ties between Minnesota's Twin Cities/Stillwater area and west-central Wisconsin have grown steadily over the years, yet the transportation links between the two regions have not increased commensurately.

St. Croix County Wisconsin is classified as part of the Twin Cities Metropolitan Statistical Area (MSA), and contains a high percentage of residents who commute to jobs in Minnesota, in addition to going there for shopping and entertainment purposes. Between 1970 and 1980 there was a 107 percent increase in the number of workers in St. Croix County who commuted to jobs in Minnesota (see table 5). Rapid residential growth is forecast to continue in and around the study area, although not necessarily at the high rates of the 1970s. According to forecasts by the Wisconsin Department of Administration and State Data Center, population growth between 1988 and the year 2000 will be 73 percent in St. Joseph Township and 24 percent in Somerset Township. (For more detailed information about study area growth, see the affected environment, and social and economic impact sections of the draft EIS.)

In addition to serving the needs of a growing population in west-central Wisconsin, improved transportation in the study area is required to meet the economic development goals in the region. Businesses interested in locating in west-central Wisconsin frequently require good transportation to the Twin Cities. It is probable that the transportation problems associated with the lift bridge and the TH 36 and STH 35/64 corridors are inhibiting economic development in and around the Wisconsin portion of the study area. Compared to communities located on I-94 (e.g., the City of Hudson and the Village of Woodville), Wisconsin settlements along the STH 35/64 corridor such as the City of New Richmond and the Village of Somerset have not been particularly successful at attracting new industry.

As already mentioned, one of the largest factors affecting the flow of traffic through the study corridor and over the existing bridge are the numerous recreational opportunities in north-west and west-central Wisconsin. Somerset is a major destination, offering inner tube float trips on the Apple River and other attractions such as a waterslide. It is estimated that on hot summer weekends, tiny Somerset gets an influx of between 10,000 and 15,000 people per day, many of which use the Stillwater bridge. Tourism in Somerset is a huge business, and continued congestion along TH 36 and STH 35/64 would likely have important implications for future growth in the area. In the winter, a number of downhill ski areas

TABLE 5

STH 35/64 COMMUTERSHED INTO THE TWIN CITIES *
(Number of Workers Over 16 Years of Age Commuting to the Twin Cities)

LOCALITY	1970	1980	% CHANGE 1970-1980
St. Croix County			
Town of Cylon	17	42	147.1
Town of Emerald	22	28	27.3
Town of Erin Prairie	15	46	32.6
Town of Forest	15	33	206.7
Town of Richmond	30	144	380.0
Town of St. Joseph	227	730	221.6
Town of Somerset	200	394	97.0
Town of Stanton	69	92	33.3
Town of Star Prairie	52	204	292.3
Village of Deer Park	9	15	66.7
Village of Somerset	106	197	85.8
Village of Star Prairie	26	60	130.8
City of New Richmond	176	312	77.3
St. Croix County Total	964	2,297	138.3
Polk County			
Town of Alden	47	157	234.0
Town of Black Brook	15	30	100.0
Town of Clear Lake	8	9	12.5
Town of Farmington	115	134	16.5
Town of Garfield	44	32	-27.3
Town of Lincoln	28	54	92.9
Village of Clear Lake	19	25	31.6
City of Amery	7	23	228.6
Polk County Total	283	464	64.0
Two County Total	1,247	2,761	121.4

* Source: Current Problems and Conditions on the Stillwater Bridge-STH 35/64 Travel Corridor, St. Croix County Highway Committee/West Central Wisconsin Regional Planning Commission, 1984. For this data, the "Twin Cities" includes workplaces in Minneapolis, St. Paul, and Hennepin, Ramsey, and Washington Counties.

are accessible to Twin Cities residents via the Stillwater-Houlton bridge.

A major recreational attraction which affects traffic in the study area are the lakes, rivers, and forests of northwestern Wisconsin. Many Minnesotans own second homes in this area, and commute to them on STH 35/64. According to a 1984 report produced by the St. Croix County Highway Committee and the WCWRPC (Current Problems and Conditions on the Stillwater Bridge--STH 35/64 Travel Corridor), the number of seasonal homes in seven northwestern Wisconsin counties grew by nearly 98 percent between 1970 and 1980, with a 217 percent increase in Sawyer County. In addition to lake cottages, many Twin Cities residents travel over the lift bridge on their way to campgrounds and resorts in northwestern Wisconsin. The closest of these Wisconsin recreational areas have greater proximity to the Twin Cities than similar areas in Minnesota. However, this advantage is partially offset by the traffic delays at Stillwater-Houlton, with potentially adverse economic ramifications for the regional tourist industry.

ALTERNATIVES

DISMISSED ALTERNATIVES AND REASONS FOR DISMISSAL

In 1984, the Minnesota and Wisconsin Departments of Transportation identified several broad corridors to address the highway safety and congestion concerns found in the Stillwater and Houlton areas. Important factors in the identification and later refinement of the corridors were: avoidance of populated areas and commercial concentrations where possible; the use of existing transportation corridors where possible; and the avoidance of historic sites, parks, public facilities, cemeteries, wetlands, inland water bodies, steep slopes, hardwood forest areas, and operating farmsteads.

Four corridors that involved the construction of replacement river crossings were originally identified: the North Corridor, the Central Corridor, the Central Corridor Alternate, and the South Corridor (see figure 6). In addition to these alternative corridors, Bridge Replacement-On-Site, and NO-BUILD were also identified in the study proposal document entitled Scoping Document/Draft Study Outline, dated October, 1985.

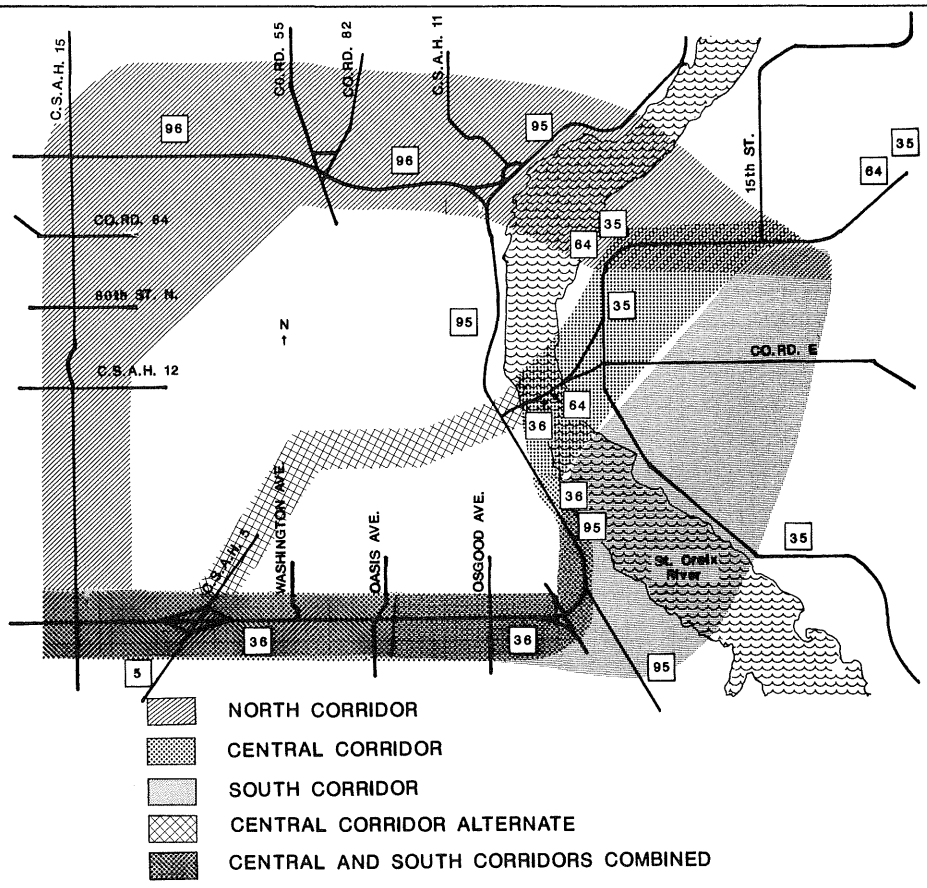


Figure 6
Early Corridor Alternatives

During the following scoping process--which involved considerable discussion with interested Federal and state agencies, the Stillwater-Houlton River Crossing Task Force, and other public groups and individuals--the study alternatives were further refined. The results of this public process were reported in the document entitled Scoping Decision Document/Final Study Outline, dated January, 1987. Important conclusions of this scoping process were as follows:

1. The Central Corridor Alternate was dismissed from further consideration.

   The consensus of the general public and representatives of participating agencies was that construction in this fully developed urban corridor would result in unacceptably severe impacts to the city of Stillwater. Dividing the city with a controlled access highway would necessitate large scale residential displacements, and would cause severe social and economic disruption.

2. The construction of a replacement drawbridge, whether located in the existing or in alternative corridors was dismissed from further consideration.

   A replacement drawbridge on the site of the existing bridge does not address the transportation problem which is caused, in part, by the drawbridge operation itself. (See the Replacement-On-Site option under the NO-BUILD Alternative.)

   Analyses of potential river crossing locations in each of the three remaining study corridors have supported the conclusion that drawbridges would not be appropriate alternatives. Riverside elevations in Minnesota, and the high bluffs in Wisconsin provide for the construction of replacement crossings with adequate navigational clearances in all of the potential bridge crossing locations.

3. For the purpose of the draft EIS, the Bridge Replacement-On-Site option will be evaluated under the NO-BUILD Alternative. If this option is the final conclusion of the EIS study process, it would then be appropriate to evaluate rehabilitating or replacing the existing bridge at its present location when the bridge becomes unsafe for travel. The estimated remaining useful life of the existing bridge is five to fifteen years.

4. The construction of a tunnel under the river was identified as a potential alternative to a bridge in the North and South Corridors.

5. Several potential partial solutions to the transportation problems were also identified for additional review and analysis. Encompassing a range of measures designed to optimize the safety and service capabilities of the existing roadway system at relatively low cost, this group of alternatives is referred to as Transportation Systems Management (TSM) strategies. These options were added to the NO-BUILD Alternative.

After the Scoping Decision Document/Final Study Outline was published, an additional series of agency and public discussions were held. Additional refinements and modifications of the study resulted. The following is a summary list of the alternatives and options which have been evaluated during the draft EIS study process:

I. BUILD Alternative (see figure 7).

   A. North Corridor

      1.) River Bridge

      2.) River Tunnel

   B. Central Corridor

      1.) River Bridge, including Land Tunnel Options

   C. South Corridor

      1.) River Bridge, including Land Tunnel Options

      2.) River Tunnel

II. NO-BUILD Alternative

   A. No-Action

   B. Replacement-On-Site

   C. TSM Strategies, including Mass Transit Options

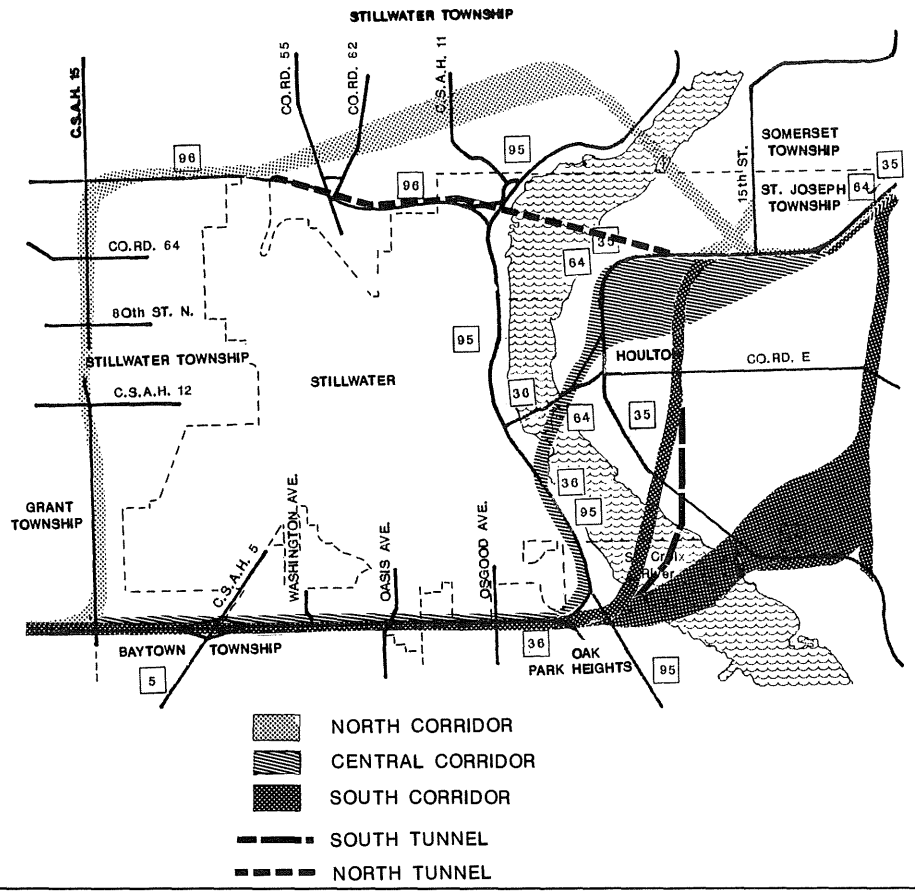


Figure 7
Present Study Corridors

DESCRIPTIONS OF THE STUDY ALTERNATIVES

This section provides a descriptive overview of both the BUILD and NO-BUILD Alternatives. The BUILD Alternative includes a set of options that incorporate major new construction or reconstruction of approach highways, and the construction of a replacement crossing of the St. Croix River. They involve a substantial commitment of public funds and resources. In this draft EIS, analysis of the BUILD Alternative options addresses the issue of which major action would best meet the combined transportation, social, economic, and environmental needs of the study area through major construction.

The analysis of the NO-BUILD Alternative in the draft EIS provides additional elements to the evaluation process, represented by the following question: Is the total effect of investing in a BUILD Alternative more or less beneficial (or more or less costly) than the total effects of NO-BUILD? Put another way, is there a less complex solution (or combination of such solutions) which provides an acceptable balance of reduced funding investment; social, economic, and environmental effects; and an adequate level of transportation improvement?

The BUILD Alternative--which will be discussed first--can be broken down into three broad corridors, composed of seven distinct alignments and fifteen different design options. They are as follows:

I. BUILD Alternative

A. North Corridor

1.) River Bridge (see figure 8/yellow insert).

The North Corridor bridge option follows an alignment traveling west and north of Stillwater, Minnesota, and north of Houlton, Wisconsin. Its total roadway length is 9.44 miles, and its estimated construction cost is $56,771,000.

The corridor alignment begins in the vicinity of TH 36 and County Road 15, where it travels north along County Road 15 to its junction with TH 96. It then travels east along TH 96 to the vicinity of Twin Lakes, where it separates from the existing highway and travels northeasterly and easterly on a new alignment to the St. Croix River. The new 2,500 foot long bridge crosses the river at an elevation of 185 feet, extending from bluff top to bluff top at a level grade. From the touchdown point in Wisconsin, the roadway continues along new alignment to its junction with existing STH 64. Potential interchange locations are at TH 36/County Road 15, County Road 15/County Road 12, County Road 15/TH 96, the vicinity of County Roads 55 and 82, and at STH 64 in Wisconsin.

2.) River Tunnel (see figure 9).

The river and land tunnel options were added to the analyses of the corridors in response to the perception that construction of a new bridge and approaches would significantly affect the scenic and recreational values of the St. Croix River as a component of the National Scenic Riverway System.

The North Corridor tunnel option also follows an alignment traveling west and north of Stillwater, Minnesota, and north of Houlton, Wisconsin. Its total roadway length is 9.16 miles, and its estimated construction cost is between $128,716,200 and $178,716,000, depending on final design considerations. Considerable additional costs would be incurred for tunnel support facilities, such as ventilation, drainage, and lighting.

The corridor alignment follows the same route as the bridge option, but continues to travel easterly adjacent to TH 96, beginning its descent below grade approximately 1,000 feet west of the river. At that point, it travels underground, beneath the river, and rises above ground approximately 4,000 feet east of the river in Wisconsin, where it continues until its junction with STH 64.

The 8,200 foot long tunnel has a descending grade of 4% (4 feet of drop every 100 feet), and an ascending grade of 5%, traveling west to east. Potential interchange locations are at TH 36/County Road 15, County Road 15/County Road 12, County Road 15/TH 96, TH 96/vicinity of tunnel entrance, and at STH 64 in Wisconsin.

B. Central Corridor River Bridge

The Central Corridor follows various potential alignments traveling south of Stillwater, Minnesota, and through Houlton, Wisconsin. Its total length varies between 6.78 and 7.07 miles, depending on location. Estimated construction costs vary between $67,819,450 and $126,073,500, depending on location and features.

The corridor alignment begins in the vicinity of TH 36 and County Road 15 where it travels east along existing TH 36 to the junction with TH 95. The Central Corridor then veers north along the TH 36/TH 95 common section to a point just south of the Stillwater central business district where the new river bridge crosses the St. Croix River. It then rejoins the existing roadway alignment, STH 64 in Wisconsin. At the top of the Houlton hill, optional alignments exist which either follow existing STH 64, or travel on new alignment to the point of the eastern study termini. Potential interchange locations are at County Road 15, TH 5/County Road 5, Oasis Avenue, TH 95, STH 35, and STH 64.

Four river crossing options have been identified consisting of various river clearances, grades, and approach roadway connections, as follows:

1.) This option consists of a 2,990 foot long elevated roadway section over TH 95 in Minnesota, a 3,300 foot long river bridge over the St. Croix, and river clearances varying from 60 feet at the Minnesota shore to 70 feet at the Wisconsin shore. River bridge grade is flat, except for a 3% rise near the eastern end. Estimated total construction cost of this option is between $85,990,800 and $86,057,600, depending on STH 64 alignment around or through Houlton (see figure 10).

2.) This option was added to the analysis of the Central Corridor to address visual concerns relating to the river clearance

heights of option one. The request to explore a lower river crossing option was made by an environmental concern group participating in a review of pre-draft EIS environmental studies. Mn/DOT requested the U.S. Coast Guard to re-evaluate its 60 foot minimum clearance requirement over navigable waters at this location. The Coast Guard response was favorable.

This option consists of a 3,100 foot long elevated roadway section over TH 95 in Minnesota, a 2,975 foot long river bridge over the St. Croix, and river clearances varying from 41 feet at the Minnesota shore to 74 feet at the Wisconsin shore. The river bridge grade is almost flat until the center of the river, where the crossing begins to ascend the Wisconsin bluff at a 3% grade. Estimated total construction cost is between $82,849,300 and $83,180,300, depending on whether the STH 64 alignment goes around or through Houlton (see figure 11).

3.) This option was added to the analysis of the Central Corridor to address additional visual impact concerns related to widening the existing STH 64 bluff corridor to accommodate the new four-lane highway alignment.

This option consists of a 3,100 foot long elevated roadway section over TH 95 in Minnesota and a 2,650 foot long river bridge above the St. Croix. Also included is a land tunnel beneath the Wisconsin bluff of 3,050 feet (5% grade) or 4,600 feet (3% grade). River clearances vary from 41 feet at the Minnesota shore to 19 feet on the Wisconsin side. The river bridge grade is almost flat. Estimated total construction cost of this option is between $109,111,400 and $126,073,500, depending on tunnel grade and whether the STH 64 alignment goes around or through Houlton (see figure 12).

4.) This option was added to address additional visual impact concerns relating to the elevated Central Corridor roadway over TH 95 on the Minnesota shoreline, which would partially block views of the Minnesota bluff.

This option consists of a 4,175 foot long combination approach and river bridge, with an integrated, single level roadway design in Minnesota along TH 36/TH 95. River clearances vary from 52 feet at the Minnesota shore to 65 feet at the Wisconsin shore. The river bridge grade is almost flat until the eastern shore where it begins to ascend the Wisconsin bluff at a grade of 3%. Estimated total construction cost of this option is between $67,819,450 and $68,150,250, depending on the STH 64 alignment in Houlton (see figure 13).

In order for this integrated roadway option to handle future traffic volumes, it is required that the existing bridge remains in operation to handle local traffic. In addition, the integrated design requires some cutting back of the Minnesota bluff, and fill to be placed in the St. Croix River to provide enough corridor width.

C. South Corridor

The South Corridor follows various potential alignments traveling south of Stillwater, Minnesota, and south and east of Houlton, Wisconsin. Its total length varies between 6.72 and 6.94 miles, depending on location, and its estimated construction cost varies between $75,727,000 and $98,069,200, depending on location and features.

The corridor alignment begins in the vicinity of TH 36 and County Road 15 where it travels east along existing TH 36 to the junction with TH 95. It continues east across the St. Croix River, and touches down on the Wisconsin bluff at one of three location options. It then travels east and north on the alignment options, and then reconnects with existing STH 64. Potential interchange locations are at County Road 15, TH 5/County 5, Oasis Avenue, TH 95, STH 35, and STH 64.

1.) River Bridge

The three river bridge alignments (consisting of various clearances, grades, approach roadway connections, and Wisconsin roadway alignments) are as follows:

a. Northern Alignment

(a.1.) This alignment was moved in response to environmental concerns related to Wisconsin bluff impacts. The alignment was moved approximately 1,000 feet north in order to take advantage of an existing ravine. After crossing STH 35, the alignment travels north along a section line to minimize farm impacts, proceeds east of Houlton, and then reconnects with STH 64.

The alignment consists of a 3,200 foot river bridge over the St. Croix, with a 1,700 foot on-land approach bridge. River clearances vary between 53 feet at the Minnesota shore to 105 feet at the Wisconsin shore. River bridge grade is 2.5%. Estimated total construction cost of this alignment is $75,727,000 (see figure 14).

(a.2.) An additional option was identified which would further reduce bluff impacts. While bridge length, grade, and height would be identical to the crossing discussed above (a.1.), this option would include a 900 foot land tunnel through the Wisconsin bluff. Estimated total construction cost of this alignment option is $86,140,000 (see figure 15).

b. Central Alignment

(b.1.) This alignment was developed to touchdown on the Wisconsin bluff. After crossing STH 35, it travels easterly between a cemetery and an existing farmstead, continues on new alignment selected to minimize farm severances, connects with a relocated STH 35, and then travels north to reconnect with STH 64.

The alignment consists of a 3,400 foot long river bridge, and a 1,700 foot on-land approach bridge. River clearances vary between 70 feet at the Minnesota shore to 157 feet at the Wisconsin shore. River bridge grade is 3.0%. Estimated total cost of this alignment is $78,712,200 (see figure 16).

(b.2.) This option was developed to investigate a lower level river crossing in order to reduce long range visual impacts from the river surface. Tradeoffs include a slightly steeper approach grade in Minnesota, and a much greater bluff cut in Wisconsin.

The option consists of a 3,425 foot long river bridge and a 1,500 foot on-land approach bridge. River clearances vary between 45 feet at the Minnesota shore to 113 feet on the Wisconsin side. River bridge grade is 3%. Estimated cost of this alignment option is $77,560,200 (see figure 17).

(b.3.) This option was added to the analysis to explore reducing impacts to the Wisconsin bluff, while retaining the lower level crossing height.

Bridge length, grade, and height would be similar to the option above (b.2.). However, it adds a 920 foot long land tunnel which goes through the Wisconsin bluff. The total estimated construction cost of this alignment option is $88,204,600 (see figure 18).

c. Southern Alignment

(c.1.) This alignment was developed to touchdown on the Wisconsin bluff, and take advantage of the existing east-west segment of STH 35 to minimize property impacts. The new alignment would be constructed adjacent to STH 35. It would travel easterly to the end of the STH 35 east-west segment where it would turn north along new alignment to reconnect with existing STH 64.

The alignment consists of a 3,900 foot long river bridge and a 2,000 foot on-land approach bridge. River clearances vary between 60 feet at the Minnesota shore to 100 feet at the Wisconsin shore. River bridge grade is flat for slightly more than half its length, then 3% up to and through the Wisconsin bluff. Estimated total cost of this alignment is $86,737,000 (see figure 19).

(c.2.) This option was also developed to investigate a lower level river crossing at this location to reduce long range visual impacts from the river surface.

Features include a slightly reduced bridge grade, which is consistent across the entire structure.

The option also consists of a 3,750 foot long river bridge and a 2,150 foot on-land approach bridge. River clearances would vary between 31 feet at the Minnesota shore to 108 feet on the Wisconsin side. River bridge grade is 2.6%. Estimated total cost for this alignment option is $86,167,600 (see figure 20).

(c.3.) This option was developed to investigate a high crossing parallel to the river surface to further reduce river and Wisconsin bluff impacts. Tradeoffs include a flat bridge grade, less traffic noise, less bluff impacts, but increased long-range visibility.

The option consists of a 6,200 foot long river bridge, with a river clearance that varies from 126 feet at the Minnesota shore to 143 feet at the Wisconsin shore. River bridge grade is 0.5%. Estimated total cost for this alignment option is $98,069,200 (see figure 21).

2.) River Tunnel

The South Corridor tunnel option also follows an alignment south of Stillwater, and south and east of Houlton in Wisconsin. Its total roadway length is 6.85 miles, with an estimated construction cost between $122,888,600 and $172,888,600, depending on final design considerations. Considerable additional costs would be incurred for tunnel support facilities, such as ventilation, drainage, and lighting.

The alignment travels east along existing TH 36 until a point approximately 1,000 feet west of the river, where it begins its descent below grade. It continues beneath the river and rises above ground approximately 4,000 feet into Wisconsin. It then goes east of Houlton in a northerly direction, following a section line to minimize farmland impacts, and reconnects with STH 64.

Th 8,800 foot long tunnel has a descending grade of 3.7%, and an ascending grade of 5.0%, traveling west to east.

Potential interchange locations are at TH 36/County Road 15, TH 36/Oasis Avenue, tunnel entrance/TH 95, and at STH 64 in Wisconsin.(see figure 22).

II. NO-BUILD Alternative

The NO-BUILD alternative includes three main options, which can be defined as No-Action, Replacement-On-Site, and Transportation System Management Strategies. Mass transit implications will also be discussed in this section.

A. No-Action

The No-Action option of the NO-BUILD Alternative provides the basis of comparison, or benchmark, for all of the other alternatives. In transportation planning and impact assessment, this option is defined as meaning:

1. The maintenance of existing facilities and services in the study area and the region;
2. The completion and maintenance of committed projects in the study area and the region; and
3. The continuation of existing transportation policies.

The above can be further explained as follows:

Maintenance includes activities such as filling potholes, repainting pavement markings, replacing worn pavement sections, curbs, signs, signals, etc. It includes all routine activities which do not increase capacity or improve the level of service and are not intended to meet future travel demand.

Existing facilities and services include all roads and transit services in the study area and region which will serve travel demand if a BUILD alternative is not constructed. This network of impacted roads often extends well beyond the immediate study area, particularly in urban areas where increasing congestion causes traffic to divert to alternate corridors.

Committed projects refer to planned projects in the study area and the region which are under construction or reasonably sure to begin construction in the near fu-

ture, and which will be operational in the period being studied.

Transportation policy continuation refers to continued maintenance as the most probable course of action in the case of delay, restudy, or rejection of the BUILD alternatives. This action is implied by the need to protect previous investments and preserve a minimum level of service and safety.

B. Replacement-On-Site

Selection of this NO-BUILD Alternative option is, in essence, a location decision without immediate action. It is, however, a commitment to perpetuate the existing transportation corridor through downtown Stillwater and Houlton, and to replace or rehabilitate the existing drawbridge. This will occur when the bridge can no longer safely carry traffic. The remaining useful life of the bridge is estimated to be between five and 15 years.

This option is considered as a NO-BUILD Alternative because replacement within the existing corridor, and rehabilitation do not address the existing or future transportation problems identified in this document.

The Replacement-On-Site option differs from the No-Action option in that it represents a conscious decision that the future transportation network will be limited to what is existing. It also represents the future commitment of an undetermined amount of public funds for bridge reconstruction or rehabilitation, which will not provide increased capacity or level of service improvements.

This decision will result in future traffic being diverted to other river crossings because of high congestion levels. Subsequently, this will necessitate additional safety and service improvements to the diverted roadway network. During the construction period, all traffic will have to be diverted to other crossings, which would result in adverse economic impacts to some businesses in the study area.

C. Transportation System Management (TSM) Strategies

The TSM option of the NO-BUILD Alternative investigates a range of partial transportation solutions that concentrate on obtaining optimum use of present facilities at relatively low cost. Examples of TSM options include: upgrading existing roadways with minor widening, reconstruction, or added turn lanes; designation of high occupancy or transit lanes; fringe parking; ridesharing/carpooling; and traffic signal refinements.

Limited opportunities are available to improve the safety and efficiency of the existing roadway network because of the nature of the area, and because of the nature of the transportation problems. The TH 36/95 approach corridor into downtown Stillwater is severely constricted by steep bluffs to the west, and by the St. Croix River to the east. Primary obstacles include topography, limited available open land, and several historic buildings in the downtown area.

After entering downtown Stillwater, the corridor is further constricted by narrow traffic lanes along Main Street, with limited street parking opportunities . In the center of the central business district, eastbound highway traffic must make a right turn at a signalized intersection. Pedestrians crossing Main Street at and between intersections add to the safety and service problems. The traffic continues along a two-lane city street, and then crosses the St. Croix River on a two-lane, fifty-eight year old through-truss drawbridge. The bridge allows a maximum lane height of 13 feet, 2 inches. In Wisconsin, the two-lane roadway climbs the restricted width bluff draw through Houlton, connects with STH 35, and continues east.

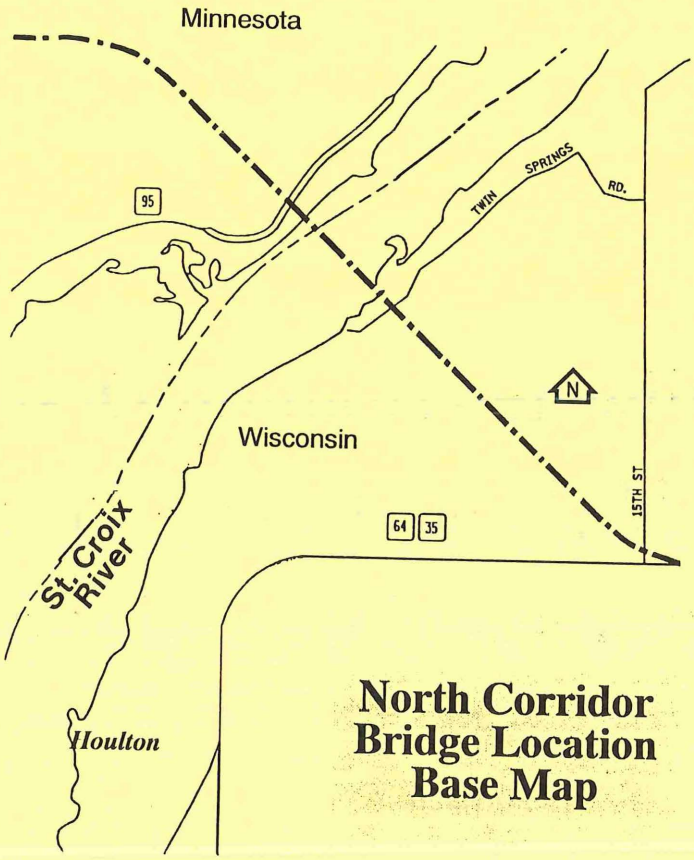
In spite of these restrictions, a number of options have been studied, and some refinements and partial solutions have been implemented over the previous thirty years, as follows:

1. 1960/61

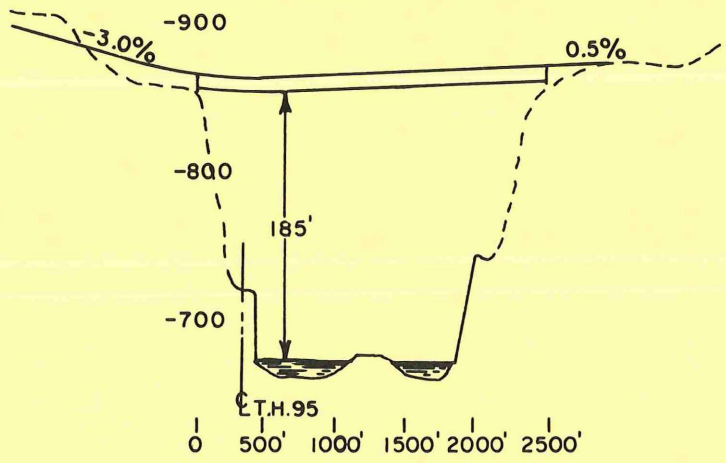
   The City of Stillwater commissioned the development of a comprehensive plan which provided for a new bypass route around the city. It also identified a new interstate bridge crossing. The legislature failed to act on the proposal to designate a new Trunk Highway route. The City Council also rejected the

Stillwater-Houlton Draft EIS
Bridge and Tunnel Corridor
Location Maps and Profiles

Figures 8-22



North Corridor Bridge Profile



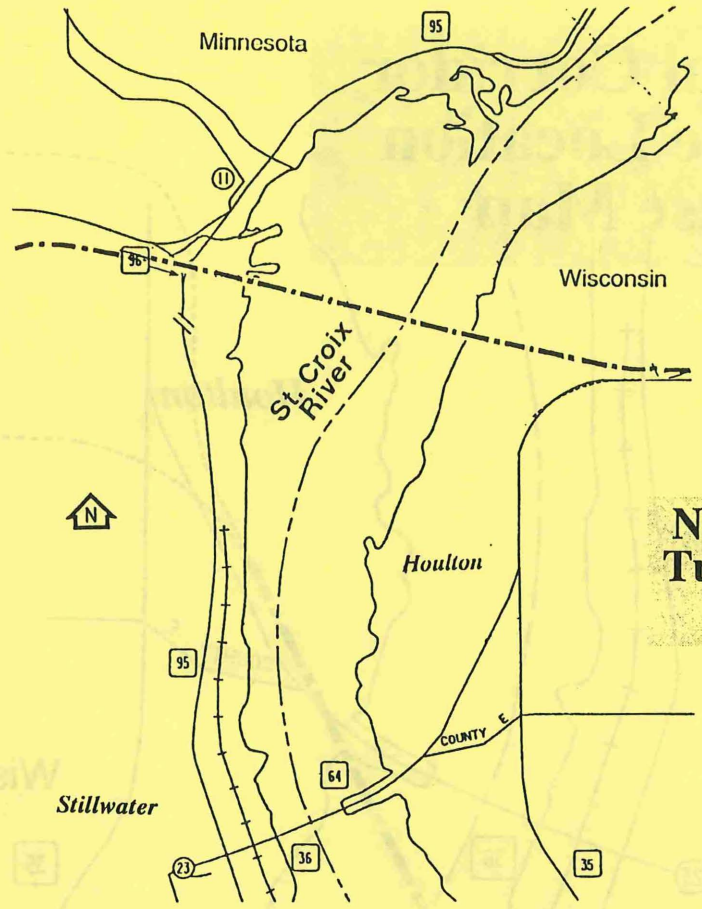
Cost: $56,771,000

Br. Length: 2,500 ft.

Elevation: 185 ft.

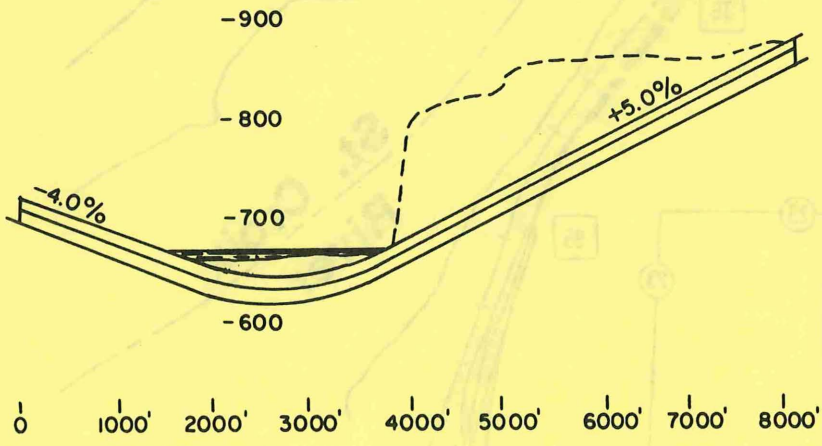
Br. Grade: 0%

Figure 8.



North Corridor Tunnel Location Base Map

North Corridor Tunnel Profile



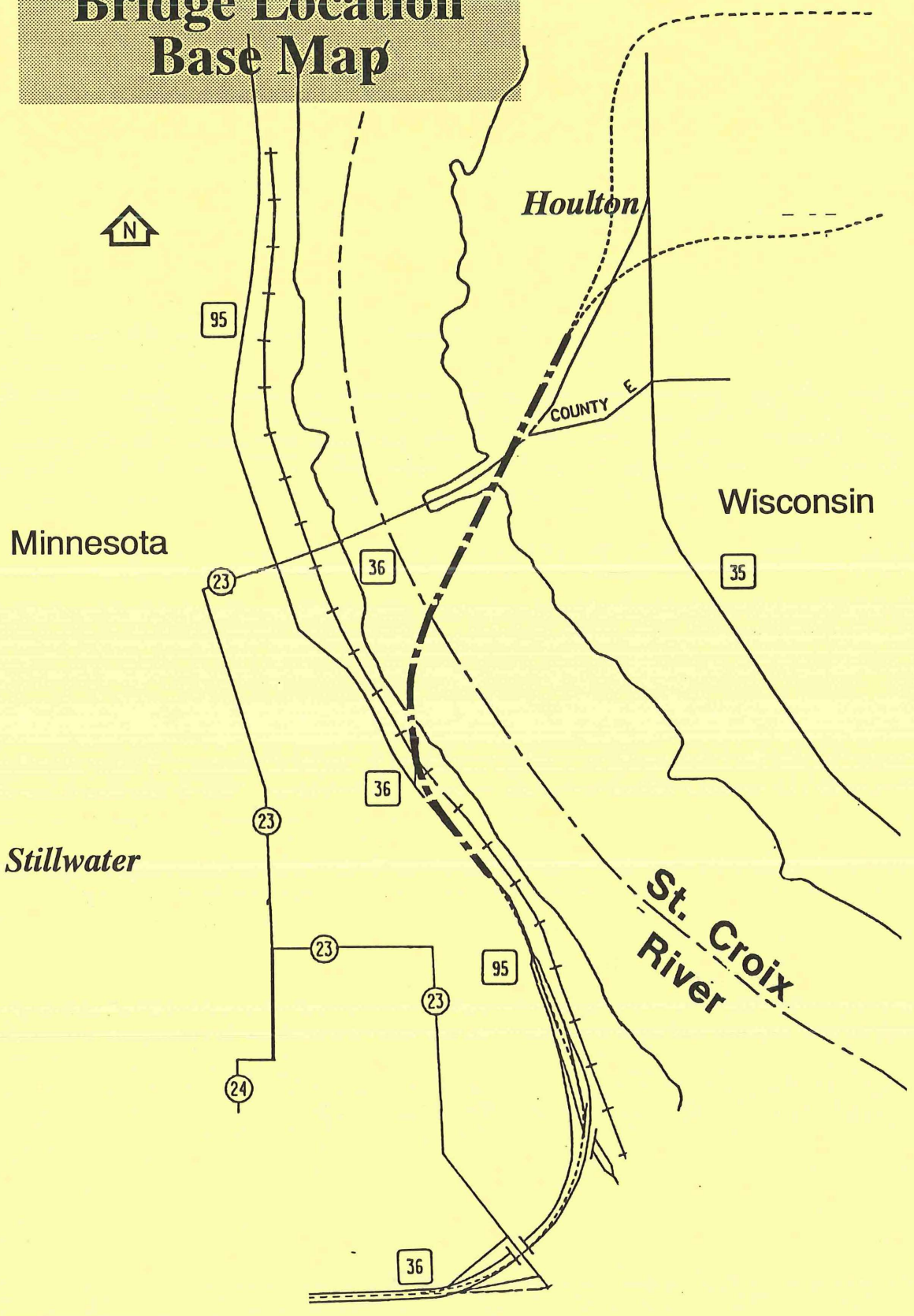
Cost: $128,716,200-$178,716,000

Tunnel Length: 8,200 ft.

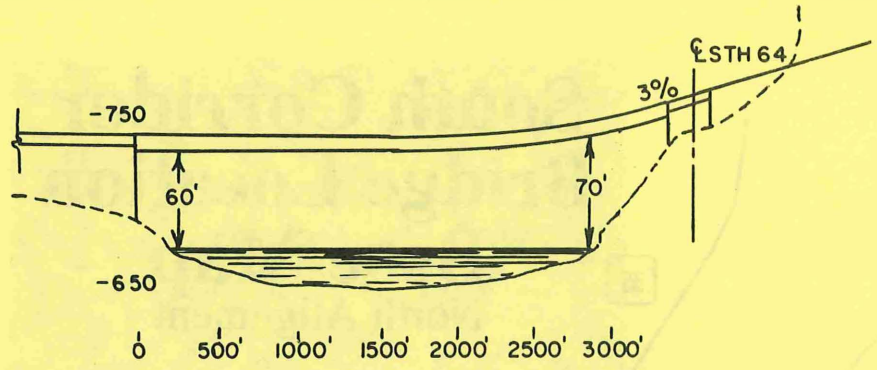
Tunnel Grade: 4% & 5%

Figure 9.

Central Corridor Bridge Location Base Map



Central Corridor Bridge Profiles



Cost: $85,990,800 - $86,057,600

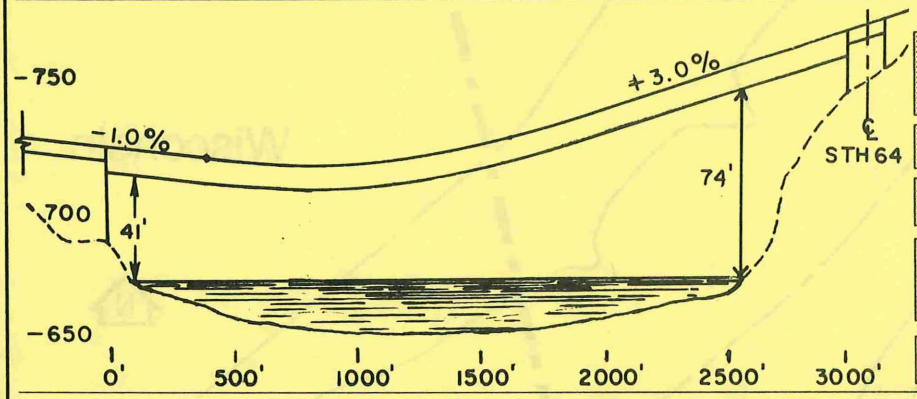
Elevation: 60 - 70 ft.

River Br. Length: 3,300 ft.

Approach Br. Length: 2,990 ft.

Br. Grade: 0 - 3%

Figure 10.



Cost: $82,849,300 - $83,180,300

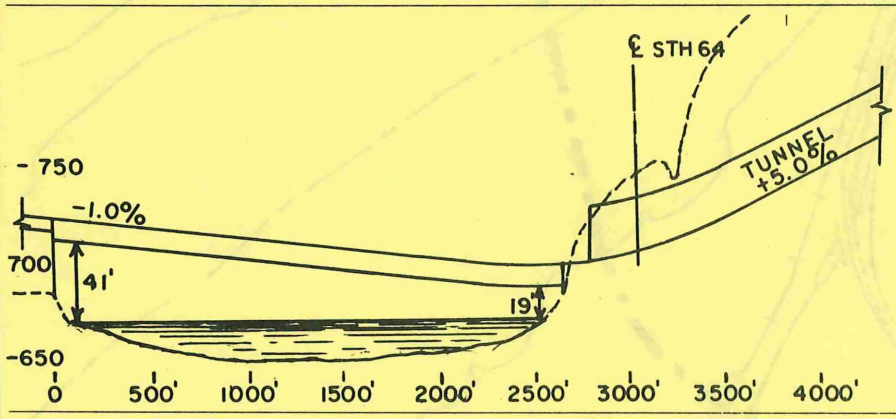
Elevation: 41-74 ft.

River Br. Length: 2,975 ft.

Approach Br. Length: 3,100 ft.

Br. Grade: 0 - 3%

Figure 11.



Cost: $109,111,400 - $126,073,500

Elevation: 19 - 41 ft.

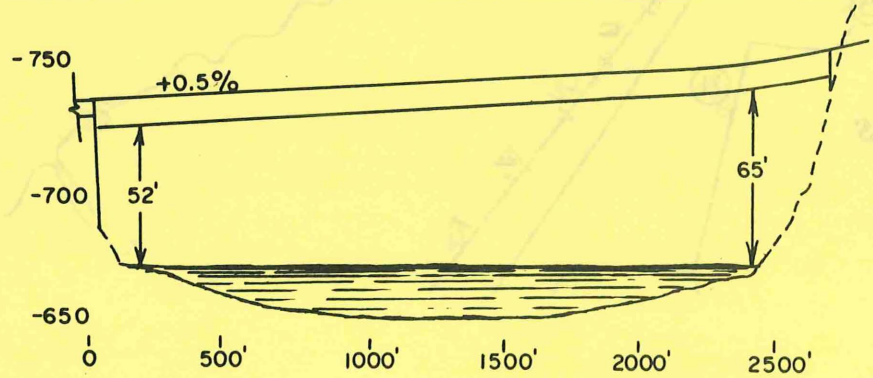
River Br. Length: 2,650 ft.

App. Br. Length:3,100 ft.

Tunnel Length: 3,050 - 4,600 ft.

Br. Grade: 0 - 1%

Figure 12.



Cost: $67,819,450 - $68,150,250

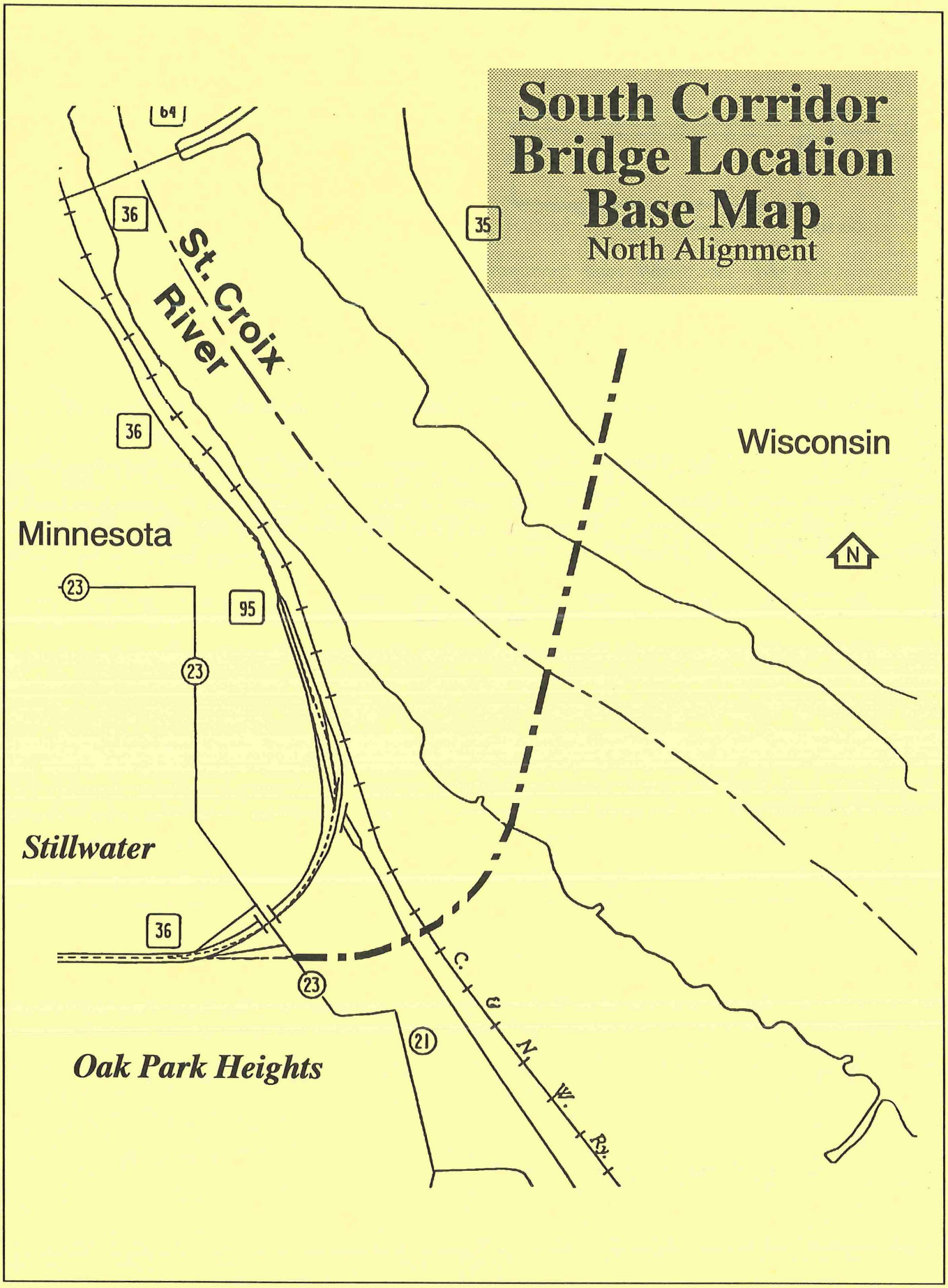
Elevation: 52 - 65 ft.

River Br. Length: 2,750 ft.

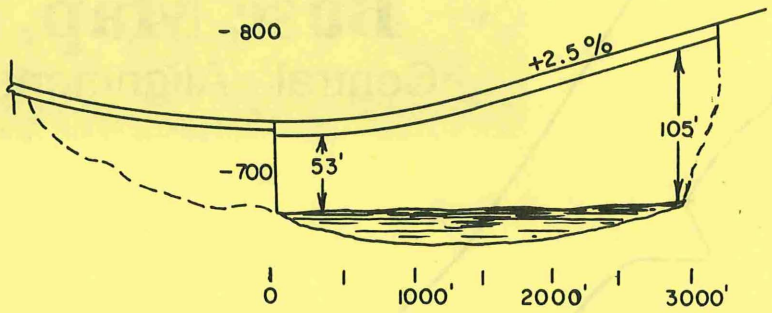
Approach Br. length: 1,425ft..

Br. Grade: 0.5 - 3.0%

Figure 13.


South Corridor
Bridge Location
Base Map
North Alignment
St. Croix River
Wisconsin
Minnesota
N
Stillwater
Oak Park Heights
C. & N. W. Ry.
69
36
35
95
23
21

South Corridor Bridge Profiles - North Alignment



Cost: $75,727,000

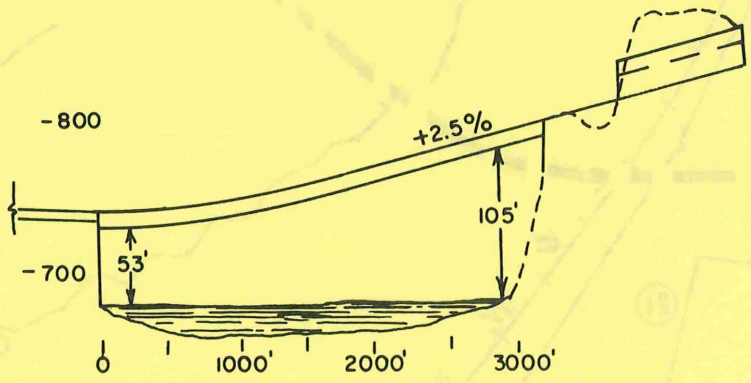
Elevation: 53 - 105 ft.

River Br. Length: 3,200 ft.

Approach Br. Length: 1,700 ft.

Br. Grade: 2.5%

Figure 14.



Cost: $86,140,000

Elevation: 53 - 105 ft.

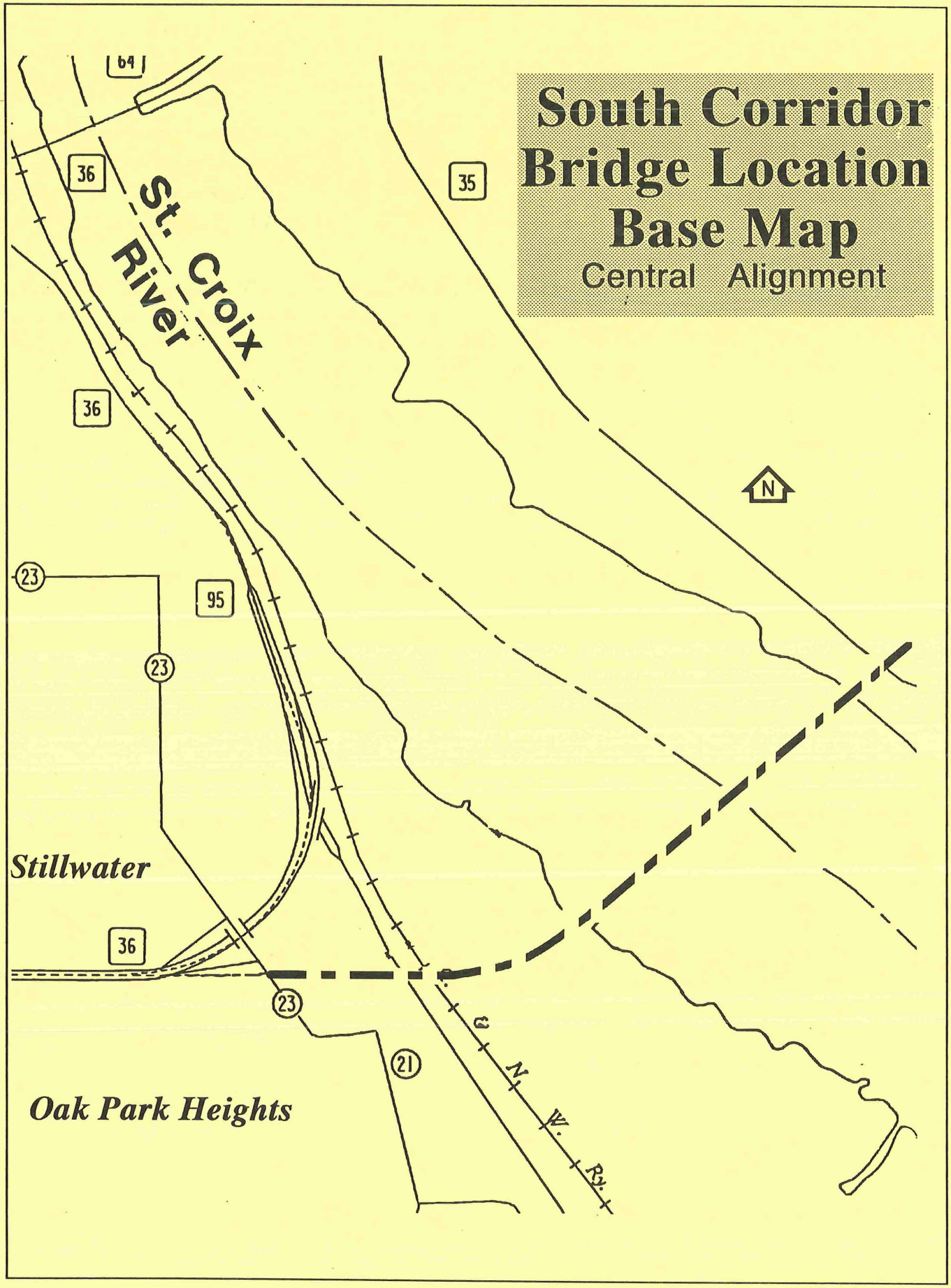
River Br. Length: 3,200 ft.

Approach Br. Length: 1,700 ft.

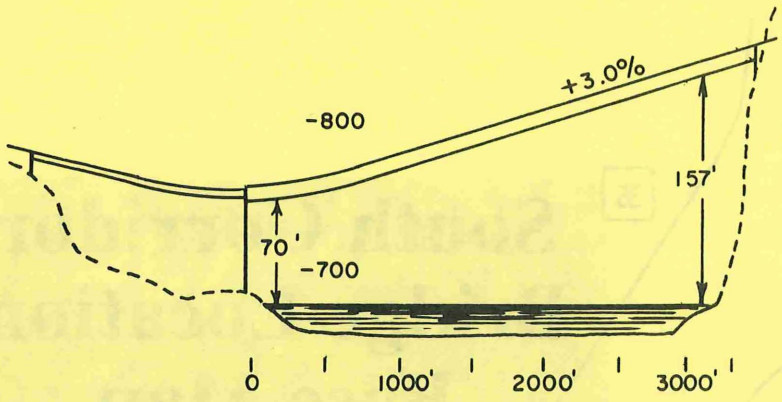
Approach Tunnel Length: 900 ft.

Bridge Grade: 2.5%

Figure 15.


South Corridor
Bridge Location
Base Map
Central Alignment
St. Croix River
69
36
35
36
N
23
95
23
Stillwater
36
23
21
C. N. W. Ry.
Oak Park Heights

South Corridor Bridge Profiles - Central Alignment



Cost: $78,712,200

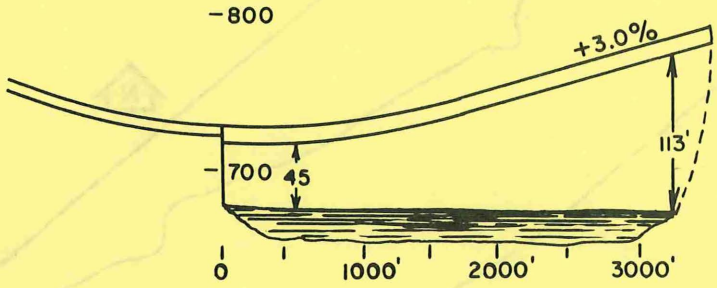
Elevation: 70 - 157 ft.

River Br. Length: 3,400 ft.

Approach Br. Length: 1,700 ft.

Bridge Grade: 3%

Figure 16.



Cost: $77,560,200

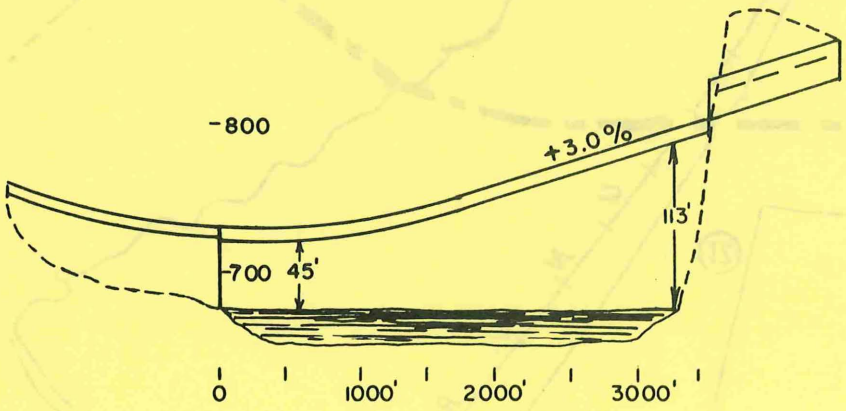
Elevation: 45 - 113 ft.

River Br. Length: 3,425 ft.

Approach Br. Length: 1,500 ft.

Bridge Grade: 3%

Figure 17.



Cost: $88,204,600

Elevation: 45 - 113 ft.

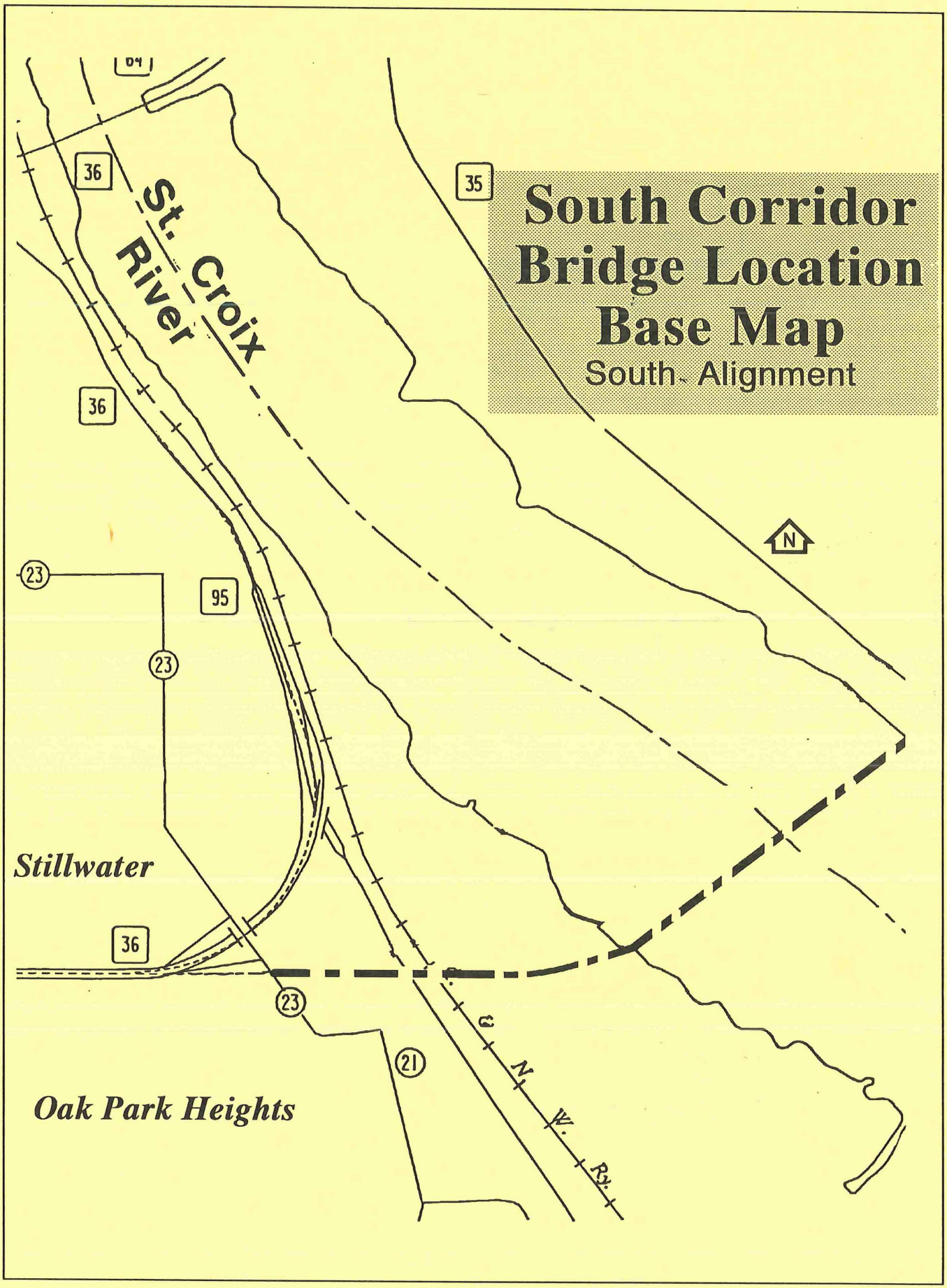
River Br. Length: 3,425 ft.

Approach Br. Length: 1,500 ft.

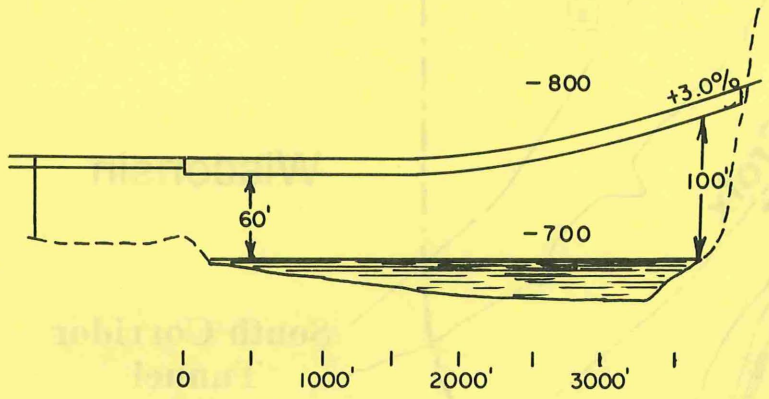
Approach Tunnel Length: 920 ft.

Bridge Grade: 3%

Figure 18.


South Corridor
Bridge Location
Base Map
South Alignment
St. Croix River
36
35
36
N
23
95
23
Stillwater
36
23
21
C. N. W. Ry.
Oak Park Heights

South Corridor Bridge Profiles - South Alignment



Cost: $86,737,000

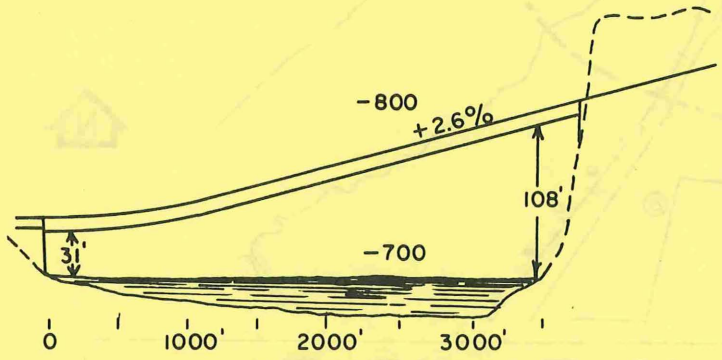
Elevation: 60 - 100 ft.

River Br. Length: 3,900 ft.

Approach Br. Length: 2,000 ft.

Bridge Grade: 0 - 3%

Figure 19.



Cost: $86,167,600

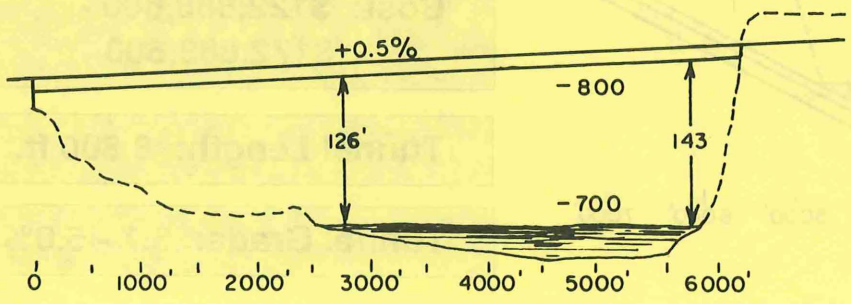
Elevation: 31 - 108 ft.

River Br. Length: 3,750 ft.

Approach Br. Length: 2,150 ft.

Bridge Grade: 2.6%

Figure 20.



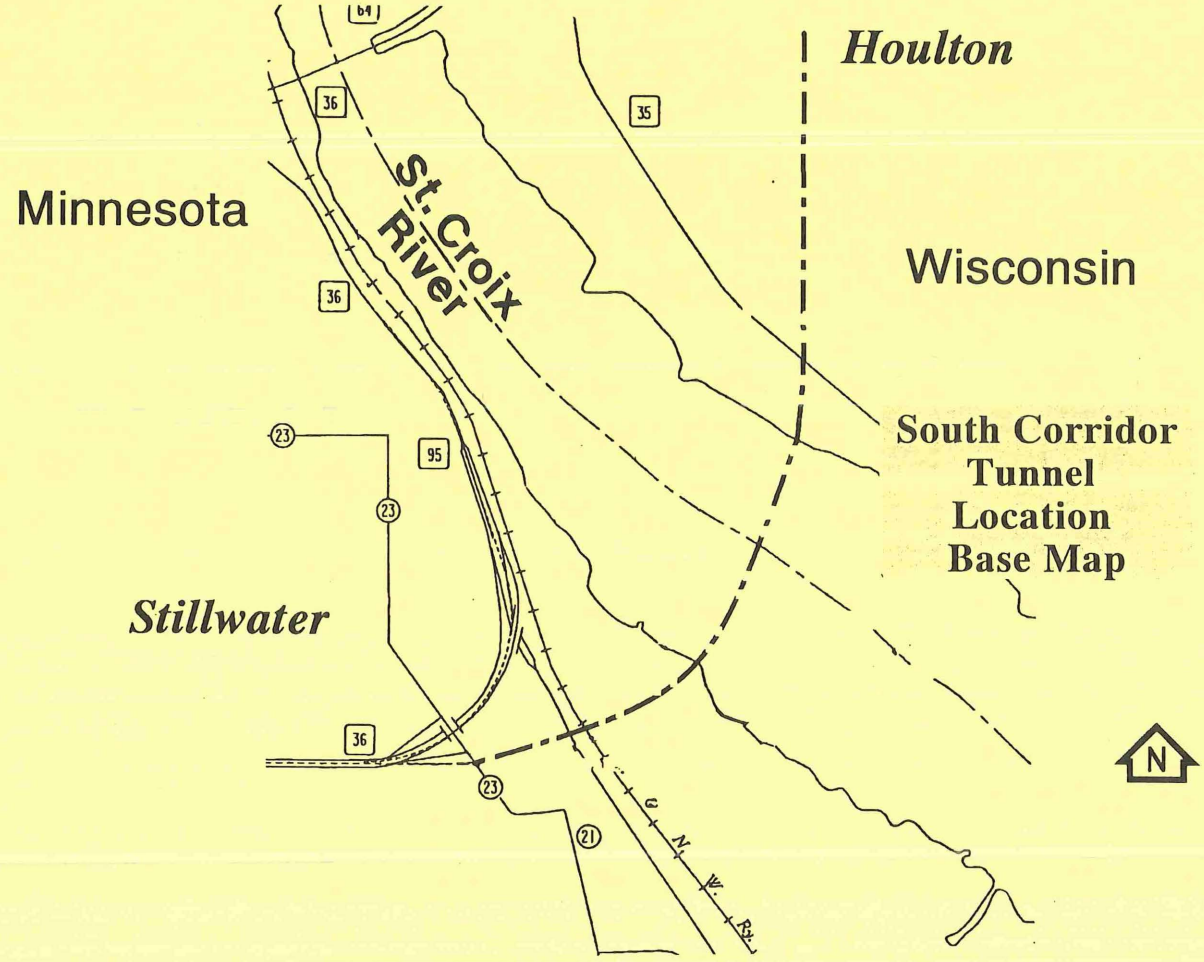
Cost: $98,069,200

Elevation: 126 - 143 ft.

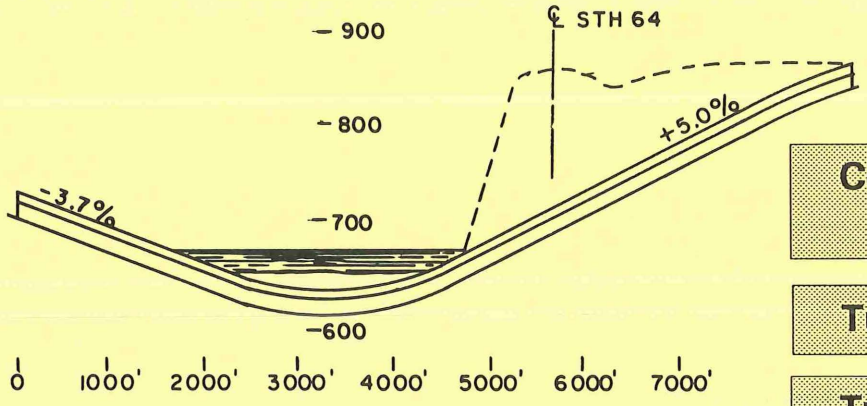
River Br. Length: 6,200 ft.

Bridge Grade: 0.5%

Figure 21.



South Corridor Tunnel Profile



Cost: $122,888,600 - $172,888,600

Tunnel Length: 8,800 ft.

Tunnel Grade: 3.7 - 5.0%

Figure 22.

proposal because of poor city accessibility.

The city did agree to incorporate additional traffic controls, including parking restrictions, in order to improve existing traffic flow.

2. 1960s
A new TH 212 alignment was developed and designed to connect St. Paul's east side with Stillwater. Part of the proposal included developing TH 95 into a four-lane, divided roadway from Bayport, through Stillwater, and north to TH 96. It also included the construction of a new river crossing at approximately the same location as the Central Corridor alignment.

Even though the portion from TH 120 to Jamaca Avenue in Lake Elmo was constructed, lack of support from the City of St. Paul as well as funding difficulties forced the proposal to be dropped.

3. 1966
A City Council resolution requested signing to be developed which directed north and southbound traffic to bypass Stillwater via County Road 15 and TH 96. This signing is still in place.

The City also agreed to evaluate additional traffic control measures such as parking bans and providing a double left turn movement from the bridge southbound along Main Street (see figure 23). This suggestion was not implemented because of traffic merge difficulties and the loss of parking in the downtown area.

Other suggestions that were considered involved directing westbound bridge traffic south onto Water Street, west onto Nelson Street, then south onto Main Street. Twin Cities and Bayport traffic was to be directed straight west up the Chestnut hill after crossing the bridge, then south on Fourth Street, three blocks west of Main. The suggestions were not incorporated because of merge difficulties, parking losses, and the adverse effects of routing highway traffic through residential neighborhoods.

4. 1969
The St. Croix Valley Area Chamber of Commerce Committee on Parking and Traffic developed a three point plan in cooperation with local and state authorities:

a.) City Traffic Flow

An intricate signal system was developed to improve traffic flow within and through the city. The signal featured pedestrian walks, a left-turn arrow for westbound bridge traffic, a right-turn arrow for eastbound bridge traffic, and other timing provisions at the Main and Chestnut intersection. The plan also included an information program designed to educate the public in the proper use of the new traffic control features.

b.) Area Traffic Flow

The Committee concluded that, even with recent refinements, the existing interstate bridge and Minnesota approach network were inadequate to handle modern traffic. The group requested that the state transportation agency speed up efforts to design, fund, and construct a replacement crossing.

c.) Stillwater Core Area Parking

The Minnesota Mercantile Company and the Stillwater Hardware Company warehouses would be acquired and demolished to beautify the waterfront, and to provide for additional downtown parking. The spur track of the Northern Pacific Railroad would also be removed and blacktopped.

5. 1972
The Minnesota Highway Department and the Stillwater City Council agreed to incorporate the following additional system modifications:

a.) Stillwater removed all parking on Chestnut between the bridge and Main Street.

b.) Stillwater removed two parking spaces on west side of Main Street, south of Chestnut.

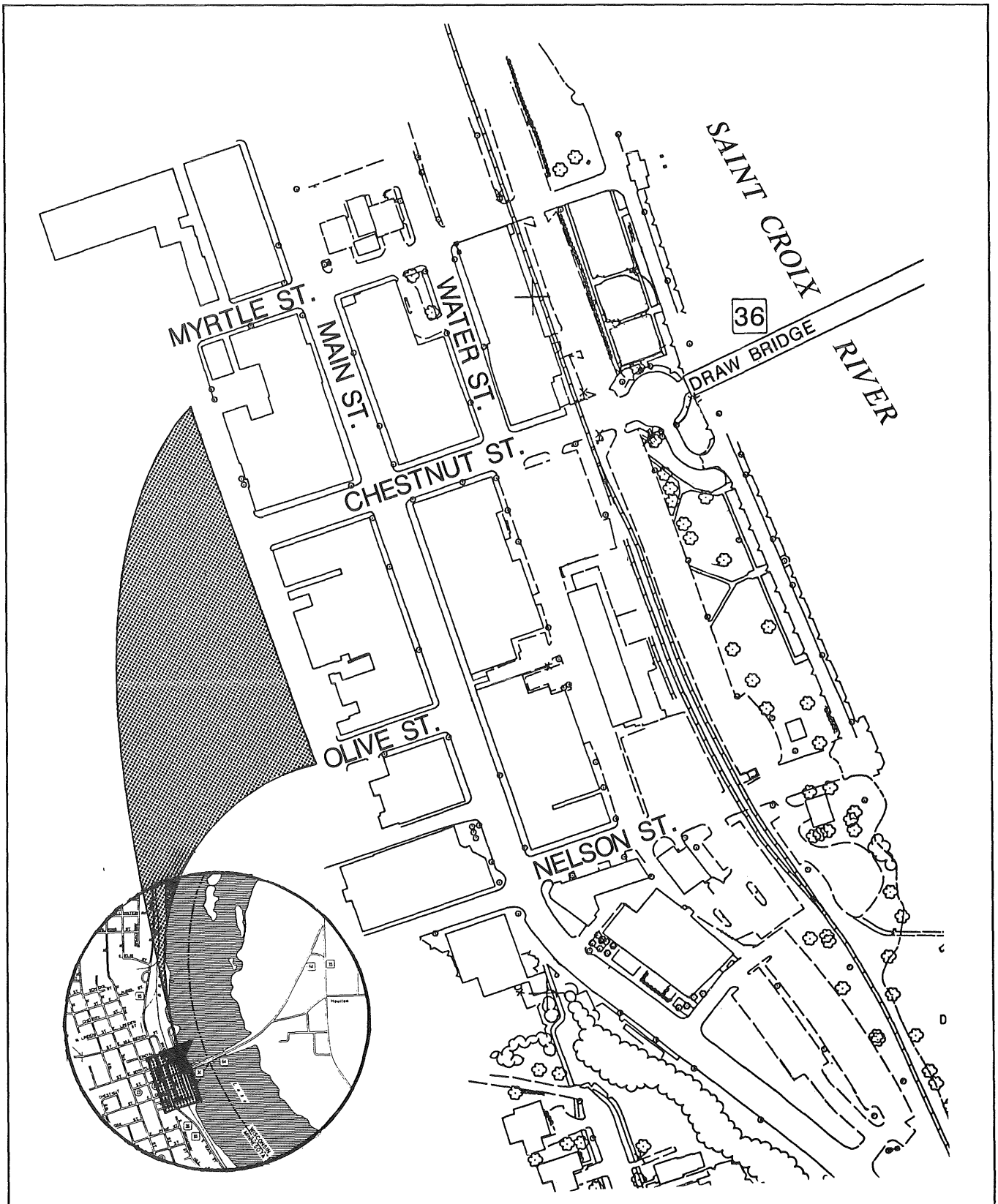


Figure 23
Downtown Stillwater

c.) Stillwater removed four parking spaces on east side of Main Street south of Chestnut.

d.) The Highway Department provided and installed "No Parking" signs.

e.) The Highway Department provided turn-lane delineations and signing.

f.) The Highway Department provided signing which banned left-turns from Chestnut to Riverside parking lot.

g.) The Highway Department agreed to evaluate system operation after the above provisions were implemented. If problems remained, an additional left-turn ban would be implemented to prohibit turns from Main Street to Chestnut.

6. 1972

A Concept Plan for Downtown Stillwater was prepared to organize and plan the downtown area to maximize shopper and visitor interest, and minimize traffic and pedestrian conflicts. The plan included the following provisions:

a.) A pair of one-way streets, consisting of southbound only on Main Street, and northbound only on Water Street through downtown.

b.) Close secondary streets of Nelson between Second and Water, and Nelson Alley between Second and Main. Study three possibilities:

1.) Second Street south of Nelson; cul-de-sac at top and bottom of hill.

2.) Olive Street between Third and Second.

3.) Mulberry Street between Third and Main.

c.) Develop directional graphics for downtown, including a uniform system of signing and banners.

d.) Policy of requiring future parking additions to be ramps in areas indicated by detailed surveys.

Design modifications were not implemented because of anticipated impacts to downtown business community, and traffic merge and signalization problems.

7. 1974

Mn/DOT developed and analyzed a Stillwater bypass study initiated by city request. Alternatives considered included the following:

a.) A two-way, two-lane roadway east of Water Street and west of the railroad tracks, from south of the central business district to Chestnut Street.

b.) A two-way, two-lane roadway east of the railroad tracks and west of Lowell Park. This option would require additional right-of-way, but no businesses would have to be displaced. However, the roadway would cross all existing railroad tracks and is located over the existing interceptor sewer.

c.) Same as above, except northbound would be a one-way, and southbound would still use Main Street.

Study was discontinued in 1979 because of high construction and acquisition costs. In addition, one of the buildings identified for acquisition (the Freight House) was nominated to the National Register of Historic Places.

8. 1976

The City of Stillwater acquired the old auditorium theater on Second Street between Chestnut and Olive. The building was removed and replaced with a parking ramp to ease downtown parking pressures.

9. 1980

In the early 1980s, the City of Stillwater constructed and landscaped a parking lot south of downtown, adjacent to TH 95. This lot was also incorporated into the traffic network to replace parking lost through accumulated TSM measures.

10. 1981

The Main/Chestnut signal was modified to provide a southbound left turn with green arrow movement. This was necessary to further protect pedestrians crossing at the Main/Myrtle intersection.

11. 1985

A study entitled, Congestion at the

Stillwater Bridge, prepared by the West Central Wisconsin Regional Planning Commission, included the following conclusion:

"There are only two basic ways in which the congestion problems could be eased. First, the physical transportation facilities could be modified to increase traffic carrying capacity. The other way is to reduce the volume of traffic needing to use the congested transportation facilities. The long-range solution is to construct a new bridge and approach highways. This measure has started, but is 6-8 years away at the least. Any interim measures to reduce congestion would, therefore, only be temporary which further reduces the effort and money that would be spent to implement. This imposes a limitation on a short-term easing of the congestion."

Three specific interim measures were proposed for consideration:

a.) Adjusting the drawbridge lift schedule
The report suggested that the 2:30 PM weekday lift be discontinued. This was evaluated and it was determined that this change would have no noticeable effect on congestion levels.

b.) Main/Chestnut Traffic Signal Modifications
Suggestion to also allow left-turning, westbound traffic during the green cycle, and to add green-time to the turning phases. This suggestion was implemented.

c.) Traffic Diversion Signing
Suggestion to install traffic congestion ahead signs, and to identify alternate routes along STH 35/64. Wisc/DOT and the St. Croix County Highway Commission developed a diversion plan, and conducted a pilot study to evaluate effectiveness. The proposal did not significantly affect congestion levels at the bridge, and safety concerns were expressed concerning the safety of the alternate routes, which were not designed to handle the additional traffic volumes. The pilot study was discontinued.

12. 1988
A traffic actuated signal was added at Main Street and Nelson to aid pedestrian crossings and to assist access to off-street parking areas.

D. Mass Transit Implications

Some mass transit opportunities are available in the study area. The Metropolitan Transit Commission (MTC) provides scheduled bus service between St. Paul and Stillwater, with 17 return trips on weekdays. The buses arrive in Stillwater on TH 5 and segments of TH 36, and complete their journey in the downtown area near the lift bridge. In addition to MTC, the St. Croix Valley Transit Company provides bus service within Stillwater, Oak Park Heights, and Bayport, with 18 trips every weekday. Combined with MTC service, there are 35 scheduled weekday bus trips within 1 block of the lift bridge, with 18 more on Saturday and 4 on Sunday. Currently, there are no scheduled commercial bus routes over the existing lift bridge, either long-distance or local. Intercity highway buses operate on I-94 seven miles to the south, and have a terminal in Hudson.

Mass transit will not be able to significantly reduce congestion in downtown Stillwater in the foreseeable future. One reason for this is that the worst congestion often occurs on weekends, when people are driving on recreational trips to Wisconsin. With the possible exception of trips to the Apple River in Somerset, mass transit (or ride sharing) would not be able to effectively reduce interstate recreational traffic. Encouraging people bound for the Apple River to park in Minnesota and take a shuttle to Somerset could reduce some of the weekend congestion at the bridge. However, it is unlikely that enough people would be willing to go along with this idea to make it viable.

Mass transit holds limited potential for reducing commuter traffic. Conceivably, Wisconsin residents could park on the east side of the bridge, walk, bike, or take a shuttle into Stillwater, and ride the bus to work in the Twin Cities or the Andersen Corporation in Bayport. If NO-BUILD becomes

the selected alternative, the possibility of locating a park and ride lot near the Wisconsin side of the lift bridge will be investigated. (Currently, Mn/DOT operates a park-and-ride lot at the junction of STH 36 and County Road 15.)

In large metropolitan areas, high occupancy vehicle (HOV) lanes have become an increasingly common technique for reducing congestion on major roads. However given the geometric configurations of TH 36 and STH 35/64, as well as the low population density in the Wisconsin portion of the study area, HOV lanes are not a reasonable answer to the congestion problems in downtown Stillwater.

Even though HOV lanes are not feasible, ride sharing is popular at the Andersen Corporation, one of the largest employers in the region. There are a large number of Andersen employees who live in or near the Wisconsin portion of the study area and commute to Bayport over the lift bridge; well over 1,000 Andersen workers use the lift bridge every day. As depicted in figure 24, there are large concentrations of Andersen employees in Somerset, New Richmond, River Falls, Hudson, Osceola, and Stillwater.

Andersen currently owns seven, eleven passenger commuter vans. These vehicles are loaned out to employees willing to function as designated drivers. All of the vans are used by employees living in Wisconsin, carrying a total of 77 people. In addition, 6 privately owned buses transport a total of 525 Andersen employees to work. All of the buses operate in Wisconsin, beginning in River Falls, New Richmond, Clayton, Balsam Lake, and Glenwood City. Four of the buses use the existing Stillwater-Houlton bridge, with the other two crossing on I-94 at Hudson.

In total, more than 600 of the Andersen employees who live in Wisconsin get to work via a bus or company-owned van. In addition, many of the Wisconsin employees belong to car pools. Andersen has a shortage of parking, and actively promotes car pooling as a means of freeing up space in company lots.

Because Andersen's space shortage is not going to be resolved at any point in the near future, the company has an incentive to continue encouraging employees to utilize vans, buses, and car pools as a means of getting to work. However, even further reductions in single-person commuting at Andersen will have no significant impact on the congestion problem in downtown Stillwater. Contrary to popular perception, traffic generated by Andersen is only a relatively small percentage of the total transportation problem at Stillwater-Houlton.

Figure 24

Residence of Andersen Corporation Employees

Source: Andersen Corporation Employee Newsletter, May, 1989

AFFECTED ENVIRONMENT

TOPOGRAPHY AND GENERAL LAND USE

In both Minnesota and Wisconsin, the topography in the upland portions of the study area is characterized by gently rolling, glaciated terrain. There are scattered patches of hardwood forest, including a protected forest in Wisconsin. Land use in the upland areas consists mainly of commercial farms, hobby farms, and low density residential development. There is also a large apple orchard northwest of the junction of TH 36 and County Road 15, in Minnesota. East of Houlton, there is a ski area which is not in current use. Commercial development is concentrated in a few areas, mainly in downtown Stillwater, along TH 36 in Stillwater/Oak Park Heights, and--to a lesser degree--in Houlton.

Along the river, the predominate natural features are steep, forested bluffs (see figure 25). Hardwoods predominate, with a scattering of coniferous trees. On the Wisconsin side, the bluff line generally begins close to the river, although there are small pockets of beach and flood plain areas. A number of small, steep ravines have been incised into the ridge in places. Houlton is set back from the river, on top of the bluff. Throughout the Wisconsin portion of the study area, scattered residences are perched on the bluff, some of which are quite visible from the river.

In Minnesota, the bluff line is more irregular, pulling back from the river in central Stillwater and, to a larger extent, in Oak Park Heights and Bayport. Significant portions of Oak Park Heights and Bayport are located below the bluffline, although the TH 36 commercial strip is located on top of the ridge. While the core of downtown Stillwater is located along the river, the town long ago began climbing the hills to the west, and much of the community is now on the bluff. From the north end of Stillwater south, development covers much of the Minnesota shoreline in the study area.

In general, the St. Croix Valley north of Stillwater-Houlton is much wilder and more scenic in appearance than the southern portions of the study area. North of downtown Stillwater, Brown's and Silver Creeks have carved two of the larger ravines in the study area, with steep forested slopes on each side. East of these valleys and north of Stillwater are a series of forested islands in the St. Croix; Mile Long Island, in particular, is used extensively for recreation during warm weather. Opposite of Mile Long Island on the Minnesota shore is the Boomsite Wayside, which is on the National Register of Historic places. There are public boat landings on the Minnesota and Wisconsin shores in the vicinity of Mile Long Island.

POLITICAL GEOGRAPHY, POPULATION, AND PLANNING

All of the affected cities and townships in the Minnesota portion of the study area are located in Washington County, which is included in both the seven county jurisdiction of the Twin Cities Metropolitan Council, and the eleven county Twin Cities Metropolitan Statistical Area (MSA). In Wisconsin, the affected towns of St. Joseph and Somerset are part of St. Croix County. (In Wisconsin, towns are equivalent to a township in Minnesota.) St. Croix County is part of the Twin Cities MSA, but outside the Metropolitan Council's jurisdiction; rather, it is part of the seven county planning area covered by the West Central Wisconsin Regional Planning Commission (WCWRPC). See figure 26 for a depiction of the corridor and jurisdictional locations.

Grant Township, Minnesota

Grant Township is an unincorporated community with a town board system of government and a 1988 population estimated to be 3,680 (population figures for Minnesota communities are from the Metro

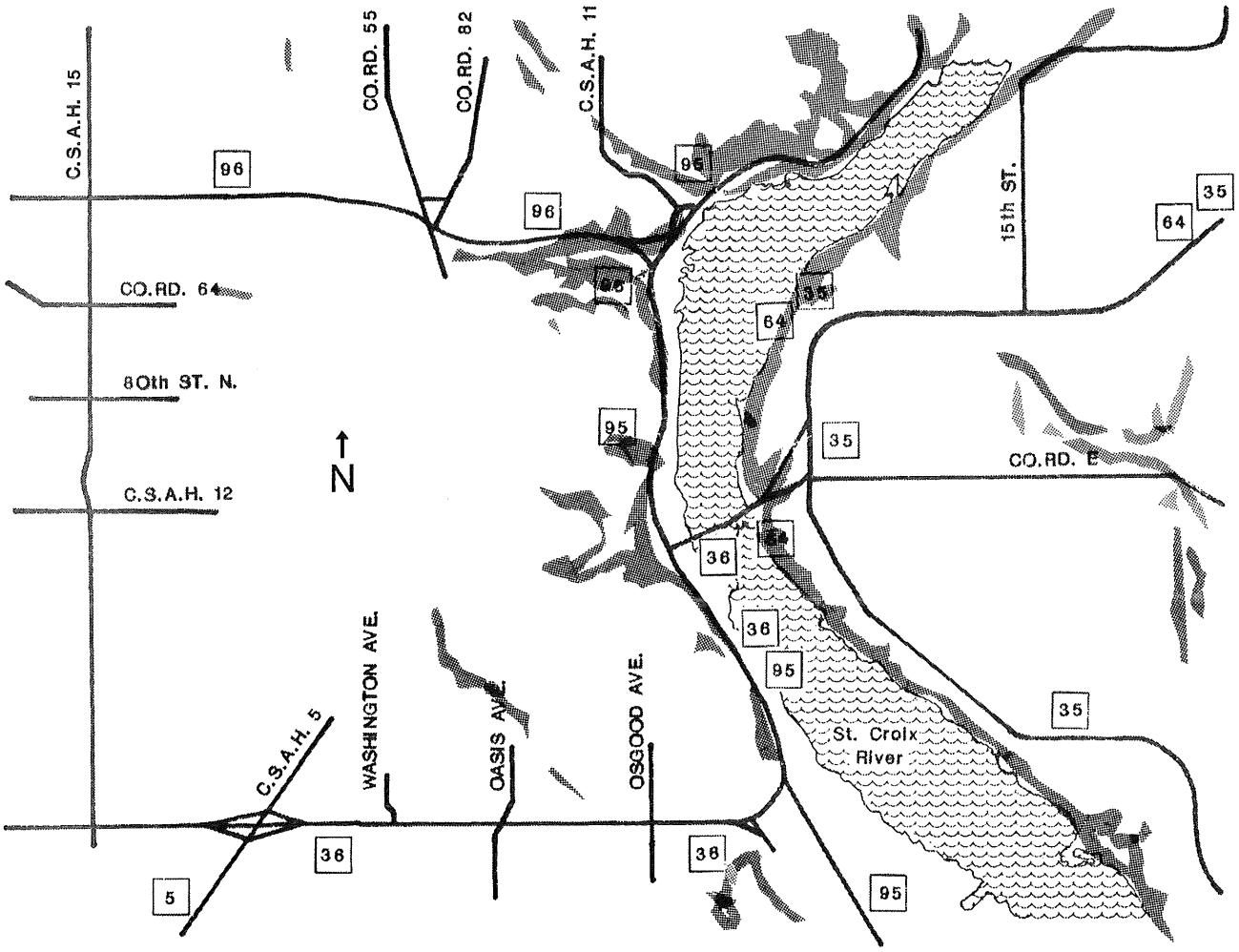


Figure 25
Steep Slopes in Study Area

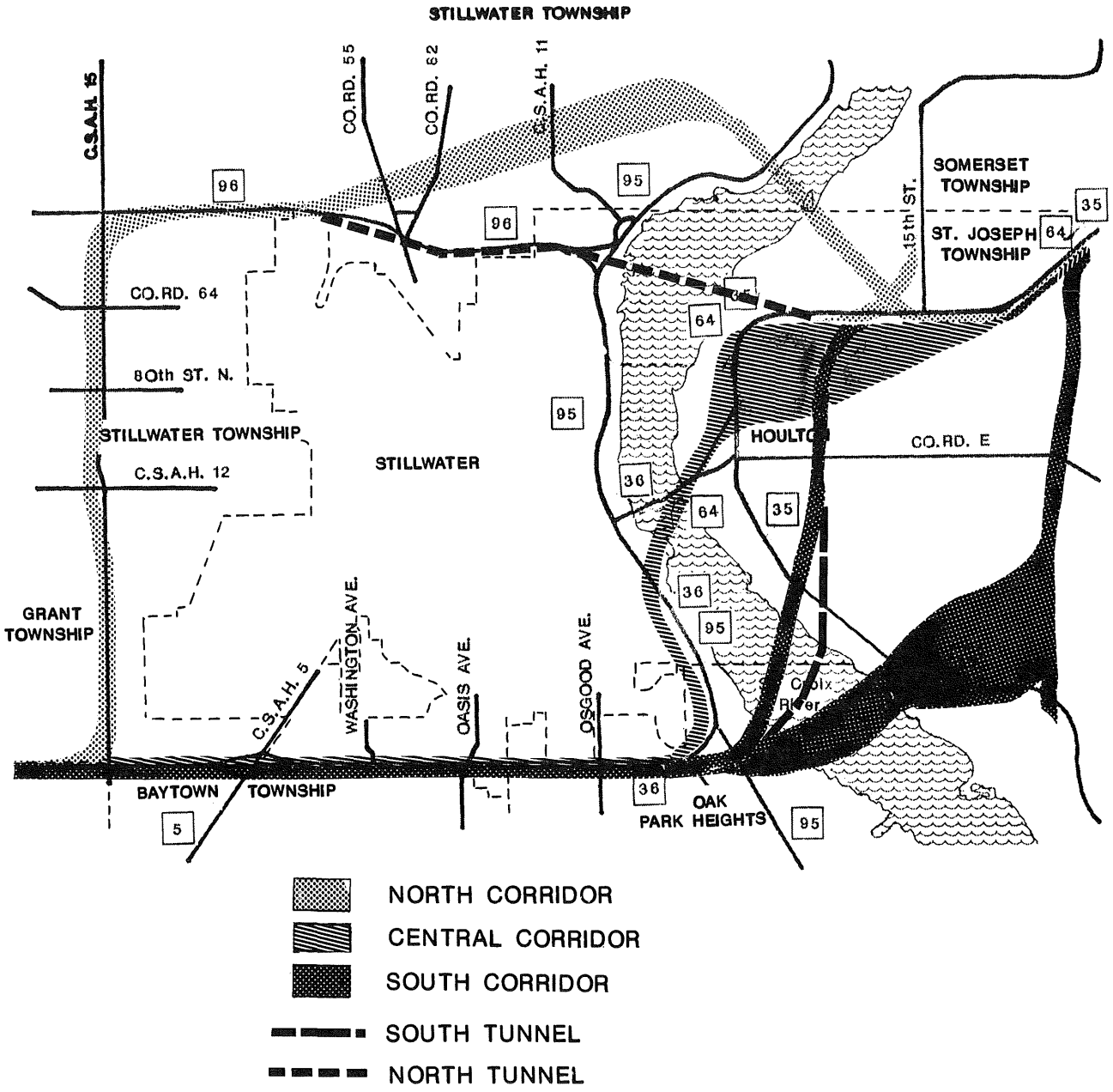


Figure 26
Corridor and Jurisdictional Locations

Council). Like all the jurisdictions in the study area, the township grew more rapidly during the 1970s than it has so far in the 1980s. Between 1970 and 1980, population growth was nearly 72 percent, but was under 20 percent from 1980 to 1988 (see table 6).

The number of households in Grant Township and other study area communities have increased at a faster rate than the population during both the 1970s and 1980s (see table 7). This is a result of a long-term decline in the persons per household ratio. Because the average household has fewer people than it did previously, a given increase in population today will result in a higher demand for housing than it would have in the past.

Grant Township is attracting scattered, low density (exurban) development from the Twin Cities. However, the township's comprehensive plan places a high priority on conserving its natural environment and rural character, and it strongly endorses agricultural preservation. The township's zoning code controls population density by requiring single family residences, with a minimum lot size of 10 acres. Individual residences are frequently large, estate-type homes; some commercial and hobby farms are also present. Grant Township aims to ensure that any new commercial development is compatible with its rural character. The Town Board foresees no future need for services such as public sewers or water.

The North Corridor alternative is the only BUILD option with the potential of directly impacting the township; the new route would follow the present County Road 15 corridor, along the Stillwater Township boundary.

Stillwater Township, Minnesota

Stillwater Township is an unincorporated community with an estimated 1988 population of 2,015. The township's population increased by 63 percent during the 1970s, and 26 percent between 1980 and 1988.

Historically, the township has been a rural agricultural community, but there has been an influx of non-farm residents from the Twin Cities during the last twenty years and agriculture has been declining. In the study area, commercial agriculture has now largely receded to areas north of Minnesota TH 96, although some small-scale and hobby farms remain south of the highway.

Single-family housing units on relatively large lots predominate; some of these include horse stables. Minimum lot size in much of the township is between two and one-half and five acres, with a special zone along the St. Croix River. In the steep, environ-

TABLE 6
STUDY AREA POPULATION CHANGE, 1970-2000

JURISDICTION	1970	1980	PERCENT CHANGE, 70-80	1988	PERCENT CHANGE, 80-88	2000
MINNESOTA						
Oak Park Hgts.	1,256	2,591	106.3	3,751	44.8	3,900
Stillwater	10,208	12,290	20.4	13,485	9.7	13,300
Bayport	2,987	2,932	-1.8	3,106	5.9	2,800
Baytown Twp.	723	851	17.7	913	7.3	1,100
Grant Twp.	1,797	3,083	71.6	3,680	19.4	3,600
Stillwater Twp.	979	1,599	63.3	2,015	26.0	2,300
Washington Co.	83,003	113,571	36.8	138,246	21.7	148,860
Seven-county Metro Council Area	1,874,612	1,985,873	5.9	2,200,321	10.8	2,310,000
WISCONSIN						
St. Joseph Twp.	1,357	2,180	60.6	2,436	11.7	4,210
Somerset Twp.	1,185	1,833	54.7	2,074	13.1	2,578
St. Croix Co.	34,354	43,262	25.9	48,655	12.5	59,250

Sources: Minnesota and Wisconsin 1970 and 1980 figures were taken from the U.S. Census. Minnesota estimates and projections for 1988 and 2000 were supplied by the Twin Cities Metro Council. Wisconsin figures for 1988 are from the Wisconsin Department of Administration. Wisconsin forecasts for the year 2000 are from the Wisconsin State Data Center's 1986 Small-Area Baseline Population Projections.

TABLE 7
CHANGES IN STUDY AREA HOUSEHOLDS, 1970-2000

JURISDICTION	1970	1980	PERCENT CHANGE, 70-80	1988	PERCENT CHANGE,80-88	2000
MINNESOTA						
Oak Park Hgts.	372	868	133.3%	1,313	51.3%	1,400
Stillwater	3,035	4,065	33.9	4,711	15.9	4,800
Bayport	655	677	3.4	738	9.0	775
Baytown Twp.	184	237	28.8	278	17.3	350
Grant Twp.	438	831	89.7	1,113	33.9	1,150
Stillwater Twp.	245	448	82.9	625	39.5	700
Washington Co.	21,314	35,001	64.2	45,880	31.1	51,600
Seven-county Metro Council Area	573,634	721,357	25.8	853,172	18.3	931,000
WISCONSIN						
St. Joseph Twp.	272	668	145.6	-----	-----	-----
Somerset Twp.	217	530	144.2	-----	-----	-----
St. Croix Co.	10,234	14,159	38.3	-----	-----	20,848

Sources: Minnesota figures supplied by the Metropolitan Council. Wisconsin figures for 1970 and 1980 are from the West Central Wisconsin Regional Planning Commission (WCWRPC). St. Croix County projections for the year 2000 were produced by the Demographic Services Center, Wisconsin Department of Administration. Complete data for the affected areas in Wisconsin are not available.

mentally sensitive areas around Brown's and Silver Creeks (located north of the City of Stillwater), the minimum residential lot size is twenty acres.

Stillwater Township desires to balance a staged and orderly urban expansion north from the City of Stillwater against the protection of existing agricultural operations. Stillwater Township, the City of Stillwater, and Washington County have entered into Orderly Annexation and Joint Powers Agreements. A joint board has authority over zoning decisions in areas near the City of Stillwater, and administers the orderly annexation of developing areas of the township by the city. The township would like to avoid highway strip development, and urban-scale growth in scattered, outlying areas located away from existing concentrations.

The North Corridor routes would be the only BUILD alternatives which would pass through Stillwater Township. The North Corridor options are unique among the BUILD alternatives in Minnesota in that they would cut across a large amount of rural land, rather than following a currently used road.

Baytown Township, Minnesota

Baytown is another unincorporated community, with an estimated 1988 population of 913. Its growth rate since 1970 has not been nearly as rapid as most of the other political jurisdictions in the Minnesota portion of the study area, and it has no public sewer or water system.

Septic systems have substantial limitations in Baytown Township, as the bedrock lies near the surface, with a relatively high water table, numerous wetlands, and a slow percolation rate. Consequently, the township is careful about issuing new building permits.

The township desires to protect existing agricultural operations and prevent excessive subdivision and sprawl. The zoning code permits only single and two family residences, which are required to have a minimum two and one-half acre lot size. Commercial development is primarily concentrated along TH 36; there is virtually no industry.

Over the years, annexation by the cities of Bayport and Oak Park Heights has reduced the township's original area by 25 percent. Currently, the Baytown Town Board opposes piecemeal annexation, although it favors a 1968 recommendation by the Metropolitan Council to consolidate the three communities into a single municipality.

The South and Central Corridor options would skirt the northern boundary of the township; a North Corridor route could touch the extreme northwest corner.

City of Stillwater, Minnesota

Stillwater is the Washington County seat and the first European settlement in the region. It is an incorporated city, with an estimated 1988 population of 13,485. Stillwater's population increased by over 20 percent during the 1970s, but slowed to approximately 10 percent between 1980 and 1988.

Along with the cities of Oak Park Heights and Bayport, Stillwater offers urban services such as a municipal sewer system. The Stillwater Wastewater Treatment Plant also receives waste from Oak Park Heights, and is located close to where the South Corridor river crossings would leave the Minnesota shoreline.

Squeezed between bluffs to the west and the St. Croix on the east, downtown Stillwater has a wealth of well-preserved historical sites, and is a popular tourist destination. Newer development in Stillwater has occurred back from the river, on top of the bluffs. Currently, there is little vacant land remaining for new residential construction, although adequate property exists for various non-residential uses within the city limits. The city plans to accommodate new residential growth though annexation of adjacent land from Stillwater Township. Stillwater has a policy of not extending municipal services beyond its boundaries, unless such territory has been formally annexed.

Physically, Stillwater would be most directly affected by a Central Corridor route, but all of the BUILD alternatives--as well as the NO-BUILD option-- would have potentially important impacts on the municipality.

City of Oak Park Heights, Minnesota

Oak Park Heights is an incorporated city which had an estimated 1988 population of 3,751. Between 1970 and 1988, the population of Oak Park Heights increased by nearly 2,500 people, posting the largest percentage increase in the study area during that period. Growth during the remainder of the twentieth century is likely to be much slower; according to Metro Council forecasts, the city's population will increase by less than 150 people during the 1990s. Without future annexation, there will be relatively little vacant land for new residential development in the community.

Single family homes predominate in Oak Park Heights. Existing multiple family dwelling units in the city are mainly located north of TH 36. In the northeast corner of the city on the river is an exclusive condominium complex with a large private marina for residents.

The city is severed into three sectors by trunk highways. Several small sections of Oak Park Heights are divided from the main portion of the community by TH 36. In addition, the north-south TH 95 separates the industrial and vacant land in the river flats area from the western sections of the municipality.

Northern States Power's (NSP) Allen S. King Power Plant represents most of the Oak Park Heights' industrial development, occupying nearly 27 percent of the city's total acreage. The plant is located along the river, approximately a half-mile downstream from the southernmost South Corridor alignment; NSP presently utilizes a large adjacent land parcel as a waste disposal site. Across TH 95 from the power plant is the sprawling Minnesota Correctional Facility, which is situated on the Oak Park Heights-Bayport boundary.

The Central and South Corridor BUILD alternatives would pass through Oak Park Heights. A North Corridor decision would likely have an important adverse economic effect because it would divert through traffic north of the city.

City of Bayport, Minnesota

The City of Bayport has experienced the lowest percentage population increase of any community in the study area. Its population declined by -1.8 percent between 1970 and 1980, before experiencing a modest 5.9 percent increase between 1980 and 1988, making a total of 3,106 people. Its population includes over 1,000 inmates housed in the Minnesota Correctional Facility.

Bayport is close to being completely developed. The city has its own wastewater treatment plant, and provides public sewer and water services.

None of the study corridors would have a direct, physical impact on Bayport. However, the city is an integral part of the lower St. Croix Valley, and has close ties to the communities which would be directly affected by the alternatives. In particular, the city is an important employment center for the region: more than 3,500 people work at the Andersen Window Company, while the prison employs approximately 480 persons. Many of Bayport's employees live in and/or commute through other communities in the study area, with a large number residing in Wisconsin. Conversely, Bayport resi-

dents travel through and depend on shopping opportunities in adjacent communities, especially the TH 36 commercial area in Oak Park Heights and Stillwater.

Houlton, Wisconsin

Houlton is located across the St. Croix River from Stillwater, at the junction of STH 35, STH 64, and County Road E. As an unincorporated community, Houlton has no definite political boundaries or governing body of its own, and it is represented by the St. Joseph Town Board.

Recent census data are not available for Houlton. However, the West Central Wisconsin Regional Planning Commission (WCWRPC) estimated Houlton's 1970 population at 448 people. In 1976, the WCWRPC projected a 1980 population of 499 and a 1990 population of 604.

Dwelling units in Houlton tend to be modest, single-family homes and older farm houses. A small number of business are located in the area. On the outskirts of the settlement are a school, trailer park, and drive-in theater. Houlton has no public sewer or water facilities, although these may be needed at some point in the future.

A Central Corridor route is the only BUILD alternative which would directly pass through the area generally considered to be Houlton.

Town of St. Joseph, Wisconsin

The Town of St. Joseph is an unincorporated community featuring a town board system of government. In 1988, the Wisconsin Department of Administration estimated its population to be 2,436. During the 1970s, the population of the town grew by over 60 percent, a rate which slowed to under 12 percent from 1980 to 1988.

According to the 1980 St. Croix County Farmland Preservation Plan, land use in St. Joseph was classified as follows: agricultural or vacant, 68 percent; forested, 18 percent; water, 6 percent; and residential, 4 percent. Commercial, industrial, and other land uses were relatively minor. Rural non-farm residences outnumbered farm residences by more than 7 to 1; the township has become an attractive place to live for persons employed in the eastern half of the Twin Cities and on the Minnesota side of the St. Croix Valley. Since this land use data was collected, it is highly probable that the percentage of agricultural land has experienced further declines, while the relative share of residential land has increased.

Like Somerset, St. Joseph has adopted St. Croix County's zoning ordinance, with some variations. Partially as a result of the Stillwater-Houlton river crossing studies, the Town of St. Joseph has made an increasing effort to address future development issues.

All of the proposed BUILD alternatives would directly affect portions of St. Joseph.

Town of Somerset, Wisconsin

The Town of Somerset is located north of St. Joseph, and had an estimated 1988 population of 2,074. (Somerset Township and the Village of Somerset are distinct political entities; the latter is outside the project study area.) Somerset grew by nearly 55 percent during the 1970s, reflecting the area's attractiveness as an exurban residential center. As in St. Joseph, the growth rate has fallen off during the 1980s.

Land use in Somerset is roughly similar to that in St. Joseph. According to the source mentioned above, approximately 69 percent of its land was either agricultural or vacant, 19 percent was in forests, 6 percent was water, and 3 percent was residential. Acreage dedicated to commercial and industrial uses was less than 1 percent. Rural non-farm residences outnumbered farm residences by more than 3 to 1.

Somerset would be most directly affected by the North Corridor Bridge alternative.

St. Croix County, Wisconsin

While the towns of St. Joseph and Somerset encompass all of the Wisconsin portion of the study area, neighboring portions of St. Croix County would also be affected by a BUILD decision. The main reason for this is increased accessibility to the large number of jobs and other economic opportunities in Minnesota. According to projections by the West Central Wisconsin Regional Planning Commission (WCWRPC), St. Croix County is among the fastest growing in the state, and is expected to increase its estimated 1988 population of 49,000 to nearly 60,000 by the year 2,000.

Between 1984 and 1986, St. Croix County issued over 1,600 new housing permits, the most among the four Twin Cities' MSA counties not included in the seven county jurisdiction of the Metropolitan Coun-

cil. (The other three MSA counties include Wright, Chisago, and Isanti in Minnesota.) St. Croix County's increasing share of the Twin Cities' exurban development is reflected in its growing percentage of housing permits issued in the four non-Metropolitan Council MSA counties. In 1970, St. Croix County accounted for 24 percent of the new housing permits in these counties, a figure which had climbed to 41 percent by 1986, when more than 700 new permits were issued.

An important reason for the rapid growth in St. Croix County was the completion of the I-94 corridor west of the Twin Cities, a facility which puts Hudson and other parts of the county within relatively easy commuting distance of the Twin Cities. A replacement river crossing is likely to accelerate this trend.

St. Croix County has adopted a zoning code and the previously mentioned farmland preservation plan to help manage development, but implementation is largely left to the discretion of the local units of government.

Regional Planning

As indicated earlier, the Minnesota portion of the study area is within the seven county jurisdiction of the Twin Cities Metropolitan Council. Among the Council's many responsibilities is the review of local comprehensive plans in order to ascertain whether they are compatible with regional land use policies, as detailed in its Metropolitan Development and Investment Framework. The Council has been involved in reviewing the various corridor options, and is interested in seeing that any BUILD decision be consistent with Metro-wide policies. In a 1989 Council ranking of Metro Area major river crossing priorities, a new Stillwater crossing ranked third.

For planning purposes, the Council has broken the seven county area into a number of geographic policy areas, including a Metropolitan Urban Service Area (MUSA), a Rural Service Area (RSA), and Freestanding Growth Centers (see figure 27). The MUSA is the area within which the Council is willing to support new urban services such as municipal sewers, water, and highways capable of supporting urban-density traffic. New development is encouraged to occur inside the MUSA line in order to avoid the high economic costs of extending or developing new urban services in outlying areas

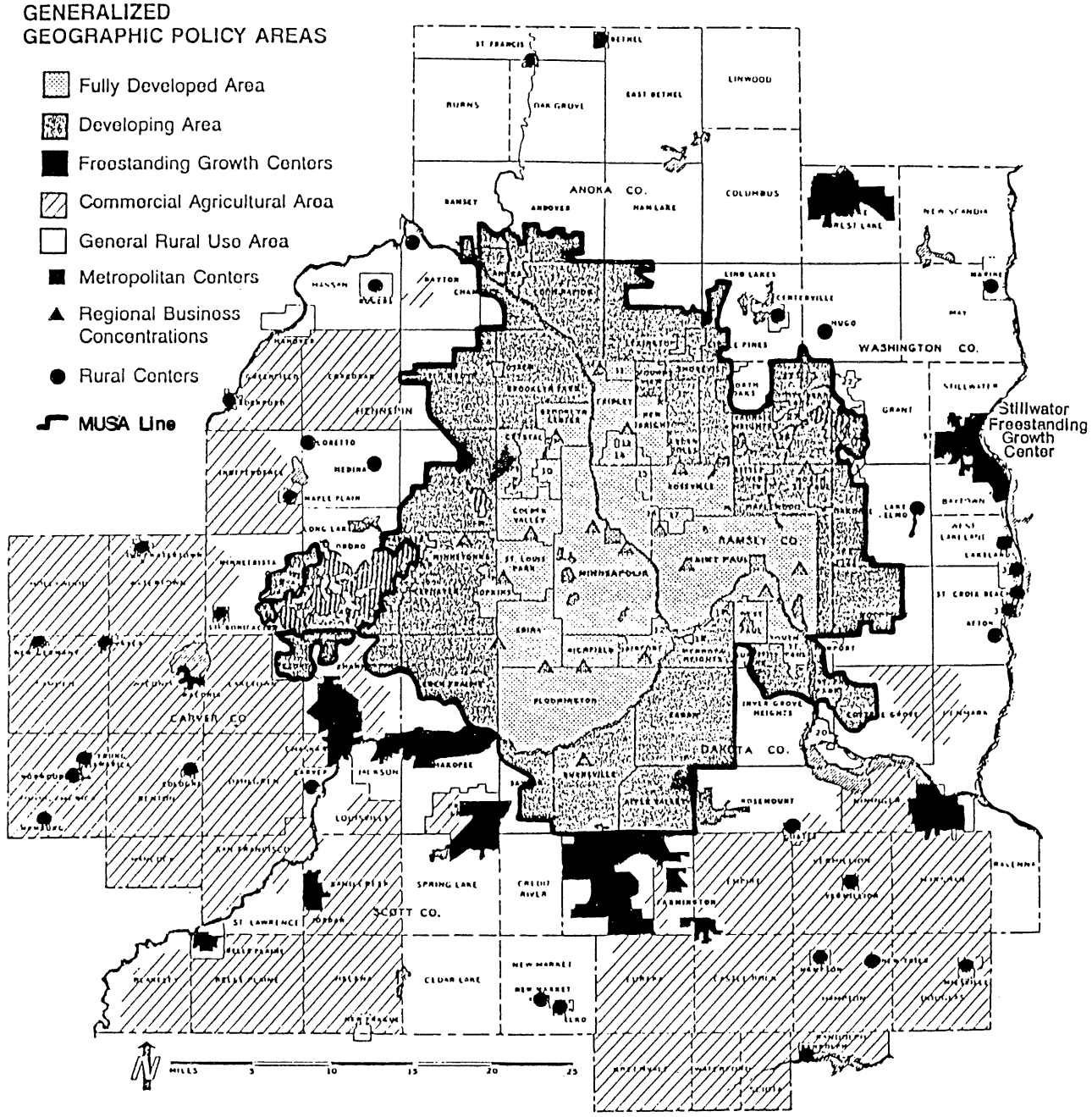
Within the boundaries of the MUSA are several sub-sectors, including the Metro Centers, Regional Business Centers, the Fully Developed Area, and the Developing Area. The western border of the study area is located nearly five miles beyond the eastern edge of the MUSA Developing Area.

The RSA is composed of three sub-sectors, including Rural Centers, General Rural Use Areas, and Commercial Agricultural Areas. Rural Centers are towns which originated primarily as retail and transportation centers for the surrounding agricultural area. Now many of these towns have become homes for residents who commute to locations within the MUSA, as well as industries with few ties to agriculture. The Council wants development in these areas paced according to local ability to supply services, without relying on the construction of regionally financed facilities. There are no Rural Centers in the study area, although Lake Elmo (to the southwest) and Lakeland (to the south) are only several miles away.

The General Rural Use Area contains a heterogeneous mixture of uses. The Council supports both agriculture and low density residential development in this area, but not at densities exceeding one house per ten acres; housing densities or business concentrations should not reach the point where urban services such as sewers are required. Much of the Minnesota portion of the study area is classified as a General Rural Use Area. The North Corridor Alternatives would be in direct conflict with the aims of this policy area, as a new highway along current County Road 15 and TH 96 would likely encourage new development at densities beyond those intended by the Council. Council policy does not approve of new roads or road improvements in rural areas which facilitate urban-density development.

The Commercial Agricultural Area includes land that has been covenanted or certified as eligible for the Metro Agricultural Preserves Program (see Mn/DOT's special study on agricultural issues). Urban densities and services are prohibited, and local zoning restrictions must allow no more than one house per forty acres of land. A relatively small portion of Washington County's agricultural land is included in the Commercial Agricultural Area, with little, if any, in the study area.

Freestanding Growth Centers include eleven intensively developed areas located outside the MUSA; within the study area, the cities of Stillwater, Oak



SOURCE: Metropolitan Council, 1986
Note: Areas are shown as of Dec. 18, 1986.

Figure 27
Metropolitan Council's Geographic Policy Areas

Park Heights, and Bayport are considered to be one Freestanding Growth Center. The Council is committed to providing services to the older parts of the centers, and to new developments elsewhere within the boundaries providing they are planned, orderly, and contiguous to existing developed areas. Essentially, the Freestanding Growth Centers can be considered to be outlying or detached portions of the MUSA.

In Wisconsin, the WCWRPC provides planning services to St. Croix County and six other contiguous rural counties. The Commission was established in 1970 to assist in coordinating area-wide planning and development, and to help solve intergovernmental problems. The WCWRPC is composed of a staff of ten, with a board of commissioners appointed by the respective county boards. Unlike the Metro Council, the WCWRPC does not possess any statutory development control authority.

The Commission's work encompasses such issues as transportation, land use, economic development, environmental protection, and solid waste. Since 1985, it has done research on the congestion problems at the existing Stillwater bridge and on issues pertaining to the STH 35/64 highway improvement proposal.

GENERAL SOCIAL CHARACTERISTICS

All of the six census tracts in the project study area have a population which is more racially homogeneous than the Twin Cities Metro Area. The MSA as a whole is nearly 95 percent white, while the census tracts in the study area range between 98 and 99 percent white. The largest minority in the study area is the Asian/Pacific Islander group, which ranges between .2 and .9 percent of the population. According to the most recent census, there are 147 people from this minority category scattered through the study area. There are no important concentrations of this or any other minority group in any of the study census tracts (see figure 28).

One notable social characteristic of the study area population is the high number of people of German descent. In the Twin Cities MSA as a whole, 33 percent of the population is of German heritage; by contrast, at least 34 percent of the study area population claims German ancestry, with highs of 45 percent in tract 706.01, and 43 percent in tract 705 (both mainly in the City of Stillwater). Other significant variations from MSA averages include a high percentage of people with French ancestry in Wisconsin tract 1204 (14 percent, compared to an MSA average of 2 percent), and a comparatively large number of individuals of Irish descent in tract 706.01 (18 percent, compared to an MSA average of 7 percent). For other ancestries, the variation between the MSA average and the study tracts is less than 10 percent.

Age distribution in the study area is generally comparable to the Twin Cities MSA, although there are some variations. The study area as a whole, for example, has a higher percentage of persons under the age of 20 than the MSA (see table 8). This relatively large percentage of children and young adults is reflected in a persons per household ratio which is higher than in the MSA as a whole, especially in the more rural portions of the study area such as St. Joseph, Somerset, Stillwater, and Grant Townships.

Some census tracts have a relatively high percentage of elderly people. In tracts 705, 706.02 (both mainly in the City of Stillwater), and 707.02 (most of Oak Park Heights and Bayport), for example, between 12 and 17 percent of the population is older than 64 years of age, compared to an MSA average of 10 percent. In the mid-range age category, only one tract varies significantly from the MSA norm--18 percent of the people in tract 704.01 (Grant and Stillwater Townships) are between the ages of 20 and 24, compared to an MSA average of 29 percent.

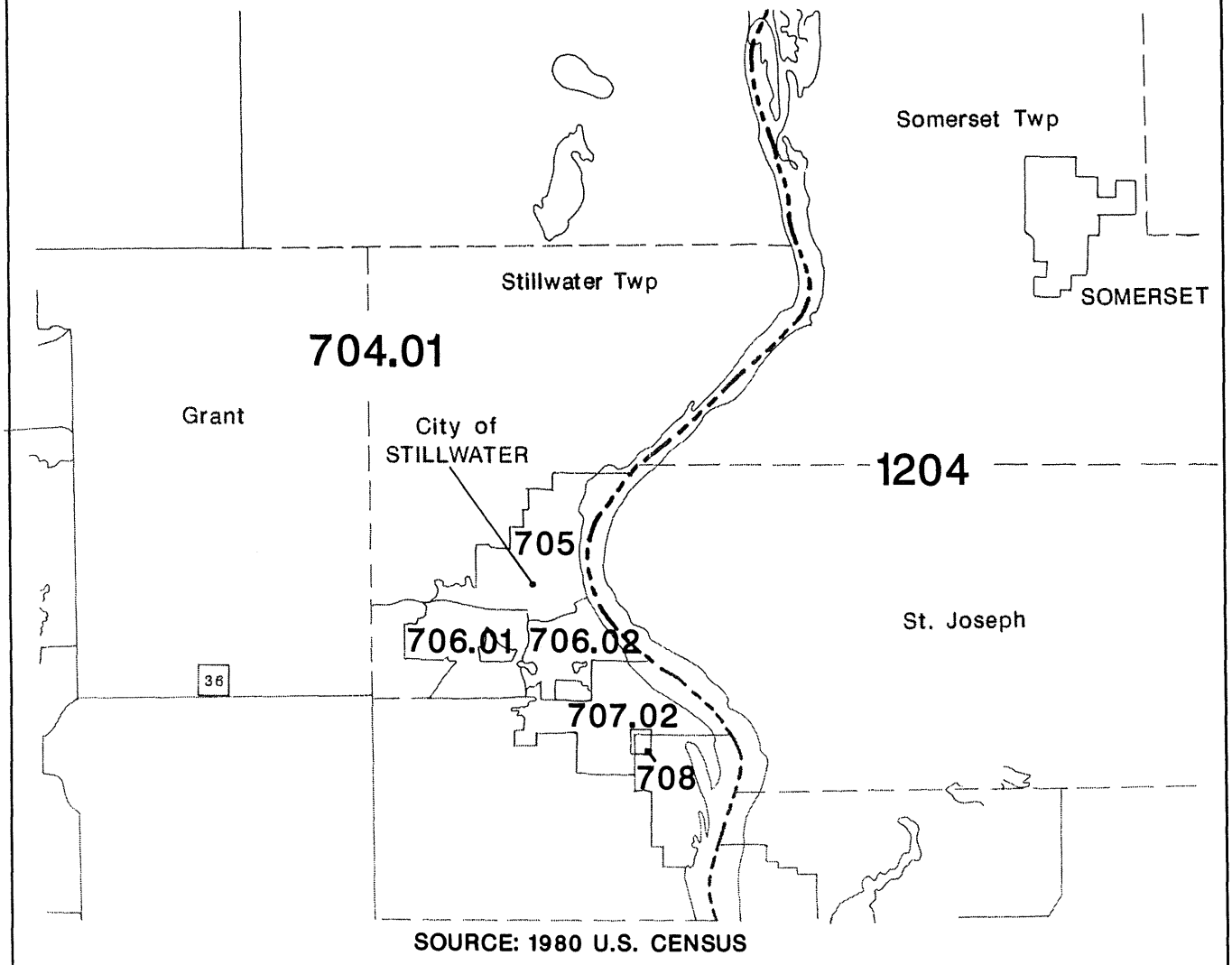


Figure 28
Census Tract in Study Area
(1980)

TABLE 8

YOUNG AND OLD AGE GROUPS IN THE STUDY AREA

CENSUS TRACT/AREA	UNDER 20	OVER 65
704.01	43%	3%
705	32%	17%
706.01	43%	4%
706.02	35%	12%
707.02	32%	13%
1204	40%	6%
MSA	32%	10%

Source: 1980 U.S. Census

NEIGHBORHOODS

There are two relatively well-defined neighborhoods which could be seriously affected by a BUILD decision (see figure 29). The largest potential direct impact would be in a residential section of Oak Park Heights, located on the hillside east of TH 36 and west of the Stillwater Sewage Treatment Plant. This area would be affected by both a Central and South Corridor BUILD decision. Less directly affected would be the Sunnyside waterfront development, just north of the sewage treatment plant. A Central Corridor decision would also directly affect a number of residences in and around Houlton. The effects would be especially acute where the settlement pattern is most dense, near the junction of the current STH 64 and STH 35.

In other portions of the study area, the corridors would affect rural or exurban areas, or the fringes of developed areas. The entire North Corridor route and the Wisconsin corridors outside of Houlton would affect areas with scattered residences and farms. The Central Corridor alignments would affect a few houses and a business in Stillwater. However, these properties are either at the base of the bluff or at the top of it; damage to the residential neighborhood on top of the bluff would be minimized because the affected properties are at the edge of the developed area, unlike the situation in Oak Park Heights.

HISTORIC AND ARCHAEOLOGICAL RESOURCES

The presence of a rich supply of natural resources in the Lower St. Croix Valley has contributed to an abundance of archaeological and historical sites in the area. The river valley provided hunting and fishing grounds for Native Americans, as well as a means for transporting logs and other goods during the early days of European settlement. The river's large clam population supplied the raw material for an important button manufacturing industry which flourished for a time. The St. Croix Valley was one of the first areas of the state to be settled by Europeans; consequently, towns such as Stillwater, Bayport, Afton, Prescott, and Marine on St. Croix have many sites which are of local, state, or national historical importance.

Most of the known historic and archaeological sites in the study area are on the Minnesota side of the river, including eighteen standing structures which are listed on the National Register of Historic Places (NRHP). The Minnesota study area also has five known archaeological sites, one of which is listed on the NRHP. In the Wisconsin portion of the study area, there are no properties currently included on the NRHP, although several structures in Houlton have been identified as being worthy of evaluation for NRHP eligibility. There is a potentially important archaeological site near the Wisconsin shore, in the North Bridge Corridor.

Within the context of this study, one of the most notable historic features is the existing lift bridge, which was completed in 1931. The structure was recently added to the NRHP, and is one of the last remaining original examples in the Upper Midwest of a tower-and-cable lift bridge with truss spans.

The City of Stillwater has numerous historical attractions. In particular, the town was powerfully influenced by the late nineteenth century logging industry, as well as river transportation. Logs harvested from the vast forests to the north were floated down the St. Croix River to the Boomsite above Stillwater, where they were sorted and sent to the town's sawmills, or made into rafts for flotation to points as far south as St. Louis, Missouri.

When the logging industry began to decline in the early twentieth century, Stillwater was saved from a precipitous economic decline by growth in other industries. Many of the local entrepreneurs involved in lumber turned their attention and capital to manufacturing, banking, wholesaling, and flour

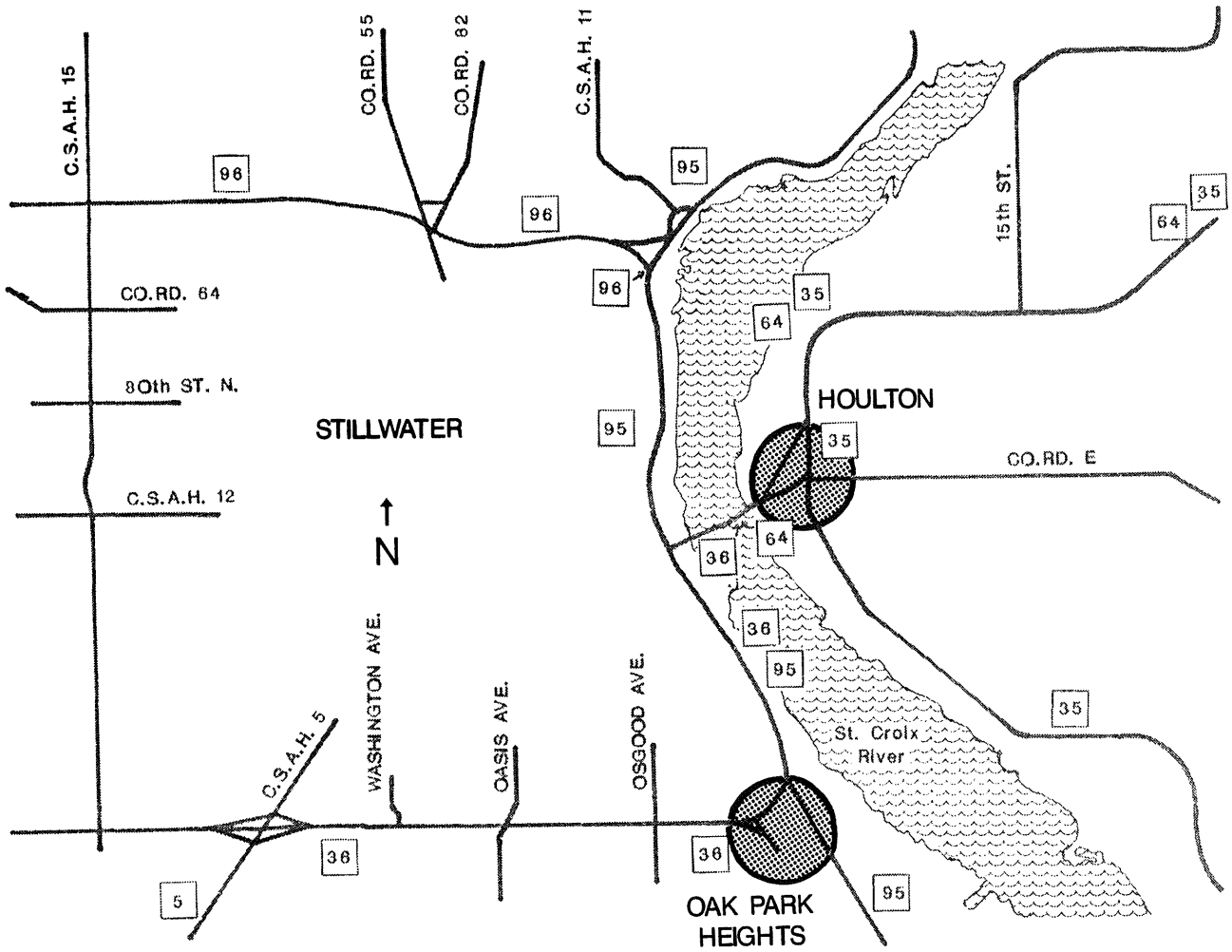


Figure 29

Major Affected Neighborhoods: Houlton and Oak Park Heights

milling. Historic industrial firms, of which few traces remain today, were located on the Stillwater riverfront, where river and rail transportation routes came together.

In recent years, Stillwater has placed a high priority on preserving its historical heritage. A survey was recently undertaken to determine the potential eligibility of much of the downtown commercial area (including the lift bridge) as a National Historic District. Because of Stillwater's historical associations and its picturesque setting, tourism has become an increasingly important industry in the area.

PARKS AND RECREATION AREAS

The major parklands which could be affected by one of the potential corridors are on the St. Croix River, and are discussed in detail in the Section 4 (f) documents (attached to the back of this draft EIS). This land includes Lowell and Kolliner Parks, and state and Federal property included in the Lower St. Croix National Scenic Riverway. Lowell Park is a developed park on the west side of the St. Croix in central Stillwater. Kolliner Park--which is also owned by Stillwater but is currently undeveloped--is located on the east side of the river, just across the lift bridge from Lowell Park.

North of Stillwater on both sides of the river are scattered parcels owned by the National Park Service (NPS), in addition to private holdings for which the NPS owns scenic easements. Mile Long Island, which would be directly affected by a North Corridor bridge, is jointly administered by the NPS and the Minnesota and Wisconsin Departments of Natural Resources. There are public boat launches on both sides of the river in the vicinity of Mile Long Island.

The only other public park adjacent to any of the proposed corridors is a small roadside area called Otto Berg Memorial Park, located at the junction of TH 96 and Norrel Avenue North.

HYDROLOGY

The most significant hydrological feature in the study area is the St. Croix River, which is part of the National Wild and Scenic River Program. Originating in northwestern Wisconsin, the river is characterized by very good water quality and abundant recreational opportunities. Salient characteristics of the river are discussed in detail in other portions of the draft EIS and the Section 4 (f) study on Riverway impacts.

In addition to the St. Croix, the study area is well-endowed with streams, lakes, and wetlands. Streams in the vicinity include the previously mentioned Brown's and Silver Creeks, both of which are very small. The major lakes in the study area are also in Minnesota: these include Lily Lake, Long Lake, Lake McKusick, and Twin Lakes. The only lakes which are close to any of the proposed corridors are the Twin Lakes, which are currently separated by the existing TH 96 corridor.

As detailed in the natural resources special report, more than fifty wetlands have been identified in the study area, the overwhelming majority being in Minnesota. Most of these are either close to the North Corridor routes, or sufficiently distant from all of the proposed corridors so that they probably would not be affected. Less than half a dozen of the wetlands are in the vicinity of the South or Central Corridors. Of the total wetland acreage in the study area, there are 57.9 acres in the North Corridor, 5.6 acres in the South Corridor, and 2.4 acres in the Central Corridor. Because specific highway alignments have not yet been determined, it is probable that some or all of the wetlands within a corridor could be avoided.

Groundwater is abundant in the study area and is a critical water source for rural residents. Aquifers are located in glacial sand and gravel deposits, and in underlying sedimentary layers (e.g., the Prairie du Chien formation) which are used extensively for private wells. In general, the water table tends to vary with the topography, and is often close to the surface around rivers, lakes, and wetlands.

WILDLIFE

The study area contains a diversity of wildlife habitat, including river and floodplain ecosystems, lakes, wetlands, forested bluffs and ravines, and upland areas. For the purposes of this study, the most notable species are those which are on the Federal Endangered Species list. Of the species on the Federal list, the only one which could be directly affected by any of the proposed corridors is the Higgins' Eye Pearly Mussel (Lampsilis higginsi), an endangered fresh water mussel which has been found in the St. Croix. There is also a possibility that other rare mussels are living within the boundaries of the study area. Other species on the Federal list which could occur in or close to the study area include the Bald Eagle (Haliaeetus leucocephalus) and the Peregrine Falcon (Falco peregrinus).

Minnesota and Wisconsin both maintain lists of species which are considered to be threatened or endangered within their boundaries, a number of which are found in the study area. These are discussed in detail in the Threatened and Endangered Species Special Study. Additional discussion of wildlife found in the study area is included in the Natural Resource Impacts Special Study.

ENVIRONMENTAL CONSEQUENCES

LAND USE IMPACTS

As established by the Metropolitan Land Planning Act of 1976, all local units of government within the seven-county Twin Cities Metropolitan Area are required to develop comprehensive plans. These plans are reviewed by the Twin Cities Metropolitan Council in order to determine their consistency with the Council's regional planning goals, as set forth in the Metropolitan Development and Investment Framework (MDIF). The policies contained in the MDIF are aimed at guiding growth to ensure that Metropolitan services and infrastructure (e.g., sewers and highways) are used efficiently. According to the Council, growth should be encouraged where facilities to support development are already in place, rather than areas where new infrastructure would have to be constructed.

The Wisconsin portion of the study area -- which is encompassed by St. Croix County -- is outside the Metropolitan Council's seven-county jurisdiction. St. Croix County, along with six other contiguous counties, is supplied with regional planning services by the West Central Wisconsin Regional Planning Commission (WCWRPC). Unlike the Metropolitan Council, the WCWRPC does not possess statutory development control power.

The following sections will briefly summarize the land use impacts of the various corridor alternatives. For more details about the planning efforts of the Metropolitan Council, the WCWRPC, and local governments in the study area, consult the Affected Environment section of the draft EIS. Additional information about land use impacts is found in the economic and farmland impacts draft EIS sections, and the special studies on the same topics.

NORTH CORRIDOR

In Minnesota, the jurisdictions which would be directly affected by a North Corridor river crossing are Washington County, and Grant and Stillwater Townships. The comprehensive plans of these local governments emphasize the importance of preserving existing agricultural and rural land uses, such as those which occur along the North Corridor. According to the Metropolitan Council, land adjacent to the North Corridor is classified as a General Rural Use Area, and is not suitable for intensive development requiring sewers and other urban services.

Depending on the effectiveness of local zoning ordinances, construction of a new highway in the North Corridor could increase development pressure and the demand for services along the route. Some of the traffic-sensitive businesses found along TH 36--as well as new enterprises--would have an incentive to relocate along the new corridor. As a result, a North Corridor decision would be contrary to the development plans of both the Metropolitan Council and the affected local governments.

The jurisdictions in Wisconsin which would be directly affected by a North Corridor decision are St. Croix County, St. Joseph Township, and--to a lesser extent--Somerset Township. With some variations, both St. Joseph and Somerset Townships have adopted the St. Croix County zoning ordinance. As with all the Wisconsin BUILD alternatives, there would be an adverse effect on local agriculture due to right-of-way acquisition, and increased residential and commercial development pressure. Since 1980, St. Croix County has had a Farmland Preservation Plan, which functions as a general guide to help local governments direct commercial, industrial, and residential development away from prime agricultural land.

CENTRAL CORRIDOR

The Minnesota jurisdictions directly affected by a Central Corridor river crossing include Washington County, Stillwater Township, Baytown Township, and the cities of Stillwater and Oak Park Heights. A Central Corridor location would conform with the comprehensive plans of these localities in that it would provide a strong incentive for future development to locate along the TH 36 commercial strip, rather than in rural areas. Traffic-sensitive businesses currently on TH 36 would be unlikely to move elsewhere.

While a Central Corridor crossing would avoid the Stillwater downtown area, its presence would jeop-

ardize future plans that the City has for the waterfront south of Lowell Park, and could affect its utilization of Kolliner Park on the other side of the river. In general, both the Central and North Corridor crossings would be less compatible with Stillwater's long-range plans than a South Corridor decision.

In addition to agricultural impacts and increased development pressure in Wisconsin, a Central Corridor decision would affect the small, unincorporated community of Houlton. Although congestion caused by the current lift bridge would be relieved, relocations and the presence of a new, limited access highway would have a negative impact on the settlement. As with the South Corridor, all Central Corridor impacts in Wisconsin would be limited to St. Joseph Township in particular and St. Croix County in general.

SOUTH CORRIDOR

The South Corridor alignments would affect the same local units of government as the Central Corridor options. In Minnesota, the land use impacts would be similar to the Central Corridor, as both routes would follow the already developed east-west TH 36 route. The South Corridor would require more relocations in Oak Park Heights, but would avoid the impacts to Stillwater which would be necessary with a Central Corridor decision.

In Wisconsin, the South Corridor would avoid Houlton, but has the potential for the most serious agricultural impacts of any of the BUILD alternatives.

Some of the land use implications of a BUILD decision in the South Corridor--or any of the other corridors--will be determined by whether or not the existing bridge remains in place. If the lift bridge is kept in operation in conjunction with a new crossing, there will be better access between Stillwater and the Houlton area. The existing bridge is an important element in Stillwater's plan for its downtown area, and will affect how it is able to use its waterfront. Removal of the old bridge would reduce Stillwater's access to Kolliner Park, but could make the park more appealing for certain types of recreational activities.

NO-BUILD

In Minnesota, a NO-BUILD decision would provide an incentive for businesses to remain along the TH 36 commercial strip. However, as local and through traffic increases on TH 36, there will be growing congestion at the intersections, with local vehicles mixing with through traffic. Conversely, if either the South or Central Corridors became the preferred alternative, signals would be removed along TH 36, with ramps and overpasses constructed at key intersections.

The most serious land use consequences of a NO-BUILD decision would be in downtown Stillwater, which is already suffering from serious traffic congestion problems. Conflicts between auto traffic and pedestrians would increase, and the downtown's historical rivertown flavor would be diminished with growing traffic volumes. Reducing the amount of through traffic entering downtown Stillwater is an integral component of the City's long-term plan. The success of this plan would be jeopardized by a NO-BUILD decision.

In Wisconsin, a NO-BUILD decision would help conserve agricultural land. In general, the rural characteristics of portions of west-central Wisconsin would be more easily preserved under a NO-BUILD decision. On the other hand, access to the Twin Cities would be reduced as traffic congestion increases. For some, this will make portions of western St. Croix County a less attractive place to live or do business than under a BUILD decision. It is probable that the current bottleneck at the Stillwater-Houlton bridge has inhibited economic development in portions of St. Croix County, compared to areas with better access to the Twin Cities such as Hudson.

FARMLAND IMPACTS

During the last two decades, there has been growing recognition that American farmland is a resource which should not be taken for granted, however abundant it is perceived to be. Governments at the national, state, and local level have increasingly taken measures to insure that the benefits of farmland conversion be balanced against the costs, and that farmers near the developing fringe are not severely disadvantaged by comparatively high urban tax rates.

Both the Minnesota and Wisconsin portions of the study area have farmland preservation programs which offer tax incentives and other benefits to farmers who commit to a long-term interest in continuing to farm their land. St. Croix County adopted a Farmland Preservation Plan in 1980, the same year the Minnesota legislature passed the Metropolitan Agricultural Preserves Act for the seven-county Twin Cities Area. For more details about these programs, and agricultural impacts in the study area in general, refer to the Agricultural Impacts and Issues Special Study, as well as the Agricultural Impact Statement (AIS) prepared for the Wisconsin portion of the study area by the Wisconsin Department of Agriculture, Trade, and Consumer Protection. Required documents for this section (i.e., AD 1006 forms) are included in appendix 2.

IMPACTS

All of the three study corridors will have adverse impacts on farmland. In Wisconsin, where the potential for impacts is greatest, the South Corridor Bridge alignments would have the most serious adverse effect. In Minnesota, only the North Corridor bridge and tunnel routes would affect agriculture. When impacts from both states are combined, the North Corridor would potentially affect the most farmland acreage, and the Central Corridor the least. The NO-BUILD alternative will have no important direct effect on agriculture in either state.

According to the criteria established by the USDA Soil Conservation Service, most farmland in the Wisconsin portion of the study area is of "local" or "statewide" importance. There is also a considerable amount of "prime" farmland in the area, some of which is enrolled in a farmland preservation agreement. Although prime farmland exists in the Minnesota study area, none of it has been certified or covenanted under the Metropolitan Agricultural Preserves Act .

Farmland impacts frequently extend beyond the actual agricultural property which is acquired for road construction. Right-of-way acquisition sometimes severs parcels, making them more difficult or impossible to farm. Because of their small size and irregular shape, severed fields are often less efficient to work; machinery must be turned frequently, and additional costs are incurred because of increased fuel consumption and wear on equipment. In addition, access to fields can become much more difficult. A controlled access highway can increase the difficulty of moving livestock and farm machinery from one field to another, requiring a farmer to spend additional time and money to perform basic farm operations.

Because much of the land in the study area is under pressure from residential and commercial developments, it is difficult for farmers in the area to find suitable land to rent or buy. The acquisition of farmland for highway right-of-way could have an important impact on the affected farmers, and diminish the long-term viability of agriculture in portions of western St. Croix County.

The impacts discussed in this section are worst-case estimates; the exact corridor alignments have not yet been determined. While actual farmland impacts could vary from the calculations, the figures are useful in comparing impacts in the various corridors. The land considered to be farmland here does not necessarily have to be cropland; it can also include pasture, woodlands, or wetlands owned by farmers.

North Corridor

The North Corridor is the only alternative which would have agricultural impacts in both Minnesota and Wisconsin. While portions of the Minnesota North Corridor have been developing rapidly, numerous agricultural operations are still present, including a number of horse and hobby farms. According to information supplied by the U. S. Soil Conservation Service (SCS), a North Corridor BUILD decision could affect 85 acres of Minnesota cropland, 67 acres of which is considered prime. It is probable, however, that some of this acreage will go out of production in the next decade due to residential development, regardless of whether the North Corridor becomes the preferred alternative.

If the North Corridor became the preferred alternative, it is likely that strips of right-of-way would be required from several Minnesota farms, with some small parcels acquired in total. Depending on the precise alignment, a number of farms could be seriously affected, although at the larger, county level there would be no discernible effect on production. As in Wisconsin, a North Corridor tunnel would have less of an agricultural impact than a bridge.

According to the worst-case scenario employed in the Wisconsin AIS, a North Corridor bridge would affect two farms in Wisconsin. Approximately 38 acres would be acquired for right-of-way, 13 acres of which is classified as prime and unique farmland.

Both the affected farms would have fields severed by the right-of-way, and the acquisition of a farm house would be required on one of the parcels. According to the AIS, the North Corridor would have the least overall agricultural impact of any BUILD alternative in Wisconsin.

Central Corridor

The Minnesota portion of the Central Corridor is largely developed, and there would be no impacts on agricultural land.

In Wisconsin, the worst-case alignment evaluated in the AIS would require 28 acres from four farms, three of which would have parcels severed. No farm buildings would need to be acquired. The Central Corridor could affect up to 20 acres of prime and unique farmland.

According to the AIS, the Central Corridor would affect the least amount of farmland in Wisconsin, but would be less preferable from an overall agricultural perspective than the North Corridor. In addition to the larger number of farms impacted, an important reason for this is that the Central Corridor would affect two parcels which are zoned for exclusive agricultural use. One of these is enrolled in a twenty-year farmland preservation agreement, in which the state offers tax benefits to the owner for keeping the property in long-term agricultural use. St. Croix County and the Wisconsin Department of Agriculture, Trade and Consumer Protection would have to grant approval before property enrolled in a farmland preservation agreement could be acquired for right-of-way.

South Corridor

The South Corridor would have no impact on agricultural land in Minnesota.

The South Corridor would have the largest potential agricultural impacts of any of the Wisconsin BUILD alternatives. The Wisconsin AIS evaluated two potential worst-case alternatives, the northern and southern bridge alignments. The southern alignment would require 103 acres of farmland, a quarter of which is considered to be prime and unique. All of the five affected farms would have severances, and a number of buildings on one of the operations would need to be acquired. Two of the impacted farms are zoned for exclusive agricultural use, and would have to be rezoned by St. Joseph Township. According to the AIS, the south alignment would have the greatest impact on Wisconsin agriculture of any of the alternatives.

The northern alignment of the South Corridor would require 92 acres of farmland, 75 acres of which is classified as prime and unique. Six farms would be affected, two of which would have parcels severed. Farm buildings on two of the farms would need to be acquired. This alignment would have the second most severe agricultural impact of the alternatives evaluated in the Wisconsin AIS.

Although the central alignment of the South Corridor was not evaluated in the Wisconsin AIS, its impact would be roughly similar to the other South Corridor alternatives, requiring the acquisition of at least 90 acres of farmland. The South Corridor tunnel would require the least acreage of the South Corridor alternatives, as a significant portion of its route would be underground.

MITIGATION

The careful selection of an alignment can be an important means for mitigating farmland impacts. When avoiding impacts to fields is not possible, adverse effects can be reduced by following property lines.

Affected farmers in both states will be consulted about how the movement of farm machinery and livestock between fields can be facilitated in ways which are both convenient for agricultural purposes and consistent with highway safety requirements. In some cases, compensation could be appropriate for increased costs incurred as a result of severed farm operations. Additional payments for damages or losses are also possible.

Affected landowners must be given advance notice of construction schedules so that agricultural activities can be adjusted accordingly. To the greatest extent possible, the timing of clearing and construction operations should be coordinated with farmers in order to minimize disruptions to agriculture.

If a BUILD decision becomes the preferred alternative, development pressure in portions of west-central Wisconsin is likely to increase. St. Croix County and the affected townships may have to re-evaluate their land use and development plans to ensure they remain adequate for agricultural protection.

SOCIAL IMPACTS

SUMMARY

The major focus of the social impact analysis is on groups of people, and how their interactions within and between specific portions of the study area and region might be altered by the various alternatives. Along with economic impacts, this section and the special study it is based on are of key importance to local governments in the area. Their ability to plan for future growth and development, and meet the safety needs of their constituents are closely tied to the issues discussed here. Major topics covered in this section include the following: social cohesion; travel patterns and accessibility; community services and facilities; safety issues; and social groups which will be benefited or harmed.

If NO-BUILD is the chosen alternative, the principal social impacts will result from increased congestion on both sides of the existing lift bridge. This will make historic downtown Stillwater a less attractive place for residents and tourists. It will also make it increasingly difficult for many St. Croix County residents to commute to jobs in Minnesota. Lack of a new river crossing is, to a certain extent, likely to constrain new residential and commercial development in portions of St. Croix County.

If a BUILD decision is made, the most important social impacts in the study area will result from two sets of changes: right-of-way acquisition and the relocation of households, and long-term socio-economic transformations resulting from increased development in previously rural areas. Right-of-way acquisition will affect both those who are required to physically move to another area, as well as people who are left in neighborhoods which could be dramatically altered. Long-term socio-economic changes in rural areas are less predictable, and partially depend on the effectiveness of local land use planning.

In Minnesota, the predominate social effects of a Central or South Corridor decision would be the displacement of over thirty homes and at least one business. Most affected properties would be in Oak Park Heights. An entire neighborhood in this municipality would be severely disrupted, and the ambiance for those who remain in the immediate vicinity of the relocations will be very different than before. Construction activities will also make neighborhood life less pleasant for those left in the area.

Social impacts along the more rural Minnesota North Corridor route would be very different. This area consists largely of commercial farms, hobby farms, and low-density residential development. While approximately 25 developed properties will need to be acquired, a specific neighborhood would not be affected. However, a new road in this corridor will likely have the effect of stimulating development, possibly affecting the rural life-style which many residents were hoping for when they moved into the area. A new limited access highway in this corridor would be contrary to the regional planning policies of the Twin Cities Metropolitan Council.

In the Wisconsin corridors, the number of relocations required would be relatively few (between 2 and 11), but all of the proposed BUILD alternatives would contribute to local increases in residential and commercial development in St. Croix County. In so doing, far-reaching, long-term social and economic changes in the county will likely be accelerated, as ties to the Twin Cities are strengthened and the rural agricultural base further diminishes in importance.

The most important short-term social impacts in Wisconsin would result from a Central Corridor BUILD decision. The unincorporated hamlet of Houlton would be seriously affected, with approximately 11 relocations probable. For those who remain, the area might seem less peaceful, although congestion from the lift bridge would be reduced or eliminated. It is possible that a new Central Corridor bridge will stimulate new development in and around Houlton.

Impacts resulting from a BUILD decision on community facilities and services are likely to be minor in both Minnesota and Wisconsin. Services such as police and fire will benefit from the construction of a limited access highway due to less traffic congestion and no traffic signals. However, because there will also be fewer entrance and exit points, access to some areas is apt to be more limited than at present. Overall traffic safety will be improved by a new river crossing.

Socially, the study area is relatively homogeneous, with few minorities. In terms of relocation, the most

important potential impacts would likely result from a number of elderly or low income people being affected, particularly in that portion of Oak Park Heights located in the South and Central Corridors. Large families--which are likely to be more prevalent in the rural corridors--could also pose some relocation challenges.

In general, the study area has a high percentage of professional married couples making above average household incomes and living in single-family homes. It also has a large number of employees involved in manufacturing, reflecting the importance of Bayport's Andersen Window Corporation as a regional employment center.

More detailed information about social impacts is available in the special study on that topic done by Mn/DOT. Refer to the draft EIS affected environment section for more details about the individual municipalities.

COMMUNITY COHESION

A major aim of community cohesion analysis is to illustrate how affected census tracts are similar or different, both from each other and the larger Twin Cities Metropolitan Statistical Area (MSA) they are part of. The community cohesion map in figure 30 illustrates the degree of social congruence and dissimilarity between census tracts in the study area. The thicker the line between two tracts, the more shared social characteristic indicators there are. Tracts with thin (or non-existent) connecting lines have fewer common social traits. The social cohesion map does not illustrate the amount of in-

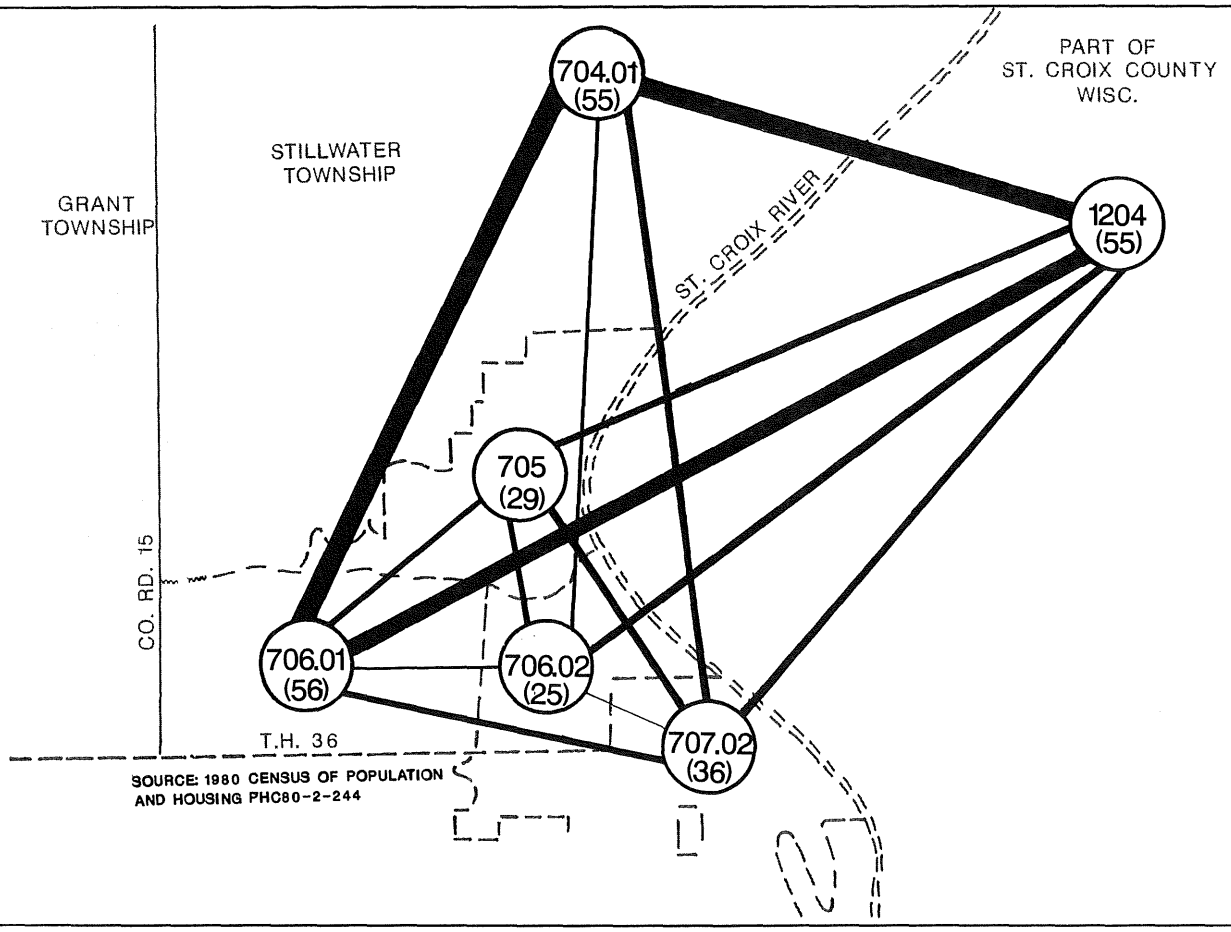


Figure 30

Community Cohesion Between Study Area Census Tracts

Note: The relative thickness of connecting lines between tracts indicates the amount of shared social characteristic indicators. The actual numbers are in parentheses inside circles.

teraction between people in various tracts; rather, it depicts the potential for interaction.

The basic geographic units used are six tracts from the 1980 U.S. Census (shown in figures 28 and 30). The tract boundaries are sometimes--but not always--congruent with political jurisdictions in the area.

The amount and type of information provided for each census tract in the study area is directly related to the potential for social impacts within its boundaries.

South

Minnesota

If a BUILD decision is made, by far the most important short-term social impacts would occur in the residential area of Oak Park Heights affected by the South and Central Corridor alternatives. This area, which is part of census tract 707.02, is located east of where the present TH 36 begins to curve north into Stillwater.

Of the various options, the most disruptive social impacts are likely to result from the tunnel and northern bridge alignments of the South Corridor, which would require the acquisition of between 50 and 60 residences. The southern and central alignments of the South Corridor would affect approximately 40 Minnesota residences, many of which would be the same as under the northern alignment.

The affected section of Oak Park Heights is characterized by modest, lower-middle to middle class houses which are scattered across the hillside as it slopes down toward TH 95 and the river. It is likely that the most serious impacts in areas adjacent to the construction will be on homes which are located in between the proposed new alignment and the existing TH 36. These houses will lie in a small cluster, isolated between the old and new corridors; they will be affected by noise and a less appealing residential ambiance than existed before construction. Between 5 and 20 homes could be left in this area, depending on the alignment.

As depicted in the social cohesion map, Oak Park Heights/Bayport (tract 707.02) has a modest number of connections to other tracts in the study area. Interestingly, the least number of connections are to an adjacent tract (number 706.02). This indicates that a new limited access highway in the TH 36 corridor will not be severing two tracts which have a large degree of potential social cohesion. These areas are quite different, and the existing TH 36 has already been operating as a significant boundary between them for some time.

One of the distinguishing characteristics of Oak Park Heights/tract 707.02 is the large percentage of residents who are employed in Washington County. Additionally, a high percentage of residents are employed in manufacturing jobs. According to the census, 45 percent of resident workers (over the age of 16) employed in the selected industries category were involved in manufacturing, compared to 37 percent in the study area and 23 percent in the MSA. Because a significant number of people are employed locally at the Andersen Window Company, it is likely that many of the people who would be displaced in Oak Park Heights would be interested in relocating in the area.

Other relevant social characteristics in tract 707.02 include the highest median age in the study area and the lowest percentage of people with college education in the Minnesota tracts.

Wisconsin

In Wisconsin, all of the study corridors are located in census tract 1204, which includes the towns of St. Joseph and Somerset, as well as the Village of Somerset. As indicated by the community cohesion analysis, tract 1204 has the most important connections with less densely settled areas (tracts 704.01 and 706.01).

In the study area, tract 1204 has the lowest per capita income, the smallest percentage of college graduates, and the largest relative share of workers employed in manufacturing. More than 60 percent of the workers in Wisconsin tract 1204 work in Minnesota, reflecting the historical trend toward non-farm employment in the region (see figure 31). This is further illustrated by the fact that the tract has the highest average travel time to work in the study area--23 minutes--more than 2 minutes greater than the MSA average. A new river crossing would likely help reduce this average.

The various South Corridor approaches through tract 1204 would traverse farmland, but would not affect any urban areas in the Wisconsin portion of the study area. There would be some social disruption due to the acquisition of several homes and/or farms, a large amount of farmland acreage, and possibly a business, but the total number of improved properties directly affected will be relatively

small, probably 6 or fewer, depending on the alignment.

An indirect effect which may eventually prove to be more important than initial displacement of people, particularly in the South Corridor, is the degree to which the new road stimulates development in previously rural agricultural areas. Agricultural areas can tolerate a certain amount of low-density residential development, but the two land uses can eventually become incompatible.

Substantial increases in residential and business development hold the potential for a dramatic long-term social impact in western St. Croix County. St. Croix County's shift away from farming towards a more urban orientation has been occurring for decades, but it would likely be increased by a new crossing in any of the proposed corridors.

Central Corridor

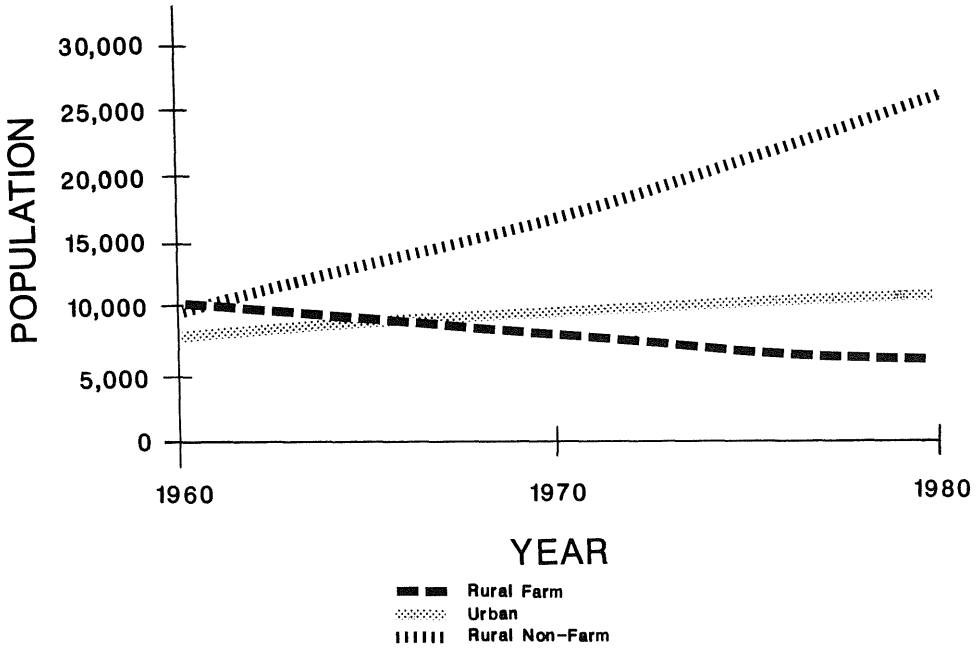
Minnesota

A Central Corridor BUILD decision will have a major impact on the same Oak Park Heights neighborhood (tract 707.02) discussed in the preceding section. Approximately 30 developed properties in this area would need to be acquired for new highway construction, in addition to several houses and the River Oasis Superette along the cliff in Stillwater (tract 706.02). Aside from the loss of fewer homes, social impacts and mitigation in Oak Park Heights will be roughly similar to those described above under the South Corridor alternative.

In spite of the loss of a few homes in Stillwater/tract 706.02, the direct social impacts of a Central Corridor decision on the city are not likely to be major. The houses would be at the edge of the bluff, and the heart of the community they are a part of would not be severed. It is possible that a more important but less predictable effect would be how the changes would alter the way Stillwater is perceived by visitors and residents. Of all the BUILD alternatives, the Central Corridor would have the most negative impact on the nineteenth century rivertown atmosphere which is an integral part of Stillwater's heritage and identity.

Wisconsin

The Central Corridor would likely have the largest short-term social impact of any of the alternatives in Wisconsin. The reason for this is that the concentration of residences in the Wisconsin portion of the study area is greatest in the Houlton vicinity. Both



SOURCE : West Central Wisconsin Regional Planning Commission, 1988

Figure 31

Rural and Urban Population Trends in St. Croix County: 1960-1980

the north and south alignments would require approximately 11 developed properties, mainly residences.

Although Houlton is not incorporated, it does have the identity and appearance of a rural village; because of its small size, the property acquisitions required for a Central Corridor BUILD decision--especially in the south alignment--would have an important adverse impact on the community's present atmosphere.

If a new river crossing is constructed, Houlton would benefit from the elimination of long lines of idling traffic waiting for the lift on the existing bridge. Even if the old bridge remains under a BUILD decision, traffic problems caused by the lift would be greatly reduced because most vehicles would take the new crossing. With all of the BUILD options, eventual removal of the lift bridge would make access to downtown Stillwater more difficult for those living in the Houlton area, and diminish the historical connection between these two communities.

North Corridor

Minnesota

The North Corridor bridge and tunnel approach roads would traverse rural and semi-rural areas. Both the North Corridor bridge and tunnel alternatives would require the acquisition of approximately two dozen developed properties in Minnesota, mainly in census tract 704.01 (which includes most of Stillwater and Grant Townships) and, to a lesser extent, tract 706.01 (which is mainly in the City of Stillwater). The impact of the tunnel option could also extend to a number of homes in tract 705, in the northern half of the City of Stillwater.

Affected properties would likely include farms, scattered residences, and a garden store at the junction of TH 36 and County Road 15. Although the bridge and tunnel would not require exactly the same properties, social impacts would be similar.

Because of the relatively light development in this corridor, community social impacts due to right-of-way relocations would not be nearly as great as with those options which affect more densely settled areas. As detailed in the economic impacts special study, however, traffic-sensitive businesses along the current TH 36 commercial area could be severely affected by a North Corridor route. With through traffic diverted to the North Corridor, some of these businesses might not be economically viable in their current location; this could produce indirect social impacts (e.g., owners are forced to move business and residence, while local consumers must go elsewhere to shop).

Census data indicate that, compared to the study area and the MSA as a whole, census tracts 704.01 and 706.01 have a relatively large share of professional, well-educated, high-income households, living in expensive single-family homes. This area has a high percentage of school age children, and comparatively few elderly residents. There is a strong employment orientation towards St. Paul and Ramsey County.

Wisconsin

On the Wisconsin side of the river (tract 1204), approximately 5 or 6 developed properties would be acquired for both the bridge and tunnel options. General census information would be the same as that described earlier for tract 1204. A relatively small amount of farmland would be affected by a North Corridor bridge, with fewer impacts likely if the tunnel option is selected, as a significant portion of the route would be underground. Overall, the social impacts of a BUILD decision in Wisconsin are likely to be least severe with the North Corridor alternative, as the number of relocations would be fairly small and the corridor length short.

In general, a decision to build in the North Corridor will increase bonds between tracts which already have comparatively high readings on the social cohesion index. As illustrated by the social cohesion map, tracts 706.01, 704.01, and 1204 have more in common than any other portions of the study area, and it is likely that all three tracts would experience many of the same changes as a result of the new highway. As with all the BUILD alternatives, the St. Croix River would provide a less significant barrier to development pressure flowing outward from the Twin Cities than it has in the past. A new river crossing would strengthen the social and economic linkages between the Minnesota and Wisconsin sections of the Lower St. Croix Valley, the various parts of which have a long history of interdependency.

No-Build

The two most important social impacts of a NO-BUILD decision would be caused by two major factors: increasing traffic congestion on both sides of existing the lift bridge (as well as for watercraft

waiting to go underneath), and constraints on economic opportunities for people living in western Wisconsin.

While no people would be displaced by the NO-BUILD option, mobility during times of peak congestion would continue to decrease for local residents in the Stillwater-Houlton area. Additionally, visitors to downtown Stillwater would be directly affected by growing levels of traffic; the town's attractiveness as a tourist destination would be diminished. In general, it is likely that as traffic volumes continue to increase through central Stillwater, the city will become a less desirable place to live in, pass through, and visit. A NO-BUILD decision is in conflict with the future Stillwater has envisioned for itself, as detailed in the comprehensive plan for the downtown area.

In Wisconsin, the effects of a NO-BUILD decision would be concentrated in the previously discussed tract 1204. However, social and economic impacts would not be limited to this area. The existing river crossing at Stillwater serves a large area of western Wisconsin, as well as the recreation areas to the north. A NO BUILD decision would make it harder for St. Croix County residents to reach the more abundant employment and shopping opportunities in Minnesota. Similarly, businesses interested in locating in western Wisconsin might be discouraged because of the relative lack of good transportation routes into the Twin Cities. With the continuing expansion of the Twin Cities Metro Area, social and economic ties to western Wisconsin have been increasing, but they are likely to be inhibited by a NO-BUILD decision.

By contrast, construction of a new river crossing near Stillwater will augment the interaction between the Twin Cities and western Wisconsin. With this increase will likely come an expanding interest in new residential, commercial, and industrial development, and a growing urban orientation. For some residents, the possibility of losing more of the rural ambiance in St. Croix County will outweigh the socio-economic benefits associated with better access to the Twin Cities.

Mitigation

Mitigation for the effects of relocation is limited, and is discussed more fully in the relocation section of this draft EIS. With the South and Central Corridors, one mitigation measure might include abandoning the old TH 36 corridor and opening it up to new residential or commercial development. In Oak Park Heights, in particular, an effort will be made to reduce the noise and visual impacts to people remaining in the vicinity of the new corridor, during and after construction. If there is a BUILD decision, every attempt will be made to see that displaced people can find new housing which meets their domestic needs and is within reasonable commuting distance of their place of employment.

In rural areas, there will be fewer social effects caused by relocation, although secondary impacts resulting from increased development are likely. If a BUILD decision becomes the preferred alternative, a given level of development in rural areas is not inevitable; to a significant extent, it will depend on local attitudes towards development, and how these values are reflected in zoning, farmland preservation plans, and other manifestations of local planning. Additionally, the location of entrance/exit ramps and frontage roads can play an important role in influencing where development will occur.

CHANGES IN TRAVEL PATTERNS AND ACCESSIBILITY

South Corridor

As with all the BUILD options, a new South Corridor crossing will result in a diminished traffic flow through downtown Stillwater. This will help preserve the historic ambiance of the town, and make the CBD safer and more pleasant for pedestrians.

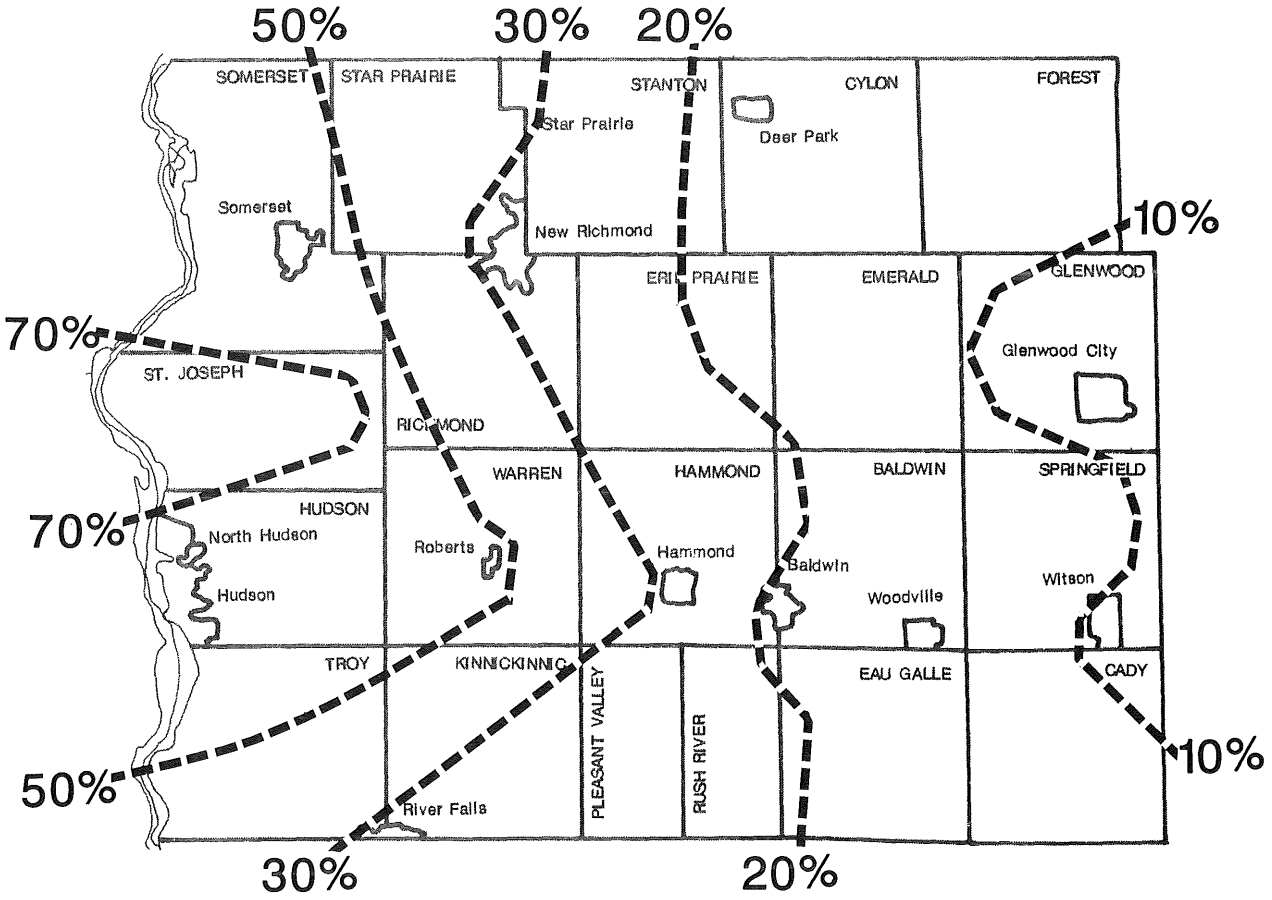
As already mentioned, Minnesotans would have increased accessibility to Wisconsin recreational attractions such as the Apple River and northern lakes area. In addition, the overall effect on people traveling west from St. Croix County will be easier access to Minnesota in general and the Twin Cities in particular. Many St. Croix County residents who work in Minnesota should find it much easier to commute to their jobs than in the past . Nearly 30 percent of the working residents in census tract 1204 are employed across the river in Washington County. Another 30 percent of the workers in this tract are employed in Hennepin or Ramsey County; less than a third of the workers in tract 1204 commute to jobs which are in St. Croix County (see figure 32).

Major reasons for increased regional accessibility would be the elimination of traffic signals along TH 36, and allowing through traffic to avoid the lift bridge and signals in downtown Stillwater. Along TH 36, accessibility to businesses will be maintained by a number of ramps, overpasses, and frontage roads.

The only notable decrease in accessibility with a new South Corridor crossing would occur if the existing bridge were to be closed at some point in the future. This would make access to downtown Stillwater more difficult for those living in the vicinity of Houlton, near the current crossing. However, it is possible that the new crossing would result in improved accessibility to Stillwater for these people compared to times when traffic is backed up on the old bridge as a result of boat traffic.

The degree to which pedestrian and bicycle traffic is affected by a new South Corridor crossing will be partially determined by whether the existing bridge remains open. Should it be left in place, it could continue to serve as a pedestrian and bicycle link between Stillwater and Houlton. The role of the old bridge as a conduit for pedestrians and bicyclists could become more important than it is now if Stillwater develops Kolliner Park. If the old bridge is closed, Stillwater's plans for making better use of Kolliner Park could be jeopardized.

In general, diminished through-traffic in downtown Stillwater will facilitate the movement of pedestrians and bicyclists through the area. One potential disadvantage of a new limited access corridor along the present TH 36 will be fewer crossing opportunities for pedestrians, bicyclists, and



SOURCE: U.S. Bureau Of The Census
Lines Indicate the percent of employed individuals that commute to Hennepin, Ramsey, or Washington Counties of Metropolitan Minneapolis–St. Paul.

Figure 32

1980 Minneapolis-St. Paul Commutershed: St. Croix County

vehicles. However, the new crossings should be safer than previously.

Central Corridor

The improvements in accessibility which will occur with a new South Corridor crossing will also hold true with a Central Corridor BUILD decision. If the old bridge is closed, access to downtown Stillwater will involve some back-tracking for those coming from Wisconsin on a new central crossing. The reason for this is that drivers will exit the new highway at an intersection near the Stillwater-Oak Park Heights boundary; once off, they will have to travel back a mile north on TH 95 to get to the downtown area.

Except for increased vehicular traffic on the TH 36/95 common section, impacts on pedestrian and bicycle traffic should be roughly the same as with a new South Corridor crossing. Through-traffic on a Central Corridor bridge would not interfere with non-vehicular movement in downtown Stillwater.

North Corridor

The North Corridor bridge and tunnel options are fundamentally different from the other BUILD possibilities in that they require a wide detour west and north of Stillwater. As with the Central Corridor, travelers going from Wisconsin to downtown Stillwater will not be able to go directly to their destination (unless the existing bridge remains in place). The first interchange that westbound motorists will encounter after crossing the river will be northwest of central Stillwater, necessitating a trip back east in order to get on the north-south TH 95. For travelers going to the Twin Cities from western Wisconsin, the trip is likely to be longer than for the Central or South Corridor BUILD alternatives, but probably less time-consuming than the present trip over the old bridge and through downtown Stillwater.

Among the BUILD options, a North Corridor decision is likely to be the least desirable for the many Wisconsin residents who commute to jobs in the Minnesota portion of the study area. The Andersen Window Corporation in Bayport is one of the largest employers in the St. Croix Valley; over 1,000 of its more than 3,600 employees live in Wisconsin. Many of these workers currently use the existing Stillwater lift bridge, and must contend with congestion at certain times of the day. While a new North Corridor crossing would eliminate the delays on the bridge, employees living in Wisconsin would be forced to travel a very circuitous route to get to and from work if they wished to avoid traveling through downtown Stillwater.

As discussed earlier, traffic along the present TH 36 corridor between County Road 15 and Stillwater would fall dramatically, threatening the vitality of some businesses which are currently located along this strip. Depending upon zoning restrictions and access availability, traffic-sensitive businesses along the TH 36 commercial corridor might have a strong incentive to relocate along the new Minnesota North Corridor.

The impact of a North Corridor decision on bicyclists and pedestrians in downtown Stillwater would be similar to the other BUILD decisions. The major difference between this and the other options is that bicycling along County Road 15 and TH 96 would be much less attractive due to increased traffic. Currently, County Road 15 has a designated bike route along its shoulder.

No-Build

One of the major effects of a NO-BUILD decision will be continued, increasing congestion in downtown Stillwater, with traffic delays on both sides of the lift bridge during the boating season. The accessibility of jobs in Minnesota for people living in western Wisconsin is likely to diminish as traffic increases at the current bottleneck. Increased travel time between this part of Wisconsin and the Twin Cities Metropolitan Area is likely to dampen the area's desirability as a residential and business location.

Because of growing congestion, a NO-BUILD decision would likely diminish the accessibility of popular recreational areas on the Apple River and northern Wisconsin lakes for Twin Cities residents. Although those headed to a lake in northern Wisconsin have a number of crossing options further upstream from Stillwater, the Stillwater-Houlton crossing and associated approach roads (i.e., TH 36 and STH 35/64) are by far the most direct for Twin Cities residents headed for a day of recreational inner-tubing on the Apple River.

A NO-BUILD decision is likely to have an increasingly adverse impact on pedestrians and bicyclists in downtown Stillwater. Any effort to speed the flow of traffic through the central city is apt to conflict with non-vehicular movements in the area. The continued heavy flow of traffic over the current lift bridge is also likely to make this facility less

appealing for pedestrians and bicyclists than it would be if a new crossing was available to absorb much of the pressure.

IMPACTS ON COMMUNITY SERVICES AND FACILITIES

In general, community services and facilities will not be seriously impacted by any of the BUILD alternatives. A major reason for this is that a special effort was made to avoid these features when the preliminary corridors were drawn. There is a potential, however, for some school enrollment impacts, particularly in Oak Park Heights. Another concern is that emergency vehicle routes will be altered by the construction of limited access corridors. In addition, all of the BUILD options would have some impact on recreational areas, particularly along the St. Croix River. A BUILD decision should have little impact on churches, cemeteries, or other community facilities not discussed here.

School Districts

In Minnesota, all of the proposed new corridors would be located in School District 834. Wisconsin impacts will be divided between the Hudson and Somerset Districts; Vo-Tech District 1 would also be affected. None of the corridors in either state would require the relocation of a school, although the South and Central Corridors would pass within easy walking distance of several schools.

In all of the proposed corridors, school impacts are likely to be substantially greater in Minnesota than in Wisconsin. Aside from a greater physical proximity to schools, an important reason for this is the much greater number of households which will require relocation in each of the Minnesota corridors options.

In Minnesota, the South and Central Corridor routes would pass within a half-mile of two schools--Stillwater Senior High with a 1989 enrollment of 1,895, and Oak Park Elementary with 688 students (see figure 33). Within a mile and a half of the South and Central Corridors are a number of other schools, including Stillwater Junior High, Lily Lake Elementary, Stonebridge Elementary, Bayport Elementary, and the Washington Campus of Stillwater Senior High.

Stillwater Senior High School should suffer no major adverse impacts from any of the proposed crossing options as a result of student attrition. Because the area served is relatively large, it is likely that a substantial number of displaced high school students will relocate within the district and still be able to attend the same school.

There are two main junior high schools which could be impacted by a BUILD decision. Junior high students in the Oak Park Heights neighborhood affected by the South and Central Corridor alternatives attend Oakland Junior High, which is located about a half mile north of the junction of I-94 and County Road 15 (not on the map). A North Corridor decision would also affect students in this school, as its boundaries extend up to the junction of County Road 15 and TH 96. As with Stillwater High, it is likely that a substantial number of displaced students would relocate within the boundaries of the area served by the school. Current enrollment is 1,002 students, and the number of students lost to the school as a result of any of the corridor options is not likely to have a serious long-term impact on the facility's viability.

A small number of Junior High students in the eastern section of the North Corridor and the Stillwater portion of the Central Corridor attend Stillwater Junior High. Current enrollment at this school is 702. A few students could be lost to the school as a result of a North or Central Corridor decision, but the overall impact would be minor.

Enrollment impacts on elementary schools as a result of the various BUILD alternatives are more complex, as the study area includes portions of six different elementary jurisdictions. The largest potential short-term enrollment impact would be to Bayport Elementary, which has 356 students. This school serves the Oak Park Heights neighborhood affected by both the South and Central Corridor options. Enrollment impacts on other elementary schools as a result of a BUILD decision will be much less pronounced, with the loss of a few students possible.

With one possible exception, school enrollment impacts in Wisconsin will be minor, with the Central Corridor alignments having the largest potential effect. Most of the residences potentially affected by a BUILD decision are located within the Hudson School District, with a few possible in Somerset. The greatest potential enrollment impact would be on Houlton Elementary (which has an enrollment of 106 students) with the Central Corridor option. Approximately 11 households in the Houlton area could be affected with this alternative; it is not

known how many--if any--of these households actually have children which attend Houlton Elementary. The school is located several blocks east of Houlton on County Road E.

Enrollment losses are not the only potential school impacts of a BUILD decision. One effect of constructing a new, limited access highway in the vicinity of a large number of school children is the increased difficulty of crossing on foot or by bike. This problem--which would be most acute along the TH 36 corridor--could be mitigated by the strategic placement of pedestrian ramps over the new highway; overpasses should be constructed with enough space so that student pedestrians and bicyclists can cross safely and not interfere with traffic. Additionally, school bus routes may need to be altered somewhat if a BUILD decision is made in any of the proposed corridors. Another potential impact resulting from a BUILD decision would be the loss of school district property tax revenues; this issue is discussed in the fiscal impacts section of the draft EIS.

Police, Fire, and Medical Services

Police and fire protection in the Minnesota portion of the study comes from four stations: the City of Stillwater Government Center; Washington County Government Offices; Bayport; and Oak Park Heights (see figure 33). The major medical facility in the Minnesota study area is Stillwater's Lakeview Hospital, which is located two-thirds of a mile north of TH 36 near Lily Lake.

The overall effect of a BUILD decision on area-wide police, fire, and medical services will be strongly beneficial due to reduced congestion and traffic delays. During summer backup periods, emergency vehicles which ordinarily would go to Stillwater must sometimes avoid the lift bridge and take patients twenty miles east to the New Richmond Hospital, or south to the hospital in Hudson. Ambulances leaving Stillwater for Wisconsin must cross the lift bridge both going and coming, and contend with heavy traffic in between.

Lakeview Hospital should directly benefit from a Central or South Corridor decision. If entrance/exit ramps are constructed at the junction of Oasis Avenue and TH 36 (as anticipated), emergency vehicles will have good access to the highway, and should be able to reach many destinations more quickly than at present.

In some cases, a new river crossing corridor would leave emergency vehicles with reduced access. For example, one concern with the South and Central Corridor options is that Oak Park Heights and Washington County police vehicles will not be able to get on TH 36 as quickly if it is converted into a limited access facility.

In the Wisconsin portion of the study area, police support is supplied by the St. Croix County Sheriff's Department, with a Main Office in Hudson and a Patrol Division Office in Hammond. In addition, various support staff is scattered around the county, including a constable in Houlton who is based at home.

Fire protection in the Town of St. Joseph is supplied by a station located east of Houlton, at the junction of County Roads E and V. The Town of Somerset is covered by a station located east of the Village of Somerset.

The basic advantages and disadvantages of a BUILD decision on Minnesota emergency services will also hold true for the Wisconsin portion of the study area. Congestion along STH 35/64 will be substantially reduced, increasing response time. This advantage would be especially apparent in the summer; delays caused by the lift bridge could be avoided, facilitating access to the Stillwater and New Richmond Hospitals, and other areas. On the other hand, limited access along a new corridor will make it more difficult for police and fire trucks to get on and off in some areas.

Recreation Areas

The most important recreation impacts of each of the proposed corridors are discussed in detail in the Section 4 (f) documents. The resources covered in these reports include the Lower St. Croix National Scenic Riverway, Kolliner Park, and Mile Long Island. Recreation areas which could be less directly impacted include Stillwater's Lowell Park (Central Corridor), the Boomsite Wayside (North Corridor Bridge), and small public boat launches east of Mile Long Island in Wisconsin (North Corridor Bridge), and near the King Power Plant in Minnesota (south alignment of the South Corridor). While these areas would not be directly affected, there could be visual and/or noise impacts which would be difficult to mitigate.

There are several other potential impacts on existing or planned recreation areas in the study area. First, the North Corridor tunnel corridor runs close to a

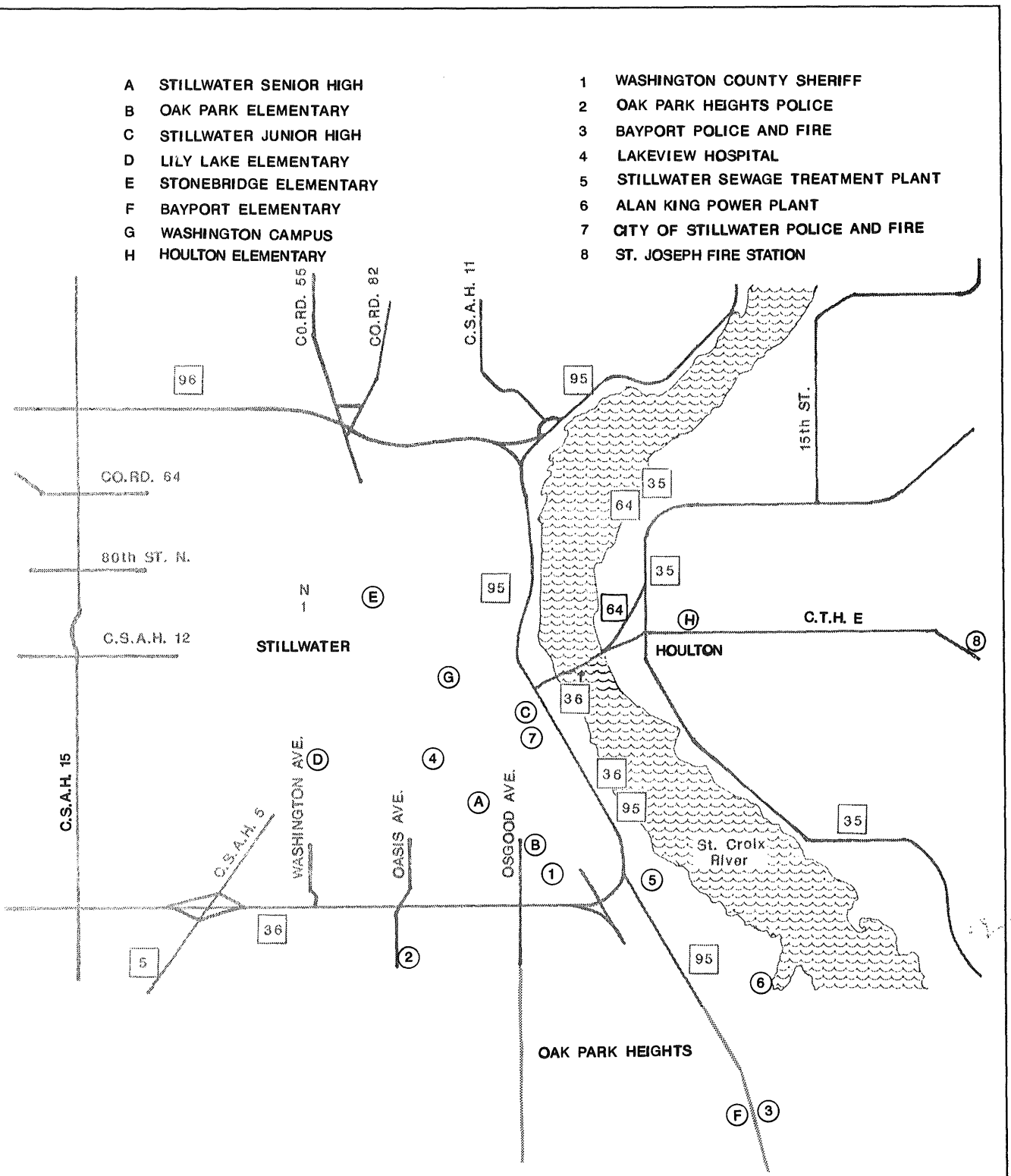


Figure 33
Selected Community Facilities

small wayside (Otto Berg Memorial Park) located near the junction of TH 96, Norell Avenue North, and Stone Bridge Trail North. Further to the east, the tunnel approach road would run through Brown's Creek Valley, which is not a park but includes a designated trout stream. (Impacts on the creek and possible mitigation are discussed in two special studies--threatened and endangered species, and natural resources.) A North Corridor route would also go past Aamodt's Apple Farm, located on the western edge of the present County 15 alignment. A relatively small amount of property would likely be acquired along the edge of the orchard if the North Corridor became the preferred alternative. The farm offers apple picking in the fall and cross-country skiing in the winter. Finally, a Central Corridor decision may have an effect on long-term plans the City of Stillwater has for a new riverfront park and/or parking area south of the existing Lowell Park.

Churches and Cemeteries

There are a large number of churches in the study area, mainly in downtown Stillwater. None of the churches in any of the corridors would be directly affected.

There are also three cemeteries located within a few blocks of various North, Central, and South Corridor alignments. None of the corridor options will encroach on cemetery property.

IMPACTS ON SAFETY

One of the major beneficial effects of a new river crossing would be reduced traffic congestion on Minnesota TH 36 and Wisconsin STH 35/64. Currently, both of these roads have accident rates which are in excess of state averages for similar facilities elsewhere. Geometric deficiencies which contribute to these high accident rates include a bottleneck at the current bridge; traffic signals and pedestrian conflicts in downtown Stillwater; and numerous access points along TH 36 and STH 35/64 which result in the mixing of local and through traffic. With Average Daily Traffic (ADT) levels predicted to roughly double by the year 2014, safety problems can be expected to greatly increase without a new crossing and corridor improvements.

Aside from the increased potential for accidents involving motorists, pedestrians, and bicyclists, the traffic congestion in this corridor creates problems for emergency vehicles, jeopardizing people's safety. As discussed earlier, the ability of emergency medical vehicles to reach patients quickly would be improved by a new river crossing.

While it is likely that a new river crossing would result in an overall improvement in public safety, there is the possibility that some traffic-related dangers will increase. Because access to the new approach roads would be more limited, crossing opportunities for pedestrians and bicyclists would be fewer than at present. This could present a danger to younger people, in particular, who may be tempted to dash across the middle of the road rather than walk or ride to an overpass. It is probable that walking or biking along the upgraded highway would be more dangerous at present due to higher speeds, unless protective fencing is added adjacent to the roadway.

SOCIAL GROUPS SPECIALLY HARMED OR BENEFITED

Socially, the study area is not remarkably different from the rest of the Twin Cities MSA; it is a relatively homogeneous locale. There are no large concentrations of any particular social group which would be disproportionately affected by any of the BUILD alternatives. The greatest potential for an impact on a particular social group is probably in Oak Park Heights census tract 707.02, which has a slightly higher percentage of low income groups and elderly people.

A small number of farm families are likely to be displaced by a BUILD decision. As detailed in the agricultural impacts section of the draft EIS, however, impacts on area farmers will involve more than physical relocation. In some cases, farm parcels will be severed, and access to some fields will be made more difficult. In addition, pressures to convert farmland to residential developments will probably increase. As a result of these factors, a BUILD decision in any corridor will have a negative impact on the long-term viability of farming as an occupation and a way of life.

RELOCATION

AFFECTED HOUSEHOLDS AND BUSINESSES

In all of the corridors, the effects of relocation would be the single most important short-term social impact resulting from a BUILD decision. While a few small businesses could be relocated, the dominant effect will be on households, including a relatively small number of farmhouses.

The precise number of people required to move in each corridor is not known. What is known is an approximate number of households which will be affected by each corridor, as well as a persons per household ratio for the various jurisdictions. There is no guarantee, of course, that the persons per household ratio in affected areas will be the same as it is for the jurisdiction as a whole.

In general, the less developed areas tend to have higher persons per household ratios than cities or towns. According to 1988 Metro Council data, for example, Oak Park Heights and Stillwater had persons per household ratios of 2.58 and 2.76, respectively, while rural areas such as Baytown, Grant, and Stillwater Townships had ratios which ranged between 3.22 and 3.28. Data supplied by the West Central Wisconsin Regional Planning Commission indicates that the persons per household ratio for St. Croix County was approximately 2.88 in 1988. One implication of these differences is that the relocation of a given number of households in a rural or semi-rural area (e.g., the North Corridor) is likely to involve more people and larger families than the same number of households in a more urban locale. Larger families can be more difficult to relocate due to school considerations and the need for more space.

Relocation impacts would be greatest under the South and Central Corridor options (see table 9).

TABLE 9
ESTIMATED RELOCATIONS, BY CORRIDOR

Corridor	Affected Residences (MN)	Persons Per Household	Affected People (MN)	Affected Residences (WI)	Persons Per Household	Affected People (WI)	Total Residences (MN/WI)	Total Persons (MN/WI)
North Corridor	25-26	3.22[1]	81-84	5-6	2.88[2]	14-17	30-32	95-101
Central Corridor	32	2.58[3]	83	11	2.88	32	43	115
South Corridor								
North Alignment and Tunnel	55	2.58	142	5-6	2.88	14-17	60-61	156-159
South and Central Alignments	38	2.58	98	2-4	2.88	6-12	40-42	104-110

Note: Figures given for relocated residences and persons are only approximations. The precise alignment of each corridor has not been determined. Should one of the corridors listed here become the preferred alternative, the actual number of relocations could be either more or less than those estimated here. The figures are most useful as a way to compare the relative impacts of the various alternatives.

1 Persons per household ratio (1988) for Stillwater Township, the Minnesota jurisdiction most affected by the North Corridor alignments. Data supplied by the Metropolitan Council.

2 Persons per household ratio (1988) for St. Croix County. Estimated by the West Central Wisconsin Regional Planning Commission.

3 Persons per household ratio (1988) for Oak Park Heights, which includes the majority of Minnesota residences affected by the Central and South Corridor alternatives. Estimated by the Metropolitan Council.

Estimated South Corridor relocations would affect between 40 and 61 households, plus 1 or 2 small businesses in each alignment. Central Corridor relocations are estimated to affect approximately 43 households, in addition to at least 2 businesses. As in the South Corridor, employment losses due to lost businesses would be small, with no major effect on regional employment. A North Corridor decision would affect 30 or more residences and at least one business. (These calculations assume that affected residences are single family dwellings. It is possible a few duplexes or triplexes may be affected, in which case these estimates are slightly low.)

SPECIAL CHARACTERISTICS OF THE RELOCATED POPULATION

The study area as a whole has a very small number of minorities, and all of the affected individual census tracts have minority populations which are less than 2 percent of the total. Consequently, it is probable that very few--if any--minorities will be required to relocate as a result of a Build decision.

Three of the census tracts have elderly populations which are above the MSA average percentage of 9.5. More than 17 percent of the population in tract 705 is over the age of 64, while tracts 706.02 and 707.02 have a share which is between 12 and 13 percent. (See census tract map in figure 28.) In terms of relocation impacts, the only tract where a high elderly population could be a notable concern is 707.02, in the Oak Park Heights neighborhood affected by the South and Central corridors. Statistically, it is probable that more than a dozen elderly people in Oak Park Heights will require relocation. Extra care is often needed in relocating elderly residents, as they may possess particularly strong ties to an area, have special requirements, and/or be less able to tolerate the rigors of moving.

Income is another factor which can affect the ease with which people adapt to relocation. In general, wealthier people have more housing options; they tend to have greater mobility than the poor due to higher income and education levels. The North Corridor route, in particular, would likely affect a substantial percentage of comparatively large, high income families.

The only study tract with a median household income even slightly below the 1980 MSA average is 705. When mean household income is considered, tracts 705, 706.02, and 707.02 are a little below the MSA average. According to the 1980 census, between 22 and 25 percent of the households in these tracts made less than 10,000 dollars a year, compared to a MSA average of slightly more than 21 percent in this income bracket. Per capita income is less than the MSA average in tracts 705, 706.01, 706.02, and 1204.

While the data on income do not indicate an exceptional amount of poverty in the study area, low income people are present in large enough numbers so that they could be a factor in relocation efforts, particularly if a South or Central BUILD decision is made. Assuming that 50 households require relocation in Oak Park Heights/tract 706.02, for example, it is possible that close to a dozen of them were earning less than $10,000 when the 1980 census was taken. If these household incomes have done little more than keep up with inflation since then, new housing options could be fairly limited. These people may need extra assistance from the Minnesota Department of Transportation in obtaining new housing.

Within the study area, there is significant variation in both owner-renter and single family-multiple family percentages. According to the 1980 census, however, all of the tracts were above the MSA average in percent of owner-occupied and single family dwellings. Tracts 704.01 and 706.01 had an owner-occupied share of over 90 percent, the highest in the study area. These tracts, which include the outskirts of the Stillwater developing area, also had the highest percentage of single family dwellings, between 93 and 95 percent. Tract 1204 in Wisconsin occupied an intermediate position, with nearly 82 percent of its housing units being owner-occupied, and more than 84 percent being single family. Tracts 705, 706.02, and 707.02 had owner occupied percentages ranging between 71 and 76 percent; these tracts also had the lowest share of single family units (between 67 and 75 percent) in the study area. In all of the proposed corridors, it seems likely that a large majority of the residents requiring relocation currently live in owner-occupied, single-family houses.

The median value of owner-occupied residences in the study area is significantly greater than the MSA figure in tracts 704.01 ($87,100) and 706.01 ($73,000). This indicates that for right-of-way purposes, the average cost per acquired residence is likely to be highest in the North Corridor. Tract 705

has the lowest median value for owner-occupied housing in the study area--$54,500, more than 12 percent below the MSA median. For renter occupied housing, tracts 705, 706.02, 707.02, and 1204 had median rates which were more than 10 percent below the MSA value. Tract 706.02, however, had a median rental value which was nearly 15 percent higher than the MSA figure.

There are several large ethnic groups in portions of the study area which may be affected by relocation. In Wisconsin tract 1204 (all corridors), for example, over 14 percent of the population is of French ancestry, nearly 12 percent above the MSA average. Minnesota census tract 706.02 (South and Central Corridors) has a comparatively large share of persons with Irish heritage--nearly 18 percent of the population, almost 11 percent above the MSA average. As in the MSA as a whole, German heritage is very common in the study area, with all of the tracts being above the eleven county MSA average of 33 percent. Tracts which are more than 10 percent above the MSA average for German heritage are 705 (North Corridor) and 706.01 (all corridors). No special mitigation procedures should be necessary for any of these ethnic groups, as all of them are well integrated into mainstream American culture.

RELOCATION ASSISTANCE

The South and Central Corridor alternative would affect numerous lower-value residences, mainly in Oak Park Heights. The Central Corridor alternative would also impact a number of lower-income residences in Houlton.

Approximately 75 percent of the residences in the affected portion of Oak Park Heights are owner-occupied. According to the Regional Multiple Listing Service, only one house was sold in this area between January 1 and June 30, 1989. The selling price was $35,500. Two other homes were on the market during this time, but failed to sell. The listing price for both was $39,900.

This part of Oak Park Heights is a unique pocket of lower-value residences. In examining properties sold in unaffected portions of Oak Park Heights and neighboring Stillwater, it was determined that they are located in very different housing markets. Therefore, they are not helpful in valuing the proposed acquisitions.

The Regional Multiple Listing Service dated November 1989 provides that approximately 200 residences are available for sale in the Stillwater/Bayport area. The single family dwellings range in value from $49,000 to $659,000. Only ten residences valued less than $60,000 are available. With these ten, only one and two bedrooms per residence can be accommodated. As mentioned earlier the persons per household ratio in Oak Park Heights was 2.58. Consequently, a two or three bedroom replacement home will be required in most cases.

The North Corridor Build decision would affect higher value residences (over 90% owner-occupied). The Regional Multiple Listing Service reveals that several residences in this area valued from $132,500 to $299,000 were sold between January 1 and June 30, 1989. In the Stillwater/Bayport area, over 100 residences are available in this price range. With approximately 3.25 persons per household, three or four bedroom residences would be a minimum requirement in most cases. This requirement could be met since these houses have between three and five bedrooms. Also, the activity in this area indicates that there is little difficulty finding a residence in this price range.

Where the existing housing inventory is insufficient, does not meet the relocation standards, or is not within the financial capability of the displaced persons, an investigation to determine the land available for residential zoning would be prudent. By working with the Housing and Redevelopment Authority, this could be accomplished and a housing development could be made available in a location such as Baytown Township. If housing cannot be made available, Mn/DOT is committed to assisting landowners by using last resort options.

It is anticipated that those who wish to remain in the same general community will be able to do so. Even though residents affected by the proposed South and Central Corridors in Oak Park Heights may not be able to remain in Oak Park Heights, they will be able to relocate in neighboring communities. Therefore, community ties such as schools and churches should not be seriously affected.

The largest potential business relocation would be with the North Corridor alternative. A garden store employing between 5 and 20 seasonal employees exists in the corridor, at the junction of TH 36 and County Road 15. Many sites are available in the area where this business could relocate. Other businesses possibly affected include an apple orchard

(which would be a partial taking) and a home-based business. Neither of these businesses present a relocation problem.

The southern alignment of the South Corridor would require the relocation of a restaurant in Wisconsin (less than 20 employees). With the Central Corridor alternative, a Cafe/Bait/Gas Station in Minnesota (less than 10 employees) and a restaurant in Wisconsin (less than 20 employees) would be affected. One or two home businesses could also be affected in each of these corridors. It is anticipated that these relocations would be fairly uncomplicated since nearby sites are available.

The acquisition and relocation of displaced residences will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and relocation resources are available to all residences and business relocatees without discrimination.

Mn/DOT attempts to ensure that each displaced household is relocated into housing that is "decent, safe, and sanitary," is in the same general neighborhood (if desired), and is affordable within the financial means of the household. Mn/DOT attempts to complete each relocation within 90 days from the date of property acquisition. The Mn/DOT relocation office, through many sources, keeps a current listing of homes for sale and apartments for rent. Persons of lower income are given priority for public housing. Moving expenses are computed on a room schedule basis. Business and farm operations are also granted moving expenses, payment for time spent in search of a replacement site, and appraisal fees.

A displaced owner-occupant may receive a supplemental replacement housing payment from Mn/DOT. This payment is the amount determined, which when added to the amount Mn/DOT pays for the acquired dwelling, equals the actual cost which the owner pays for a comparable dwelling, or the amount determined by Mn/DOT as necessary to purchase a comparable dwelling, whichever is less. The amount of this has recently been increased from $15,000 to $22,500, under the federal law.

As a last resort, if satisfactory replacement housing of comparable value to that acquired cannot be located, Mn/DOT will locate the displaced household in other housing with no upper limit on cost.

Mn/DOT will explore all possible sources of relocation assistance funding which may be available to displaced businesses. Emphasis will be placed on providing relocation advisory services to businesses. Appropriate measures will be taken to ensure that all businesses which are to be displaced are fully aware of their benefits and entitlements, courses of action which are open to them, and any special provisions designed to encourage businesses to relocate within the same community.

ECONOMIC IMPACTS

Economic impacts will be discussed in two major sections--commercial impacts and fiscal impacts. While not all economic impacts fall neatly into these two categories, these are the major groups of effects which would result from a new river crossing at Stillwater-Houlton.

Adverse commercial impacts from highway construction can occur when traffic is diverted away from existing businesses, access is curtailed, or appeal is diminished due to dust and noise. Positive commercial impacts may result from improved access or diminished congestion. An additional short-term benefit can result from demand for construction materials and workers.

Fiscal impacts occur when the construction of new highways or other public facilities requires the acquisition of private land and buildings. The acquired property is thereby removed from the tax rolls of the various districts (i.e., political jurisdictions, school districts, etc.), with effects varying due to the amount of lost revenue and the size of the tax base.

For a more complete discussion of these impacts, refer to the economic and fiscal impacts special studies.

COMMERCIAL IMPACTS

The economic viability of commercial areas can be affected by factors such as visibility, ease of access, and traffic volume on adjacent roads. While some types of businesses are very sensitive to the amount of passing traffic, the success of others is virtually independent of vehicle volumes in the area. The nature of the goods and services for sale is a key determinant of whether a retail outlet is "traffic sensitive."

For outlets selling convenience or travel-related goods such as fast food or gasoline, virtually every passing motorist is a prospective customer; adverse economic impacts will likely result if traffic is diverted. For stores offering specialty goods such as home appliances, musical instruments, or automobiles, prospective customers are drawn from a relatively small, focussed sector of the overall market spectrum. Little or no impact will result from a traffic diversion, as customers are often willing to travel comparatively long distances and visit several stores before reaching a purchase decision.

Businesses which are not sensitive to traffic volumes and are located in congested shopping areas can sometimes realize a beneficial impact when through traffic is routed away from the fronting thoroughfare. Motorists with no desire to stop and shop in the congested area will follow the new route to avoid delay. This diminishes traffic congestion in the local retail area, increasing its attractiveness and convenience for people who come into the area specifically to shop or browse.

In the Minnesota portion of the study area, two major shopping areas exist. First, there are numerous businesses paralleling TH 36, above the river bluff in Oak Park Heights and Stillwater. Second, there is the commercial area located in the Stillwater central business district (CBD). In Wisconsin, only limited commercial activity exists, concentrated mainly in Houlton. (See figure 34.)

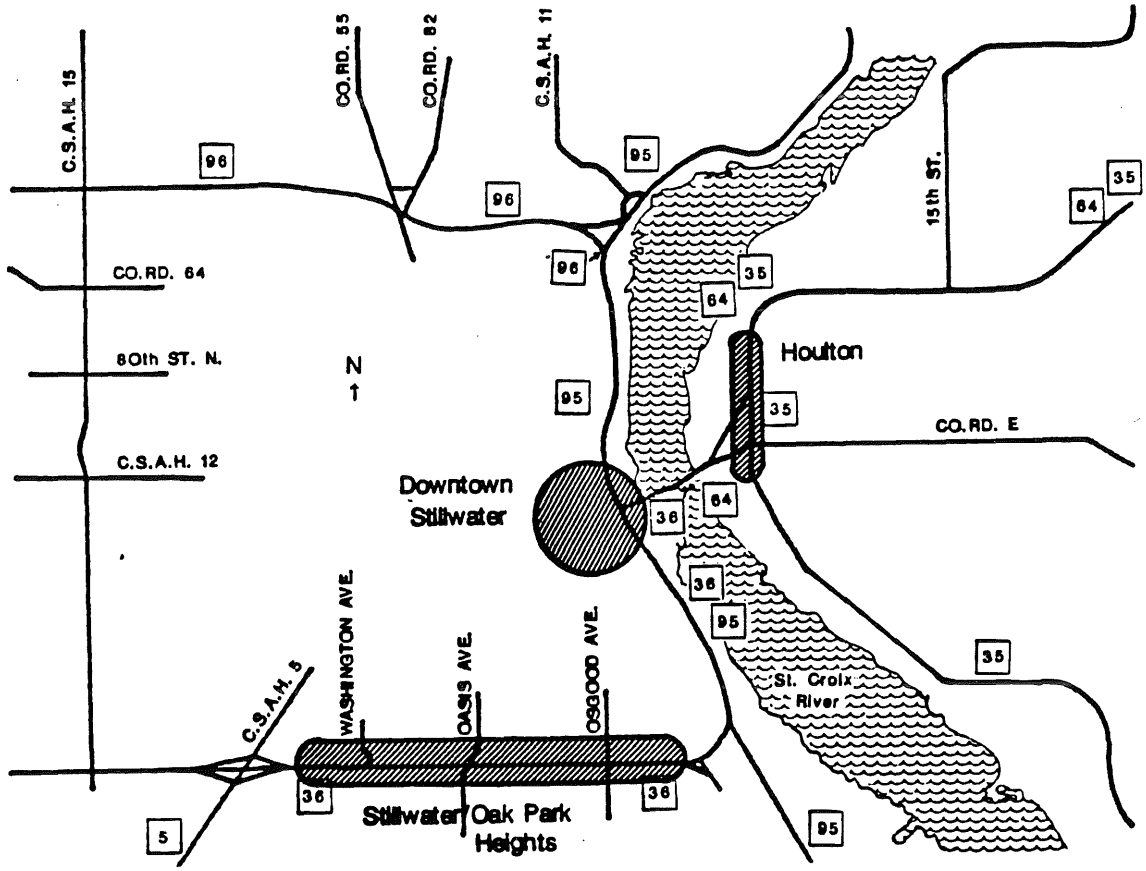


Figure 34

Major Business Concentrations in Study Area

The TH 36 strip development is a contemporary, spatially-extensive, highway-oriented commercial area. It features a number of businesses which draw customers mainly from drive-by motorists, in addition to others which are specific destinations and do not depend upon passing traffic. Large, mall-type parking lots front many of the establishments.

By contrast, the Stillwater CBD is more compact and pedestrian oriented, a destination shopping area sought out for its special retail and service opportunities. Because of their specialized nature, the majority of retail operations in the CBD draw little patronage from drive-by motorists. Stillwater's nineteenth century design gives it a historical atmosphere which is very attractive to visitors; in many cases, the shoppers who come to the city are seeking a unique historical ambiance, in addition to actual goods and services. However, the lack of space and heavy traffic volumes have created increasingly severe congestion problems for those attracted to the area.

In the Houlton vicinity, businesses include a restaurant/bar, a liquor store, a convenience store/gasoline station, a drive-in theater, a bank, and several others. Drive-by customers are an important component in the success of some of these operations, while others such as the bank and the theater are "destination" businesses.

Both Minnesota and Wisconsin have identified TH 36 and STH 35/64, respectively, as being key transportation corridors for local and regional economic development. Mn/DOT has classified TH 36 as part of its "market artery route" system, which includes the state's most important truck transportation highways. Similarly, the Wisconsin Departments of Transportation and Development consider the stretch of STH 35/64 from Houlton to New Richmond to be important for the state's future economic vitality, and have included it as part of their recent "Corridors 2020" transportation improvement initiative.

NO-BUILD

The impacts of a NO-BUILD decision would vary throughout the study area. One of the most important negative effects of the NO-BUILD option will be on the Stillwater CBD. Growing traffic jams in downtown Stillwater have the potential to gradually erode the historic ambiance which makes the City such an appealing destination. Tourists walking to and from the stores, bars, and restaurants in downtown Stillwater are in direct conflict with the heavy traffic which moves through the area during peak-level periods. The City has made a major commitment to maintaining an attractive rivertown atmosphere; these efforts are being partially undermined by heavy traffic volumes, a problem which will get worse under the NO-BUILD scenario.

Another potential long-term adverse economic impact of a NO-BUILD decision could occur in Wisconsin as a result of inadequate transportation links to the Twin Cities Area. As illustrated in figure 35, the number of routes and lanes going east out of the Twin Cities are significantly fewer than those going north, south, and west. One effect of this might be to make recreation-oriented business (e.g., resorts) in northwestern Wisconsin increasingly less competitive with their counterparts in Minnesota. Furthermore, some businesses which might otherwise be interested in locating in west-central Wisconsin may decide that transportation to Twin Cities markets is insufficient for their needs (see letter in appendix 3). Shipping products across the existing lift bridge (which goes up frequently in the summer) and through the traffic lights in downtown Stillwater results in extra costs due to additional fuel consumption and delays. An additional impact of a NO-BUILD decision for many Wisconsin residents employed in Minnesota will be increased difficulty in getting to their jobs.

For large portions of the study area, economic impacts of a NO-BUILD decision should be small or non-existent. The existing TH 36 commercial strip, for example, would be largely unaffected by the NO-BUILD option. In addition, rural areas in the Minnesota portion of the study area would, for the most part, not be affected by a NO-BUILD decision.

North Corridor, Minnesota

Like the other BUILD options, a North Corridor highway location would reroute through traffic away from downtown Stillwater. The diminished traffic congestion would benefit the downtown destination shopping area by reducing congestion. However, this alternative would have a major adverse impact on traffic sensitive businesses located along the TH 36 commercial strip and the existing STH 35/64 in Houlton, as it would substantially diminish the number of potential customers flowing past. If the North Corridor becomes the preferred alternative, it is possible that some traffic-sensitive

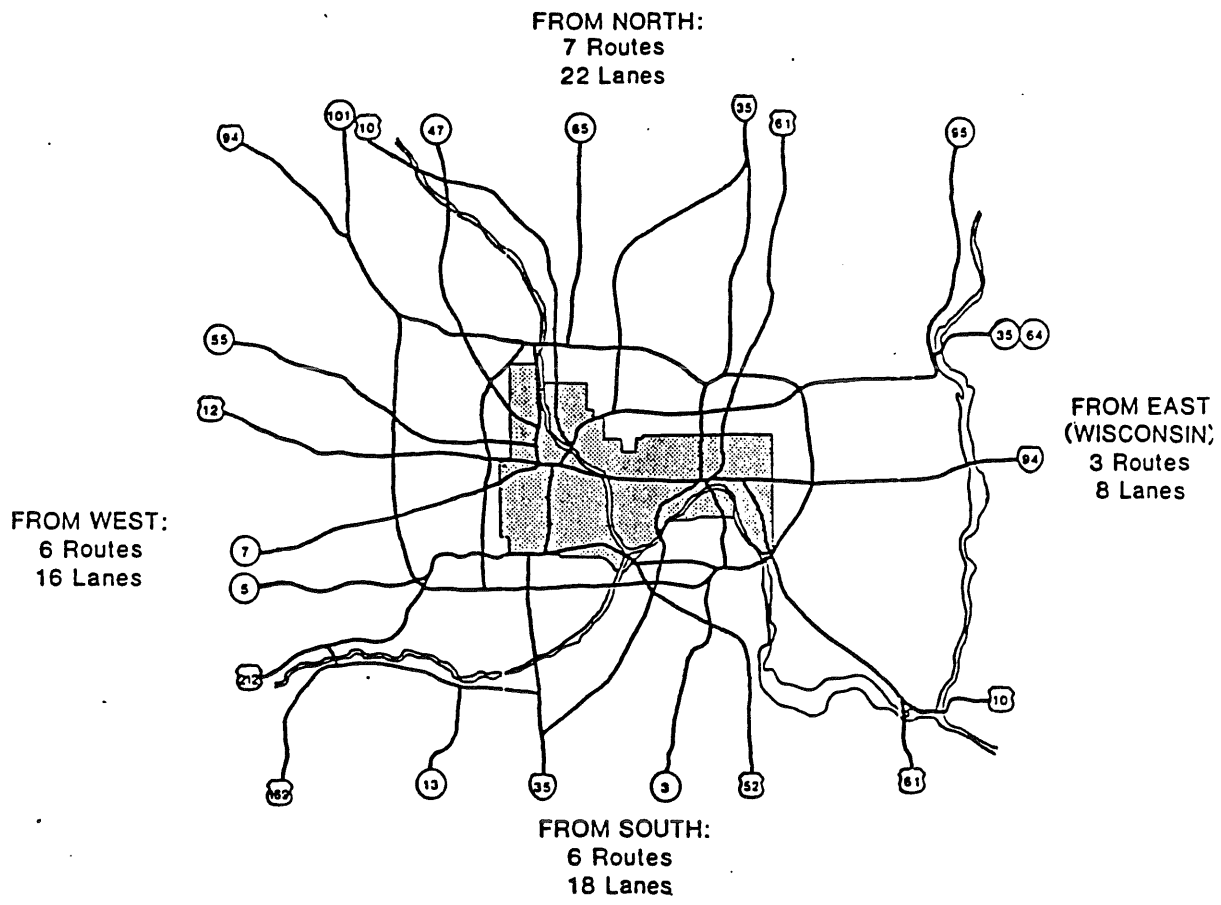


Figure 35

Interstate, Federal and State Highways Entering Twin Cities Metro Area

businesses could fail as a direct result of reduced traffic volume. In addition to inconveniencing shoppers, this could result in the loss or relocation of an indeterminate number of jobs.

Another potential adverse impact of the North Corridor is that it would generate pressure for adjacent commercial development in areas which are now rural, threatening the continuing viability of agriculture. The location and timing of new development cannot be predicted with precision, but the affected political jurisdictions can help control and manage growth through their zoning ordinances. In addition, the location of access points can be an important determinant of where development will occur. Large-scale development along Minnesota's North Corridor route would be contrary to the growth-control policies established by the Twin Cites Metropolitan Council, which has attempted to limit the extension of costly services in outlying areas.

Central and South Corridors, Minnesota

The economic impacts in these corridors are similar and can be addressed jointly. The most notable effect of these alternatives is that through traffic would be removed from the Stillwater CBD, reducing congestion. Again, this will benefit much of the downtown retail sector by making the area a more attractive place to visit, shop, and wander through.

Because these alternatives would route traffic along the current TH 36 commercial strip above the river bluffs, vehicle volumes would be preserved for traffic-sensitive businesses. However, the grade of the reconstructed TH 36 could be lower than the existing ground elevation. This might reduce the

visibility of many of these sites, which now have relatively unrestricted sight lines from the current highway. In addition, access will be more restricted than at present, limited to interchanges and frontage roads.

One or two small businesses would likely have to be acquired as a result of these alternatives, depending on the corridor and the exact alignment. Employment impacts would be relatively small.

All Corridors, Wisconsin

In Wisconsin, the North and South Corridor BUILD alternatives are likely to have the largest adverse economic impact, as they will divert highway traffic away from Houlton's traffic-sensitive businesses. This could also be a problem with the Central Corridor alignments, although access would be easier than with the other BUILD options.

In some of the South and Central Corridor alignments, a few small businesses could fall within the final right-of-way. Employment impacts would be minimal.

All alternatives are likely to generate development pressure in areas adjacent to the new STH 35/64, particularly where it interchanges with the existing highway network. Because of reduced travel times between St. Croix County and Minnesota, portions of western Wisconsin are likely to become more attractive residential and business locations, probably increasing land values in the area.

Summary of the BUILD Alternatives

A North Corridor decision would have the most adverse economic impacts of the BUILD alternatives by a wide margin. A Central or South Corridor location would produce the most beneficial set of impacts, while minimizing negative effects. The Stillwater City Council, the Stillwater Area Chamber of Commerce, and the Stillwater Downtown Business Association have formally expressed their preference for the South Corridor.

Retention of the existing bridge in connection with any of the BUILD alternatives would maximize economic benefits to downtown Stillwater and Houlton. Shoppers from Wisconsin would retain quick access to downtown businesses; without the bridge, the route from Houlton would be longer and more circuitous. Additionally, businesses in Houlton such as the liquor store and bank would maintain good accessibility to customers from the Stillwater area.

Potential Mitigation

Adverse economic impacts to businesses due to the rerouting of through traffic are not readily mitigated. However, the provision of appropriate access points and information signs are two techniques which might be used to diminish impacts.

As previously mentioned, the adverse effects associated with new development in rural areas can be reduced by thoughtful local planning.

FISCAL IMPACTS

The taking of private property for a public construction project reduces the tax base in the affected communities, at least in the short-term. In some cases, this reduction is temporary, as transportation improvements often stimulate new taxable development and/or encourage the conversion of property to uses which produce more tax revenue. With all of the BUILD alternatives, this is likely to be especially true in west-central Wisconsin, where a new river crossing will improve accessibility to employment and shopping opportunities in the Twin Cities and the Stillwater area, increasing property values. The NO-BUILD alternative should have no direct fiscal impacts in either state

The amount of useable space left within an affected jurisdiction can be an important influence on long-term fiscal impacts. When vacant or otherwise developable land is available, people displaced by public projects often move to a different location within the same taxing district. Sometimes, they may purchase or build property which is assessed higher than their previous dwelling. An affected community is less likely to retain its full tax base when there is little room for additional growth, as is now the case in Oak Park Heights. When property is permanently lost from the tax rolls, remaining residents may have to carry a proportionately higher tax burden in order to maintain service levels.

The significance of fiscal impacts on the affected local governments also depends on a number of other variables, including the amount of tax revenue lost and the size of total local tax levies. A jurisdiction with a much larger tax base is likely to be less affected by an impact of a given magnitude than a community with smaller tax revenues. Adverse fiscal impacts to Washington County, for example, are likely to be much less than those in Oak Park Heights because the tax loss will be a much smaller percentage of total receipts in the larger community. In

addition, the larger jurisdiction is more likely to retain the relocated people inside its boundaries.

The fiscal impact estimates included here are intended to be a means by which the effects of various alternatives can be compared; the figures are not meant to be exact predictions of lost tax receipts.[1] Because of revenue sharing in the seven-county metropolitan area, for example, the affected Minnesota districts will not actually "lose" the amounts listed. According to the Metropolitan Revenue Distribution Act, a portion of the marginal revenue accrued from new development in one municipality must be shared with other communities in the Metropolitan Area. Such redistribution would mitigate--but not eliminate--adverse impacts in Minnesota communities which lose property to construction, assuming that a BUILD decision is made.

Fiscal Impacts in Minnesota

In Minnesota, the area with the greatest concentration of fiscal impacts in the proposed corridors is located in Oak Park Heights. More specifically, the South and Central Corridor alternatives would have a substantial adverse effect on the cluster of hillside residences located below TH 36, just east of where it bends north towards downtown Stillwater.

Under a worst-case scenario, the alternative which would have the most substantial impact to residences in Oak Park Heights is the northern bridge alignment in the South Corridor (see appendix 3 for more information). The South Corridor tunnel approach follows this route closely and would have a similar fiscal impact. Overall, these two alternatives would have the greatest fiscal effects in Minnesota. The estimated market value of the affected property along these routes is $3,059,500, with a total property tax "loss" of $67,400. Approximately fifty-six improved properties would be affected by this option.

The other corridor alternatives result in fiscal impacts which are relatively similar. Of the remaining Minnesota alternatives, the gross tax receipts from affected improved properties would be as follows: North Corridor bridge ($51,400/twenty-six properties); "least case" south and central alignments, South Corridor bridge ($49,200/thirty-nine properties); Central Corridor bridge ($48,900/thirty-four properties); and North Corridor tunnel ($45,500/twenty-five properties).

All of the Minnesota Corridor routes would be in Washington County, but they would affect several cities and townships. South and Central Corridor bridge and tunnel impacts would be concentrated in the cities of Oak Park Heights and Stillwater. North Corridor bridge and tunnel alternatives would mainly affect Grant and Stillwater Townships. Among the affected local governments, Oak Park Heights ranks first in terms of total "lost" property tax revenue . With a northern alignment of a South Corridor bridge, or a South Corridor tunnel, Oak Park Heights would have $10,800 in property tax receipts affected. However, because the city has a comparatively large tax base, only 1.4 percent of the total 1987 tax levy would be impacted. The greatest percentage loss of local property tax revenue would occur in Stillwater Township under a North Corridor tunnel alternative. Although the affected property taxes would be modest, the local tax levy was also relatively small. As a result, the "loss" of local property tax revenues would be 2.3 percent of the total amount collected.

All of the Minnesota corridors lie within the boundaries of School District 834. The South Corridor tunnel and the northern alignment of a South Corridor bridge would have the most noteworthy effect on the district, both in terms of total impacted property taxes and percent loss of total district property tax revenues. The least impact on the school district among the BUILD alternatives would result from a Central Corridor bridge.

Fiscal Impacts in Wisconsin

In Wisconsin, all corridors would be contained within the boundaries of St. Croix County, affecting the towns of St. Joseph and, to a lesser extent, Somerset. ("Town" is the Wisconsin equivalent of township in Minnesota.) The greatest fiscal impact would be with the north alignment of the Central Corridor. The eleven improved properties along this route which would be affected have an estimated market value of $1,129,300, with local property taxes of $26,700. The gross tax receipts from af-

[1]The fiscal impact estimates are derived from affected parcels which include buildings--homes, farms, and a few businesses. The calculations are based on the value of the improvements, as well as the parcels which contain them. The figures do not include data from unimproved parcels required for right of way, most of which are assessed at low farmland rates.

fected improved properties in the other Wisconsin corridors are as follows: south alignment, Central Corridor bridge ($17,000/eleven properties); south alignment, South Corridor bridge ($15,400/four properties); north alignment, South Corridor bridge ($13,600/six properties); North and South Corridor tunnels (both $12,100/five properties); North Corridor bridge ($11,900/six properties; and central alignment, South Corridor ($3,600/two properties).

The principal reason why the Central Corridor has the highest values for the Wisconsin portion of the study area is because of the comparatively higher density of dwellings in and around Houlton. Even though much of this property has a lower estimated market value than some of the impacted farms in other corridors, the number of affected properties is substantially greater.

Most of the fiscal impacts in Wisconsin would be in the town of St. Joseph. The largest impact in St. Joseph would be with the north alignment of the Central Corridor: local tax receipts on affected property would total $1,200, approximately .05 percent of the 1988 tax levy. The least impact on St. Joseph would be with the central alignment of the South Corridor, which would result in a property tax loss of $200, about .01 percent of total levies.

Unlike Minnesota, the Build alternatives would affect a number of school districts in Wisconsin. All of the corridors would have some effect on the Hudson and Somerset School Districts, as well as Vocational-Technical District 1. (School district boundaries do not coincide with the town boundaries of the same name.) The greatest impact on the Hudson district would be with the north alignment of the Central Corridor, which would affect $15,500 in district property tax revenues, 1.00 percent of total collections. The largest impact on the Somerset district would be with a North Corridor bridge alternative: $4,700 in district revenues would be affected, 1.85 percent of the total. Wisconsin Vocational-Technical District 1 would be most affected by the north alignment of the Central Corridor: school property tax losses would be $1,900, 1.24 percent of the district's locally-collected revenue. Of the various Build alternatives, the central alignment of the South Corridor would have the least impact on all three districts.

Summary of Fiscal Impacts in Both Minnesota and Wisconsin

When data from Minnesota and Wisconsin are combined, the most substantial fiscal impacts would be with the north alignment of the South Corridor (see table 10) . This route would affect improved property with an estimated market value of $3,656,400, with gross property taxes of $81,000. A close second would be the South Corridor tunnel, which would result in property tax losses of $79,700.

The BUILD alternative with the least overall fiscal impact in the two states would be the central alignment of the South Corridor, which would affect property with an estimated market value of $2,311,900 and gross taxes of $52,800. The BUILD alternative with the second smallest impact on property taxes is the North Corridor tunnel, which would affect $57,600 worth of revenue.

Potential Mitigation

As mentioned earlier, one type of mitigation for fiscal impacts is the revenue sharing program in the Minnesota portion of the study area. In general, there should be little need for fiscal impacts mitigation, as long-term growth in local communities should more than make up for "lost" tax revenues. A possible exception to this is Oak Park Heights, which has comparatively little space for new growth. Taken from a regional perspective, a new river crossing is likely to stimulate more new economic development than under the NO-BUILD scenario.

TABLE 10
ESTIMATED FISCAL IMPACTS IN MINNESOTA AND WISCONSIN COMBINED*

BridgeAlternatives	Assesed Value	Estimated MarketValue	Gross Taxes	County Taxes	City/Twp Taxes	School Taxes	Other Taxes
South Corridor							
South Alignment	$1,070,200	$2,843,000	$64,600	$16,400	$ 8,700	$37,800	$3,900
Central Alignment	594,100	2,311,900	52,800	13,600	8,200	28,400	3,900
North Alignment	1,161,100	3,656,400	81,000	20,800	11,500	46,000	4,700
Central Corridor							
South Alignment	1,110,100	2,870,600	65,900	15,300	9,400	34,600	5,100
North Alignment	1,453,200	3,253,400	75,600	17,300	9,800	41,400	5,200
North Corridor							
(One Alignment)	1,001,600	3,193,600	63,300	17,600	5,800	41,100	1,800
Tunnel Alternatives							
North Tunnel	936,400	2,959,600	57,600	15,600	5,800	35,400	1,900
South Tunnel	1,100,600	3,588,900	79,700	20,400	11,400	44,800	4,700

*Based on taxes payable in 1988. Figures are based on affected improved properties in each corridor.

JOINT DEVELOPMENT

With the exception of a related transportation project in Wisconsin and possible multiple uses of highway right-of-way, none of the study alternatives are specifically linked with major development proposals in any of the affected communities. However, the choice which is eventually made--whether it is BUILD or NO-BUILD--will have an important impact on many aspects of the area's future. From this perspective, a decision on the river crossing alternatives is necessary to help study area communities, businesses, and citizens successfully plan for the future. Ideally, information included in the draft EIS and special studies will facilitate discussion about important issues facing the region.

The river crossing alternatives are separate but closely related to Wisc/DOT's plans to improve the STH 35/64 corridor between Houlton and New Richmond. The highway, which is heavily used by commuters and recreationalists, will be upgraded to a controlled access, four-lane expressway. While the improvements are planned regardless of what the river crossing determination is, a decision on the

latter is necessary before the project can be completed.

If a BUILD decision is made, Mn/DOT and Wisc/DOT will pursue the possibility of constructing a boat launch ramp, along which the principal agencies involved in managing the Lower St. Croix National Scenic Riverway. This effort would be consistent with the Memorandum of Understanding between the Federal Highway Administration and the Department of the Interior regarding Section 147 of the Federal-Aid Highway Act of 1976.

The development plans of Stillwater will be greatly influenced by the river crossing decision. The continuing downtown congestion which is inevitable with a NO-BUILD decision, for example, would have an adverse impact on Stillwater's efforts to emphasize its historical roots. It could also influence the kinds of businesses which would choose to locate in downtown Stillwater.

A Central Corridor BUILD decision would have important implications for Stillwater's plans for its waterfront. The City owns the stretch of property along the river from the lift bridge downstream to the Sunnyside Marina. Although the land south of Kolliner Park is currently leased for river barge operations, the agreement ends in 1998 and Stillwater would like to utilize the property, possibly in conjunction with Lowell Park. The recently released draft Stillwater Downtown Plan suggests various ways of maximizing the land's recreation possibilities, including the construction of walkways, picnic areas, fishing piers, and boating facilities. A Central Corridor bridge would cut through this area and dramatically change its land use potential.

The same is true of Stillwater's Kolliner Park, on the Wisconsin side. A new Central Corridor bridge would make the park less desirable for recreation. Potential development of recreation facilities will depend heavily on whether the existing lift bridge is retained, as it is the key link between downtown Stillwater and the park.

The river crossing location decision could have an important impact on some area businesses. For establishments located along TH 36 in Minnesota, for example, one critical issue is the economic impact of a North Corridor route. Businesses which rely heavily on a high volume of traffic (e.g., gas stations, fast food restaurants) for their success could be seriously hurt by a decision which diverts through traffic. In and around the Wisconsin portion of the study area, many businesses depend on having good access to the Twin Cities. This access will continue to deteriorate in the event of a NO-BUILD decision, and will affect the desirability of west-central Wisconsin as a business location. The disposition of the existing lift bridge will also have an effect on businesses in Houlton and Stillwater.

For individuals, a river crossing location decision could have a key influence on choices such as where to live, work, and shop. A BUILD/NO-BUILD decision will also have an important impact on the future of a number of farms, mainly in Wisconsin.

CONSIDERATIONS RELATING TO PEDESTRIANS AND BICYCLISTS

The overall impacts of a BUILD decision on pedestrians will be beneficial. The reason for this is that vehicle traffic in downtown Stillwater (where most pedestrian activity in the study area occurs) would be greatly diminished, making it easier, safer, and more pleasant for people on foot. Under a NO-BUILD decision, through traffic would continue to grow rapidly in downtown Stillwater, increasing conflicts with pedestrians.

Effects on pedestrians in other portions of the study area would be less notable. The most important impacts outside of downtown Stillwater would be along the current east-west TH 36 corridor in Stillwater and Oak Park Heights, and in Houlton. In the event of a South or Central Corridor BUILD decision, TH 36 will be converted to a limited access facility, and crossing opportunities will be fewer. On the other hand, the new crossings will be safer than previously. Compared to the other BUILD alternatives, the Central Corridor options would continue to have an adverse impact on pedestrian traffic in Houlton, as through traffic would continue to pass through the edge of the community.

Impacts on bicyclists would be more complex. First of all, the beneficial and adverse impacts mentioned above for pedestrians would also be true for bicyclists. Downtown Stillwater will be a safer and more enjoyable place for bicyclists with any of the BUILD corridors. Other bicycle impacts would depend on the specific alternative chosen. According to the Minnesota State Bicycle Transportation System Plan, TH 36 currently has an "unsatisfactory" rating for bicycling along its urban section in Stillwater, and a "poor" rating on the 3.5 mile segment east of the TH /County 5 junction. In the event of a South or Central Corridor BUILD decision, Mn/DOT will accommodate bicyclists along this route by either widening the shoulders and/or directing bike traffic off the main highway and on to frontage roads or alternate routes. A possible alternate route into downtown Stillwater would be TH /County 5

A North Corridor BUILD decision would directly affect bicycling on County Road 15 and TH 96. County Road 15 currently has paved shoulders and is classified as a Washington County bike route. The potentially affected section of TH 96 also has paved shoulders, and is rated by the State Bicycle Plan as being "satisfactory" for biking. In the event of a North Corridor river crossing, Mn/DOT will ensure that bicyclists can continue to safely use these routes either through adequate shoulders, frontage roads, or off-road bike paths. A North Corridor decision would greatly reduce vehicular traffic along the current TH 36, making it more suitable for bicyclists than it is now.

A North Corridor decision would also have a major effect on TH 95 between downtown Stillwater and TH 96. Because this would be the principal access route to Stillwater for people crossing the river from Wisconsin, traffic volumes would increase. According to the State Bicycle Plan, the stretch of TH 95 from Marine on St. Croix to Elm Street in Stillwater currently has 4 foot gravel shoulders and an "unsatisfactory" rating for bicycling; it has been given a high priority for improvement due to its popularity among cyclists and lack of parallel alternatives. In 1991, the section of TH 95 from Marine on St. Croix to TH 96 will be upgraded to include two 12 foot lanes and 6 foot bituminous shoulders, as recommended by the State Bicycle Plan. Currently, there are no plans to upgrade the stretch between TH 96 and Stillwater; any upgrading here would be complicated by lack of space under the rail bridge.

In the Wisconsin portion of the study area, the only designated bike route is along County Road E; the route runs east out of Houlton towards Burkhardt. None of the BUILD alternatives will affect biking along this corridor.

In the event of a BUILD decision, Mn/DOT will ensure that pedestrians and bicyclists have access to a river crossing. It is probable that any new river crossing would have facilities for non-motorized traffic. In addition, the existing bridge could continue providing an interstate route for pedestrians and bicyclists for as long as it remains in active use. Should the existing bridge remain open under a BUILD decision, its utility for non-motorized traffic would be improved due to the diminished vehicle traffic volumes. The existing bridge could provide excellent pedestrian and bicycle access to Kolliner Park, should Stillwater decide to develop facilities there at some point in the future. If NO-BUILD is the preferred alternative, the existing bridge could continue serving pedestrians and bicyclists, although high traffic volumes and lift interruptions would diminish its appeal.

Roadway bicycle improvements are generally done in conjunction with other road work, primarily construction, reconstruction, and reconditioning projects. Typically, resurfacing projects do not include shoulder widening, although gravel shoulders are sometimes upgraded to a bituminous shoulder of the same width. In the event of a NO-BUILD decision, trunk highways in the Minnesota study corridors which are currently deficient for bicycling purposes will be considered for upgrading when scheduled for major road work. A four foot bituminous shoulder is considered the minimum for a safe attached bicycle facility.

AIR QUALITY IMPACTS

OVERVIEW

Air quality impacts resulting from a new highway project can occur both during and after construction. Construction impacts include vehicle emissions from the operation of construction vehicles and/or from vehicles that are delayed or slowed by the road work. Additional impacts can occur from the generation of dust. The operation of vehicles after construction results in emissions from a variety of pollutants, including carbon monoxide (CO), hydrocarbons, nitrogen oxides, lead, sulfur oxides, particulates, and others.

In addition to construction-related impacts, the major focus of this analysis is on operational CO concentrations predicted for the study alternatives. Impacts on health can result from a relatively low level exposures to CO over short periods of time. Particular attention is given to forecasting future CO levels to determine whether they will be within the Federal and state standards established to protect human health.

Emissions of hydrocarbons and nitrogen oxides are of concern because chemical reactions can change them into ozone and smog. Analysis has shown that emissions of these pollutants from a single roadway are relatively minor. Problems resulting from ozone and smog formation are typically associated with large metropolitan areas where the density of all types of emissions is much higher than in the study area. These pollutants are not analyzed in detail in this section because the amounts are insignificant, and differences among the alternatives are not large enough to be meaningful.

Lead emissions are a result of gasoline additives used to reduce engine knock. The use of lead in gasoline is incompatible with catalytic converters, which are standard equipment on new vehicles. While these converters are designed to reduce CO emissions, an indirect effect of their use is that consumption of leaded gasoline is declining. Lead emissions are expected to continue to decrease and become a minor exhaust component. For this reason, an analysis of lead emissions is not included here.

Sulfur oxides and particulates are minor components of motor vehicles exhaust emissions. They are not emitted in sufficient quantities to provide significant impact levels, or to establish differences among the study alternatives.

The Clean Air Act Amendments of 1977 required all states to submit a State Implementation Plan (SIP) documenting control measures needed to attain the Federal Air Quality Standards. This project is in an area where the SIP is required to contain transportation control measures. The SIP was approved by the Environmental Protection Agency on June 16, 1980. The metropolitan planning organization passed a resolution on December 21, 1989 certifying that their transportation planning process fulfills all applicable Federal requirements; Mn/DOT concurred on December 29, 1989. The FHWA accepted the transportation improvement plan on January 31, 1990, and made the finding that the project was developed in accordance with the provisions of 23 CFR Part 450, Subparts A and B.

An Indirect Source Permit issued by the Minnesota Pollution Control Agency (MPCA) may be needed if traffic volume parameters are exceeded on specific alternatives. If a BUILD alternative is selected, additional analysis will be conducted on the specified design alternative.

For more information about the modeling methodology used in this section, consult Mn/DOT's Noise and Air Quality Impacts Special Study.

CONSTRUCTION IMPACTS

The construction of a new river crossing would have a temporary negative impact on air quality. Impacts would be localized near the center of construction activities. Construction operations could impact air quality in three ways:

1.) Vehicle delays during reconstruction will result in higher emission levels from affected vehicles.

2.) Construction vehicles and related equipment will provide additional emissions.

3.) Disruption of the existing ground cover in construction areas will generate dust.

Vehicle delays due to construction activities are not expected to be serious. Every effort will be made to minimize these impacts by maintaining smooth traffic flows in each direction throughout the construction period. Temporary lane closures will probably occur, but will be short-term.

Construction equipment emissions will be minimal. Construction equipment will not be concentrated at locations near any sensitive receptor sites, and any single piece of equipment will not result in serious pollutant concentrations. The majority of construction equipment is diesel powered; diesels generate minor levels of CO compared to non-diesel engines.

Dust will be generated by construction activities, but will be minimized by controlled adherence to transportation agency specifications and MPCA regulations. Dust control measures will include watering, application of calcium chloride, and/or street sweeping. Paving and replacement of vegetation will be done as soon as possible after site preparation.

OPERATIONAL IMPACTS

Overview of CO Impacts

Violations of the ambient air quality standards of CO have mainly occurred in central business districts of large metropolitan areas. Contributing factors often associated with these locations are as follows: signalized high volume intersections, pedestrian traffic (which causes additional traffic slowdowns), and a narrow roadway/sidewalk area confined by buildings. The nearness of receptor sites (any area where people might be exposed to vehicle emissions for time periods exceeding impact thresholds) is a major factor in these situations.

The dramatic improvement of CO levels around the country is the result of the catalytic converter. In addition to improvements achieved by retiring older vehicles without catalytic converters, emission levels decrease substantially with increasing speeds (see table 11). The slow speeds common in high volume, signalized intersections is a key reason why these areas frequently have CO problems.

TABLE 11

CO EMISSION RATES IN GRAMS PER VEHICLE MILE*

M.P.H.	1986	1994	2004
10	146.2	85.3	72.4
30	37.1	24.3	21.5
50	24.5	12.5	10.9

* These "worst-case" calculations assume 20 degree ambient temperature, free-flow cruise, standard vehicle mix, and 20 percent cold start.

The typical freeway interchange is designed to reduce the possibility that high volume through-traffic will be interrupted, as it is now in downtown Stillwater. In addition, air quality problems on freeways are diminished by wider right-of-way and the increased distances to potential receptor sites.

Measured and Predicted Ambient and Total CO Levels

The ambient CO levels illustrated in table 12 represent background concentrations from all sources except the highway facility being analyzed. Ambient data was measured at four sites in 1986, and predicted for the years 1994 and 2004.

TABLE 12
BACKGROUND (AMBIENT) CO CONCENTRATIONS (PPM)

	1986 1Hr./8Hr.	1994 1Hr./8Hr.	2004 1Hr./8Hr.
Boomsite	1.8/1.1	1.3/0.7	1.5/0.8
Houlton	0.9/0.6	0.7/0.4	0.8/0.5
Downtown Stillwater (Chestnut and Main)	6.7/2.8	4.8/2.0	5.5/2.3
TH 36./TH 95	3.2/2.0	2.3/1.5	2.7/1.7

Concentrations of CO resulting from vehicle operations on a specific roadway are estimated by using traffic flow, emissions, and dispersion modeling techniques. The total predicted CO concentrations discussed in the summary below are the sum of the local CO levels generated on the transportation facility in question, plus the background levels discussed above. Worst-case scenarios were analyzed for each of the alternatives under study.

The predicted CO concentrations are measured against the state and Federal air quality standards illustrated in table 13. For the purposes of this draft EIS evaluation, negative impacts occur when the predicted CO concentrations exceed these standards, which are established to protect the most sensitive segments of the population.

TABLE 13
STATE AND FEDERAL CO AIR QUALITY STANDARDS

	1-Hour Average* Concentration	8-Hour Average Concentration
State	30 PPM **	9 PPM
Federal	35 PPM	9 PPM

* These standards are not to be exceeded more than once per year.

** Parts Per Million.

SUMMARY AND CONCLUSIONS

A worst-case CO site analysis has been completed for the three highest volume intersections in the study area for the years 1994 and 2004. The results are illustrated in tables 14 through 17.

If a BUILD decision is made, no violations of standards are anticipated at any site for the hypothetical opening date (1994) or ten years afterward (2004). All of the BUILD alternatives would be very similar, although the North Corridor would have a marginally smaller overall effect on CO levels at some study locations.

The biggest difference among the alternatives would be between the BUILD and NO-BUILD options in downtown Stillwater, at the intersection of Chestnut and Main. As depicted in table 17, the NO-BUILD alternative at this location is the only design option which shows the potential for future CO problems, with a prediction of 7.7 ppm (the eight hour standard is 9 ppm) for the year 2004.

Because of ventilation requirements, tunnels would present additional CO challenges. The one hour CO standard for tunnels is 125 ppm, which could be met by a ventilation rate of 1.76 million cubic feet of air per minute (see appendix 4).

Ventilation buildings would be required on both sides of the river to handle air intake and exhaust for the tunnel. Exhaust chimneys would also be necessary on both sides of the river to disperse pollutants.

TABLE 14
YEAR 1994
PREDICTED CO CONCENTRATIONS
Peak Hour (Standard=30ppm)

	Study Alternatives				
	Existing	NO-BUILD	North	Central	South
1. Chestnut/Main					
Background	6.7	4.8	4.8	4.8	4.8
Roadway	5.7	5.9	2.4	2.4	2.4
Total (ppm)	12.4	10.7	7.2	7.2	7.2
2. TH 36/TH 95					
Background	3.2	2.4	2.4	2.4	2.4
Roadway	0.7	1.8	0.4	0.5	0.4
Total (ppm)	3.9	4.2	2.8	2.9	2.8
3. TH 36/TH 5					
Background	3.2	2.3	2.3	2.3	2.3
Roadway	0.9	0.6	0.4	0.7	0.7
Total (ppm)	4.1	2.9	2.7	3.0	3.0

TABLE 15
YEAR 1994
PREDICTED CO CONCENTRATIONS
Eight Hour (Standard=9 ppm)

	Study Alternatives				
	Existing	NO-BUILD	North	Central	South
1. Chestnut/Main					
Background	2.8	2.0	2.0	2.0	2.0
Roadway	4.5	4.7	2.0	2.0	2.0
Total (ppm)	7.3	6.7	4.0	4.0	4.0
2. TH 36/TH 95					
Background	2.0	1.5	1.5	1.5	1.5
Roadway	0.6	1.5	0.3	0.4	0.3
Total (ppm)	2.6	3.0	1.8	1.9	1.8
3. TH 36/TH 5					
Background	2.0	1.5	1.5	1.5	1.5
Roadway	0.7	0.5	0.3	0.6	0.6
Total (ppm)	2.7	2.0	1.8	2.1	2.1

TABLE 16
YEAR 2004
PREDICTED CO CONCENTRATIONS
Peak Hour (Standard=30 ppm)

	Study Alternatives				
	Existing	NO-BUILD	North	Central	South
1. Chestnut/Main					
Background	6.7	5.5	5.5	5.5	5.5
Roadway	5.7	6.8	2.8	2.8	2.8
Total (ppm)	12.4	12.3	8.3	8.3	8.3
2. TH 36/TH 95					
Background	3.2	2.7	2.7	2.7	2.7
Roadway	0.7	2.1	0.5	0.6	0.5
Total (ppm)	3.9	4.8	3.2	3.3	3.2
3. TH 36/TH 5					
Background	3.2	2.7	2.7	2.7	2.7
Roadway	0.9	0.7	0.5	0.8	0.8
Total (ppm)	4.1	3.4	3.2	3.5	3.5

TABLE 17
YEAR 2004
PREDICTED CO CONCENTRATIONS
Eight Hour (Standard=9 ppm)

	Study Alternatives				
	Existing	NO-BUILD	North	Central	South
1. Chestnut/Main					
Background	2.8	2.3	2.3	2.3	2.3
Roadway	4.5	5.4	2.2	2.2	2.2
Total (ppm)	7.3	7.7	4.5	4.5	4.5
2. TH 36/TH 95					
Background	2.0	1.7	1.7	1.7	1.7
Roadway	0.6	1.7	0.4	0.5	0.4
Total (ppm)	2.6	3.4	2.1	2.2	2.1
3. TH 36/TH 5					
Background	2.0	1.7	1.7	1.7	1.7
Roadway	0.7	0.5	0.4	0.6	0.6
Total (ppm)	2.7	2.2	2.1	2.3	2.3

NOISE IMPACTS

INTRODUCTION AND OVERVIEW

Noise is a major impact associated with highways. Traffic noise is created by all types and sizes of vehicles, with considerable variability occurring because of differences in engines, mufflers, and tires.

Noise is measured in units called decibels (dB). Because people react to some frequencies more than others, measurements, studies, and predictions of highway noise are conducted using a weighted "A" scale referred to as dBA, which includes only those sounds humans can hear.[1] Noise levels on the A scale are quantified according to both magnitude and frequency of occurrence. For example, $L_{10}65$ dBA means that a noise level of 65 dBA is exceeded 10 percent of the time.

Land uses adjacent to the corridors under study vary broadly from agriculture, commercial, and residential, to the St. Croix River itself, with its variety of uses. Because of these land use differences, impacts will vary between areas, even when identical noise levels are generated. The sensitivity of various areas to noise impacts is reflected in the different categories of state and Federal noise impact standards and criteria.

Because wide corridors and multiple design options are still being considered, a "worst case" alignment was used for all corridors in order to determine the greatest possible impacts.

NOISE LEVEL STANDARDS AND CRITERIA

The relevant noise standards and criteria established by the Minnesota Pollution Control Agency (MPCA) and the Federal Highway Administration (FHWA) are presented below in table 18. Wisconsin uses the FHWA criteria.

NOISE PREDICTION MODEL

The Federal Highway Traffic Noise Prediction Model (Report number FHWA-RD-77-108, December, 1978) was used to estimate present and predict future noise levels. The model utilizes three classes of vehicles--automobiles, medium trucks, and heavy trucks. Peak hour traffic volumes for existing conditions, as well as for the design year 2014 were used in the model predictions.

Various adjustments are provided in the model for vehicle speeds, noise shielding, and distance, as noted below:

* Vehicle Speed: It has been assumed that the posted speeds will generally remain the same as present, although appropriate speeds have been projected where future changes are likely.

TABLE 18
MPCA AND FHWA NOISE STANDARDS AND CRITERIA

	(L_{10} dBA Levels)	
Land Use Area	MPCA[2]	FHWA
Residences and lodgings, hospitals, farmhouses, and camping areas[1]	65	70
Schools, churches, and libraries	65	70
Parks and recreation areas	70	70
Commercial and retail	70	75
Industrial and agricultural land	80	75

(The above levels are for exterior use areas only.)
[1]MPCA night standards have a 10 dBA lower level and are applicable between 10:00 p.m. and 7:00 a.m. for land uses which have overnight sleeping.
[2]A L_{50} standard also applies to all land uses.

[1]For reference, a 2-3 dBA change is barely noticeable to the human ear under laboratory conditions, while a 5 dBA change is perceptible. A 10 dBA increase represents a doubling of the noise level.

* Shielding: No shielding is assumed in order to provide the worst case noise levels. In reality, some shielding (and thus an associated drop in noise levels) due to earthwork, vegetation, and building obstructions will be present.

* Distance: Distances are measured from the centerline of roads. A hard ground roll off factor (-3 dBA) was used in lieu of a soft ground factor (-4.5 dBA) for distance attenuation. This also gives a worst case scenario for sites, especially for those located at distances greater than 200 feet. At 800 feet from the highway, a hard ground roll off factor amounts to a noise level that is 6 dBA higher than if a soft ground factor was used.

OTHER EVALUATIONS

As illustrated in Table 18, MPCA standards also include nighttime levels, as well as levels not to be exceeded more than 50% of the time (L_{50}). This study employs a worst-case analysis (unshielded, daytime peak-hour with hard roll-off factor) for the year 2014, in order to most clearly establish the predictable differences among the BUILD and NO-BUILD Alternatives. Inclusion of nighttime or L_{50} data would not present any additional useful comparisons.

NOISE IMPACTS IN THE STUDY CORRIDORS

No impacts to commercial or industrial uses are likely. As listed below, the affected areas have been separated into five areas to better illustrate the differences between the alternatives (see Figure 36).

AREAS

1. Common section along TH 36--Co. Rd. 15 to TH 95

2. Central section along the river--TH 95 corridor, from TH 36 to the river crossing.

3. North section--TH 36 to TH 96 (along Co. Rd. 15), then east to the river.

4. All Wisconsin corridors.

5. Tunnels/bridge river crossings.

1. Common Section Area

Existing peak-hour traffic noise along this 4-lane segment at adjacent receptor sites averages $L_{10}66$ dBA. This could increase to $L_{10}71$ dBA under the NO-BUILD alternative. Under the Central and South Corridor BUILD alternatives, this could increase to $L_{10}72$ dBA.

Properties exceeding FHWA criteria:

- NO-BUILD: 21 residential sites exceed criteria by 1 dBA.

- Central Corridor: 9 residential sites exceed criteria by 2 dBA.

- South Corridor: 9 residential sites exceed criteria by 2 dBA.

Properties exceeding MPCA Standards:

- NO-BUILD: 51 residential sites exceed standard by up to 6 dBA.

- Central Corridor: 57 residential sites exceed standard by up to 7 dBA.

- South Corridor: 57 residential sites exceed standard by up to 7 dBA.

Mitigation to achieve the MPCA Standard is possible on this segment for the Central and South Corridor BUILD alternatives.

2. Central Corridor River Area

Existing peak-hour traffic noise along this 2-lane segment at adjacent receptor sites averages $L_{10}65$ dBA. This could increase to $L_{10}68$ dBA under the NO-BUILD alternative. Under the Central Corridor BUILD alternative, this could increase to $L_{10}71$ dBA.

Properties exceeding FHWA Criteria:

- NO-BUILD: 0 residential sites exceed criteria.

- Central Corridor: 6 residential sites exceed criteria by 1 dBA.

Properties exceeding MPCA Standards:

- NO-BUILD: 11 residential sites exceed standard by up to 3 dBA.

- Central Corridor: 32 residential sites exceed standard by up to 6 dBA

Mitigation to achieve the MPCA Standard in this segment will not be practical because the residential sites are located well above the roadway, and barriers would not be effective.

3. North Corridor

Existing peak-hour traffic noise along this corridor is below $L_{10}60$ dBA at most adjacent receptor sites. A NO-BUILD decision would not likely increase noise levels above $L_{10}65$ dBA. Under the North

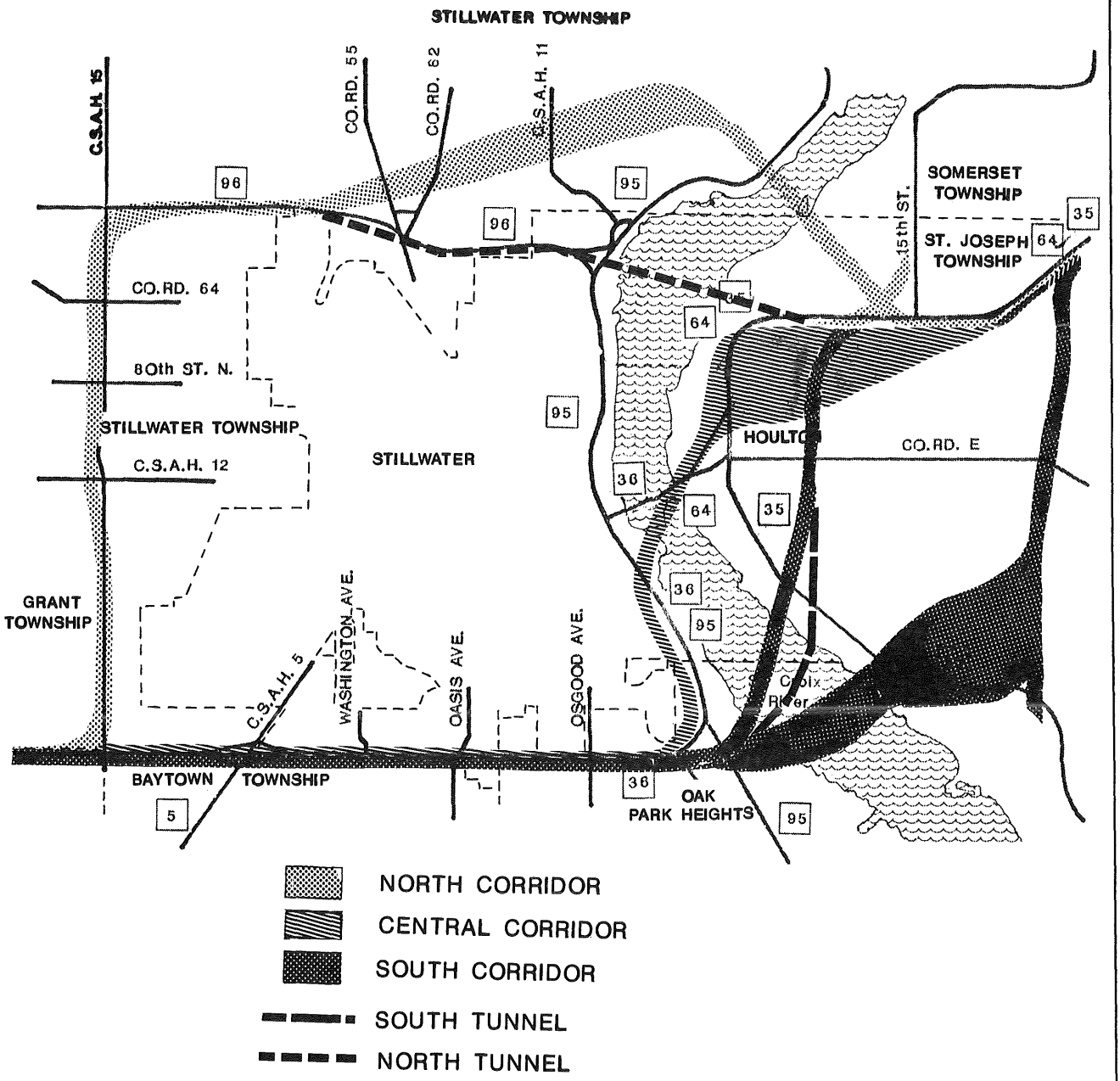


Figure 36
Corridor Alternatives

Corridor BUILD alternative, this could increase to $L_{10}68$ dBA.

Properties exceeding FHWA Criteria:

- NO-BUILD: 0 residential sites exceed criteria.

- North Corridor: 0 residential sites exceed criteria.

Properties exceeding MPCA Standards:

- NO-BUILD: 0 residential sites exceed criteria.

- North Corridor: 47 residential sites exceed criteria up to 2 dBA.

Mitigation to achieve the MPCA Standard in this corridor will probably not be practical. Development is widely spaced along four miles of roadway.

4. Wisconsin Corridors (FHWA Criteria)

In the Wisconsin corridors, the receptor sites are generally widely spaced, and noise would affect fewer people than in Minnesota. Only the Central Corridor alternative would affect more than 4 sites, with an alignment that goes through a portion of Houlton and skirts a trailer court. Under a worst-case scenario, FHWA criteria ($L_{10}70$ dBA) would be exceeded by 1-3 dBA at up to 15 sites in the Central Corridor, but impacts could be mitigated by measures such as earth mounds or short walls.

5. Tunnels/Bridge River Crossings

Noise levels around the approaches of a North and South Corridor tunnel would be similar to the impacts from a bridge approach. Of course, no noise would be audible from vehicles passing under the river. The net effect would be that residential noise impacts would be similar to a bridge in the same area, while effects on river users would be eliminated.

The sound envelopes around the various bridge proposals would be similar (see figure 37). This is assuming that safety barriers/parapets are 32 inches high, made of concrete, and continuous along the edge of the bridge. It is also assumed that the bridge deck is made of a solid material such as concrete. If no concrete safety barriers are employed, then the anticipated noise envelope would expand outward, and a $L_{10}65$ dBA level would reach the river surface. A high bridge would have slightly less impact on river users than a low (e.g., 60 foot) bridge.

For noise evaluation purposes, the river is considered to be a park and recreation area, with Federal and state standards of $L_{10}70$ dBA. No areas of the river adjacent to any of the potential crossing sites would exceed this level. Listed below are the specifics for each of the bridge alternatives:

*North Corridor alternative (High Bridge)--an increase of 10-15 dBA above the existing levels would result, with a peak level of $L_{10}60$ dBA. Nighttime noise will not exceed a $L_{10}55$ dBA level.

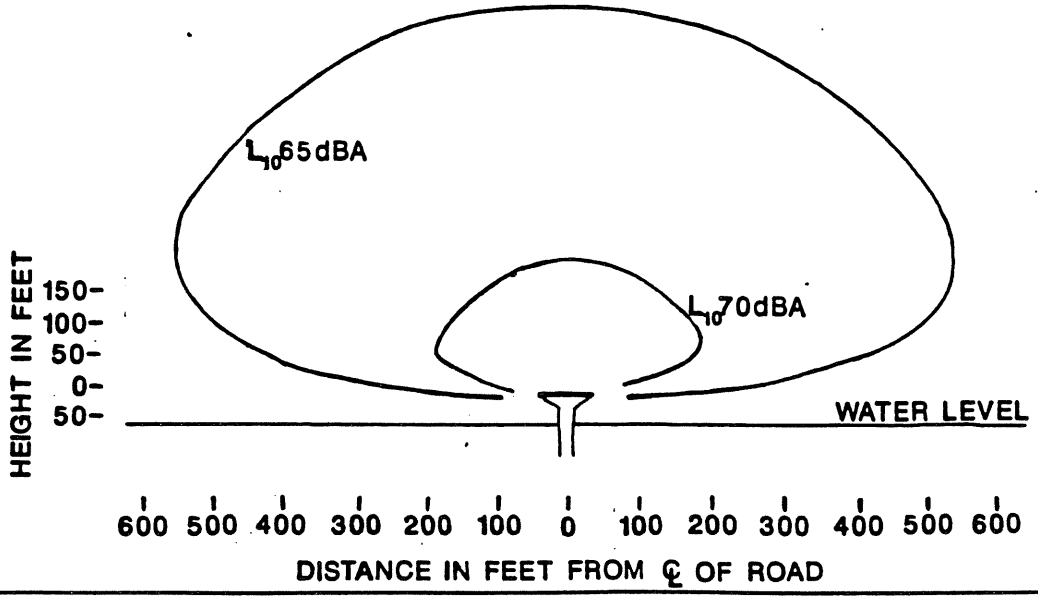


Figure 37

Bridge Sound Envelope

*Central Corridor alternative--an increase of 5 dBA above the existing levels would result, with a peak slightly below $L_{10}65$ dBA.

*South Corridor alternative--similar to Central Corridor.

SUMMARY AND CONCLUSIONS

MPCA Standards (Minnesota)

As depicted in figure 38, pre-mitigation traffic noise impacts in Minnesota would be the greatest with a Central Corridor Build alternative--89 residences would be affected by noise levels which are higher than state standards. However, mitigation efforts could reduce the number of impacted residences to about 30 homes.

In the North Corridor, a BUILD alternative would result in 47 residences being above Minnesota Standards. While this is the lowest number among the alternatives, no mitigation would be practical here due to the low development density. The end result is that North Corridor noise impacts would actually be the greatest of any of the BUILD possibilities.

Along the South Corridor, 57 residences would receive noise impacts which are above the permissible Minnesota level. After mitigation efforts, no residences would be above the standard. Among the BUILD alternatives then, the South Corridor has the potential for the least noise impacts.

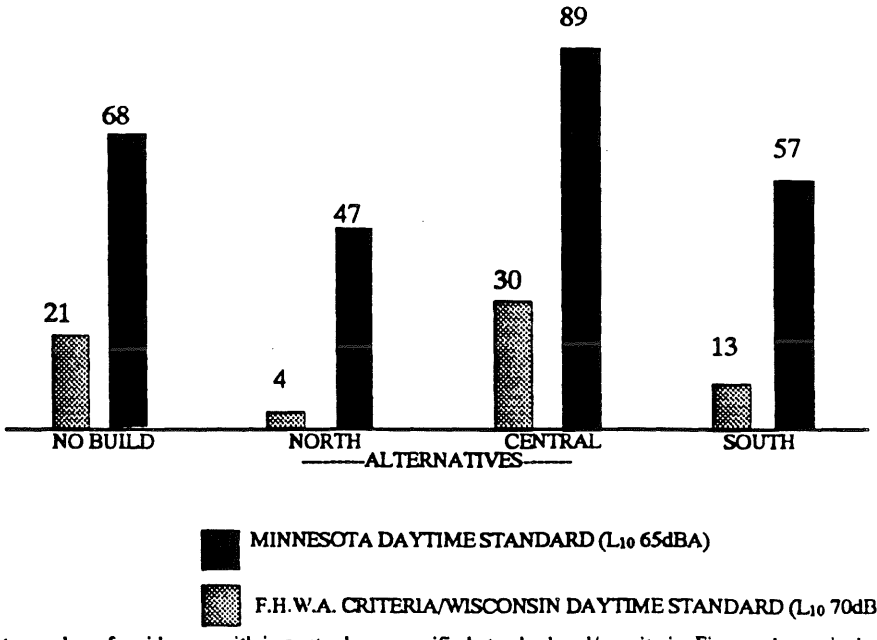
The NO BUILD alternative would result in 68 residences being above the Minnesota noise standard. Noise impacts would be greater than with any of the BUILD alternatives.

FHWA Criteria/Minnesota and Wisconsin

Using FHWA criteria, the Central Corridor would have the most serious noise impact, with about 30 residences affected in both Minnesota and Wisconsin--15 in each state.

Mitigation measures would likely be possible to protect many of the affected Central Corridor sites. Based on the worst-case studies completed to date, the DOTs intend to install one noise abatement barrier near the junction of STH 35 and STH 64 in Houlton, Wisconsin, and another along the north side of TH 36 in Minnesota, west of Beach Road.

FIGURE 38
RESIDENTIAL NOISE IMPACTS BY ALTERNATIVE*
(By Number of Residences)



*Numbers indicate number of residences with impacts above specified standard and/or criteria. Figures do not include the effects of mitigation.

According to preliminary information, each barrier would be 10 feet high, approximately 1,500 feet long, and cost $150,000 to construct. It is estimated that the barriers would result in a 5-7 dBA noise reduction for 4 affected residences in Wisconsin and 9 residences in Minnesota.

The South Corridor would affect about 13 sites in the two states, 4 of which would be in Wisconsin. It is probable that mitigation could be used to keep most of the affected sites below the FHWA criteria. Mitigation in Minnesota would likely include the same noise barrier and reductions described above for the Central Corridor, with 9 affected residences. Mitigation would probably not be feasible in the Wisconsin portion of the South Corridor because of the low residential density.

The North Corridor alternative would affect the least number of sites, about 4. All of these would be in Wisconsin. Mitigation is not likely to be economically practical due to the dispersed nature of the development.

In sum, the BUILD alternatives may require exceptions to FHWA criteria at a few scattered sites. If this is the case, noise levels would only exceed the criteria by about 1-3 dBA. The NO BUILD alternative would result in about 21 sites being over the FHWA criteria, all of them in Minnesota. If during the final design process conditions prove to be substantially different from those assumed here, the noise abatement measures described above might not be provided. A final decision on the installation of abatement measures will be made upon completion of the project design and public involvement process.

WATER QUALITY AND FISHERIES

Water quality in the St. Croix River is generally good, although oxygen depletion can occur during the summer in bottom waters. The section of the river near Stillwater is more like a mildly eutrophic lake than a river, partially due to water control structures further downstream on the Mississippi River.

A wide variety of aquatic life is found in the St. Croix, including populations of walleye, bass, northern pike, and other important game fish. Sport fishing and other water-based forms of recreation are extremely popular on the river. A more detailed analysis of water quality impacts and a listing of St. Croix aquatic life is found in the special study on natural resource impacts.

Brown's Creek, which would be affected by a North Corridor route, is a Minnesota DNR-designated trout stream. Brown's Creek impacts and mitigation are discussed in the floodplains and threatened and endangered species sections of the draft EIS, and in the above mentioned special report.

IMPACTS ON WATER QUALITY AND AQUATIC LIFE

The only potentially major impacts of a BUILD decision on St. Croix water quality and aquatic life would be caused by construction-related activities which disturb bottom sediment. Water quality impacts in the river would be temporary. In general, impacts on aquatic life are expected to be transitory, but will depend on the type of crossing and the method of construction. Of the BUILD options, a bridge would cause the least effect because bottom disturbances would be concentrated around piers. Aquatic impacts are likely to be least severe with a North Corridor bridge, which could probably be built without the need for piers on the river bottom.

Tunnel construction could cause a degradation of water clarity and a substantial increase in suspended solids downstream from the work area. Increased turbidity reduces light penetration in the water, and can alter biological productivity. The possibility exists for long-term effects to benthic (bottom dwelling) organisms near the construction zone following completion of a tunnel. In addition, there could be secondary impacts on aquatic communities for some distance downstream. Because of their mobility, fish would likely move away from the disturbed area. However, the spawning activity of some fish may be affected during construction. Additionally, secondary impacts on fish are possible due to the disruption of benthic food sources. Assuming there are no long-term impacts on the benthic organisms, impacts on fish should be limited to the construction period.

Aquatic impacts resulting from a tunnel will be partially determined by the type of construction method and/or dredging technology used. In general, aquatic impacts will be diminished to the extent that the disturbance and downstream distribution of bottom sediments can be minimized. In the sections which follow, the principal types of tunnel construction and their likely impacts will be summarized. For more information on tunnels, see the Mn/DOT special tunnel report.

Immersed Tube Tunnel

The impacts associated with the immersed tube construction method result from the preparation of a dredged trench on the river bottom, and from the construction and operation of a temporary drydock which is sometimes needed to build the tube sections.

Dredging the trench would cause localized increases in turbidity and suspended solids, the magnitude depending upon the method chosen for dredging. In the area around the trench, hydraulic dredging (as compared to mechanical methods) with land deposition would have the least effect. However, a suitable area would be needed for on-shore settling basins to reduce turbidity in water returning to the river.

Following construction of the trench, gravel or some other stable material would be spread over the bottom, and the tunnel sections would be floated out and lowered into place on the river bed. Once the segments have been properly connected, the sides and top of the tunnel can be backfilled, and the riverbed restored. Overall, the long-term aquatic impacts from the construction of an immersed tube tunnel are likely to be minor.

Earth Pressure Balance Shield Tunnel

Tunnel construction of this type would occur below the existing bed of the river. A rotary cutting head would excavate material from the river bed, and it would be removed through an attached tube. Consequently, impacts to the surface of the river bed are expected to be minimal. Some settling and compaction could occur in areas above the cutting head due to vibration. Localized increases in turbidity and suspended solids are apt to result, possibly affecting benthic organisms in the immediate area for a short period of time. The environmental impacts from the shield method would probably be less than for the other tunneling methods.

Cut and Cover Tunnel

Cut and cover tunnel construction would occur directly on the river bottom, causing major, widespread, and possible long-term disruptions to the aquatic environment. Benthic organisms around the site would be harmed by siltation resulting from the construction of cofferdams and increased scour due to more rapid flow in the constricted river channel. The narrowing of the river by coffer dams could also limit boat traffic and create navigation hazards. A cut and cover tunnel is apt to have the greatest construction-related impact of any of the subaqueous methods described here. However, should a tunnel become the preferred alternative, this method is the least likely to be used.

MITIGATION

The most important mitigation for aquatic and water quality impacts is discussed in the Threatened and Endangered Species section, and involves measures to protect any populations of Higgins' Eye Pearly Mussels (or any other mussels) from construction activity. Every effort will be made to minimize disturbing bottom sediment, and to see that it is transported and deposited safely on-shore. Construction-related debris will be kept out of the river to the greatest extent practicable. All appropriate erosion control measures will be followed during construction to protect water quality. If a bridge is the preferred alternative, runoff will--if at all feasible-- be routed to holding ponds, rather than being allowed to flow directly into the St. Croix River.

NO-BUILD DECISION

There are a number of water quality impacts associated with a NO-BUILD decision. First, the existing bridge does not have the advanced road drainage that a new structure would likely have; runoff from the lift bridge goes directly into the river. Should a hazardous spill occur, for example, the chances that the material would enter the river are greater on the old bridge than they would be with a new river crossing. Furthermore, it is possible that the collection of an increasing number of boats waiting for the lift to open during pleasant summer days contributes to water quality degradation. Removal of the existing bridge, or increasing lift "up" times would help diminish the concentration of idling watercraft in front of Stillwater.

PERMITS AND APPROVALS

The list which follows includes the permits and approvals required for this project, and the agencies which issue them. In addition to the agencies listed below, extensive involvement with the National Park Service and the Minnesota and Wisconsin Historic Preservation Offices occurred as part of the environmental review process. Refer to the Comments and Coordination section of this draft EIS for more information.

FEDERAL

*Section 9 Permit: Construction of a bridge over navigable waters in the U.S.--(Coast Guard)

No substantial, long-term effects on navigation will occur as a result of any of the BUILD alternatives. Any new piers constructed in the St. Croix River will be kept out of the navigation channel. In the event of a Central Corridor BUILD decision, the Coast Guard would be willing to reduce its minimum river bridge clearance to 45 feet, if this is required.

*Section 10 Permit: Work in navigable waters of the U.S.--(Army Corps of Engineers/COE)

*Section 404 Permit: Discharge of dredged or fill material into U.S. waters--(COE)

No major fill activities in the St. Croix River would result from any of the BUILD alternatives. If a bridge becomes the preferred alternative, some dredging would be required around pier placements. As discussed in the water quality and fisheries section of this draft EIS, the tunnel alternatives could require extensive dredging on the river bottom. The precise locations of dredge sites and sediment disposal areas will be discussed in the final EIS, if a BUILD decision becomes the preferred alternative.

STATE OF MINNESOTA

*Section 401 Certification of Federal Permits--(Minnesota Pollution Control Agency/MPCA)

*Air Quality Indirect Source Permit--(MPCA)

*Protected Waters Permit--(Minnesota Department of Natural Resources/Mn/DNR)

*State EIS Adequacy Determination--(Minnesota Department of Transportation/Mn/DOT)

STATE OF WISCONSIN

*Section 401 Certification of Federal Permits--(Wisconsin Department of Natural Resources/WDNR)

LOCAL

*Municipal plan approval is required by affected Minnesota communities.

WETLAND IMPACTS

THE UTILITY AND PROTECTION OF WETLANDS

Wetlands are valuable natural resources which, over the past century, have been greatly diminished by human activity. Long considered to be useless or wasted areas, it has become increasingly apparent that wetlands serve a number of critical functions, including the following: groundwater recharge and discharge; flood control and desynchronization; sediment trapping; nutrient retention and removal; food chain support; and habitat for fish and wildlife.

Because of the growing recognition of the importance of wetlands, there has been increasing interest at both the Federal and state levels in preservation measures. In 1977, for example, President Carter issued Federal Executive order 11990, which established a national policy "to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands..." The policy further aimed "to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative."

In accordance with President Carter's Executive Order, the U.S. Department of Transportation issued Administrative order 5660.1A. This order states that "transportation facilities and projects should be planned, constructed, and operated to assure the protection, preservation, and enhancement of the nation's wetlands to the fullest extent practicable."

Also at the Federal level, work in wetlands can fall within the Section 404 permit authority of the U.S.

Army Corps of Engineers. The U.S. Fish and Wildlife Service advises the Corps on wetland impacts associated with a particular project; in addition, the EPA has review and comment authority.

At the state level, Minnesota wetlands are protected by the Department of Natural Resource's (DNR) "Protected Water" Program. The DNR has legal authority over particular types of wetland basins of at least 10 acres in size in rural regions and 2.5 acres in incorporated areas. In Wisconsin, the state DNR has the responsibility for making regulatory and management decisions affecting wetlands.

For more detailed information about wetlands, both generally and in the study area in particular, see the Natural Resource Impacts Special Study.

WETLAND IMPACTS IN THE STUDY AREA

A large number of wetlands are located in the study area (see table 19 and figure 39). By far the greatest concentration of wetlands is in the North Corridor, mainly north of TH 96, along or adjacent to the bridge alignment. The least potential for wetland impacts among the BUILD alternatives is in the Central Corridor. The NO-BUILD alternative would have no direct effect on wetlands in the study area.

The wetland impacts estimated for the draft EIS represent a worst-case scenario. Potential impacts were calculated by assuming that all wetlands within each corridor would be affected by construction. In reality, the width of the study corridors is substantially greater than the limits of the actual right-of-way which would need to be acquired. Because many of the wetlands within any given corridor would not be affected by construction, actual wetland impacts resulting from a BUILD decision would very likely be less than those estimated here. Nonetheless, substantial wetland impacts are possible if the North Corridor is selected as the preferred alternative.

As indicated by table 20, wetlands in the North Corridor total nearly 58 acres, compared to 5.6 in the South Corridor and 2.4 in the Central Corridor. The North Corridor contains 23 wetlands, compared to 5 in the South Corridor and 1 in the Central Corridor. The vast majority of potentially affected wetlands are in Minnesota; less than one acre of wetlands are located inside one of the Wisconsin BUILD corridors.

In the special study on natural resource impacts prepared by Mn/DOT, the effect on study area wetlands was quantified according to impacts on wildlife habitat. This was accomplished by multiplying the estimated wetland acreage impacted in each corridor by the Habitat Suitability Index (HSI) value for each wetland type. The product, which is called total Habitat Unit (HU) loss, provides a means by which the impacts on wetland wildlife habitat in the various corridors can be assessed and compared. The "worst-case" loss of Habitat Units would be 1169 under the North Corridor option, compared to 296 with the South Corridor and 38 with the Central Corridor.

MITIGATION

When feasible, it is preferable to avoid adverse impacts to wetlands by adjusting corridor alignments. If there is a BUILD decision, the location of wetlands will be an important consideration in making the final alignment determination. Should impacts to wetlands be unavoidable, they can be reduced by a number of measures. For example, steeper inslopes can be used on roadsides near wetlands to minimize encroachment. In addition, compensation for losses can occur through the creation of new wetlands within the project area boundaries, on or adjacent to Mn/DOT right-of-way. Another possible mitigation measure involves modifying wetlands which exist on Mn/DOT's right-of-way to improve their value for wildlife.

It is not always possible or practical to construct appropriate mitigation projects within or near the right-of-way where impacts occur. In some cases, for example, it can be prudent to construct a single large mitigation project away from the affected area to compensate for many small wetland impacts which have occurred in the new highway corridor. Impacts to Minnesota wetland habitat which can not be compensated within Mn/DOT right-of-way will be nominated for inclusion in the Metro District's Wetland Habitat Mitigation Bank (WHMB). In the WHMB system, Mn/DOT will create new wetlands or enhance existing ones as compensation for those which are taken during construction projects. WHMB mitigation which is not feasible within the study area will occur elsewhere within the boundaries of Mn/DOT's Metro District. Mn/DOT will select appropriate mitigation in coordination with the U.S. Fish and Wildlife Service, the DNR, and any other appropriate agencies.

TABLE 19
WETLANDS IN STUDY AREA BY TYPE AND SIZE

Wetland No.	Corridor Location	Wetland Type	Size (Acres)
1	South	3	0.5
2	South	2/3	1.8
3	None	2/3	1.4
4	None	2	0.3
5	None	5	5.5
6	Central/South	5	2.4
7	North	2	1.1
8	North	2	0.6
9	North	2/6	5.1
10	None	2.6	12.0
11	North	2	0.3
12	North	2	0.1
13	North	2	0.1
14	North	2	0.2
15	North	3	1.2
16	None	2	0.2
17	North	2	0.2
18	None	2	1.1
19	None	2	0.1
20	None	2	0.5
21	None	2	0.5
22	None	2	3.4
23	None	2	0.4
24	None	5	4.9
25	North	3	0.5
26	None	2	0.4
27	None	2	0.5
28	North	2	0.2
29	North	2	0.1
30	North	2	0.2
31	None	2	0.3
32	North	3	0.4
33	North	2	0.4
34	North	2	0.2
35	North	2	1.5
36	North	2	.4
37	North	2	1.4
38	North	2/6	40.0
39	None	2	10
40	None	6	7
41	None	2	30.0
42	None	2	50.0
43	North	2	1.0
44	None	2	26.0
45	None	2/6	19.4
46	None	3	11.5
47	South(WI)	3	0.8
48	South(WI)	5*	0.1
49	None(WI)	5*	0.1
50	None(WI)	5*	0.1
51	None(WI)	5*	0.1
52	North	3	1.2
53	None	2	4.0

* These wetlands are stockponds located in pastures or crop fields.

A description of wetland types is found in appendix 5. Wetlands are mapped in figure 39.

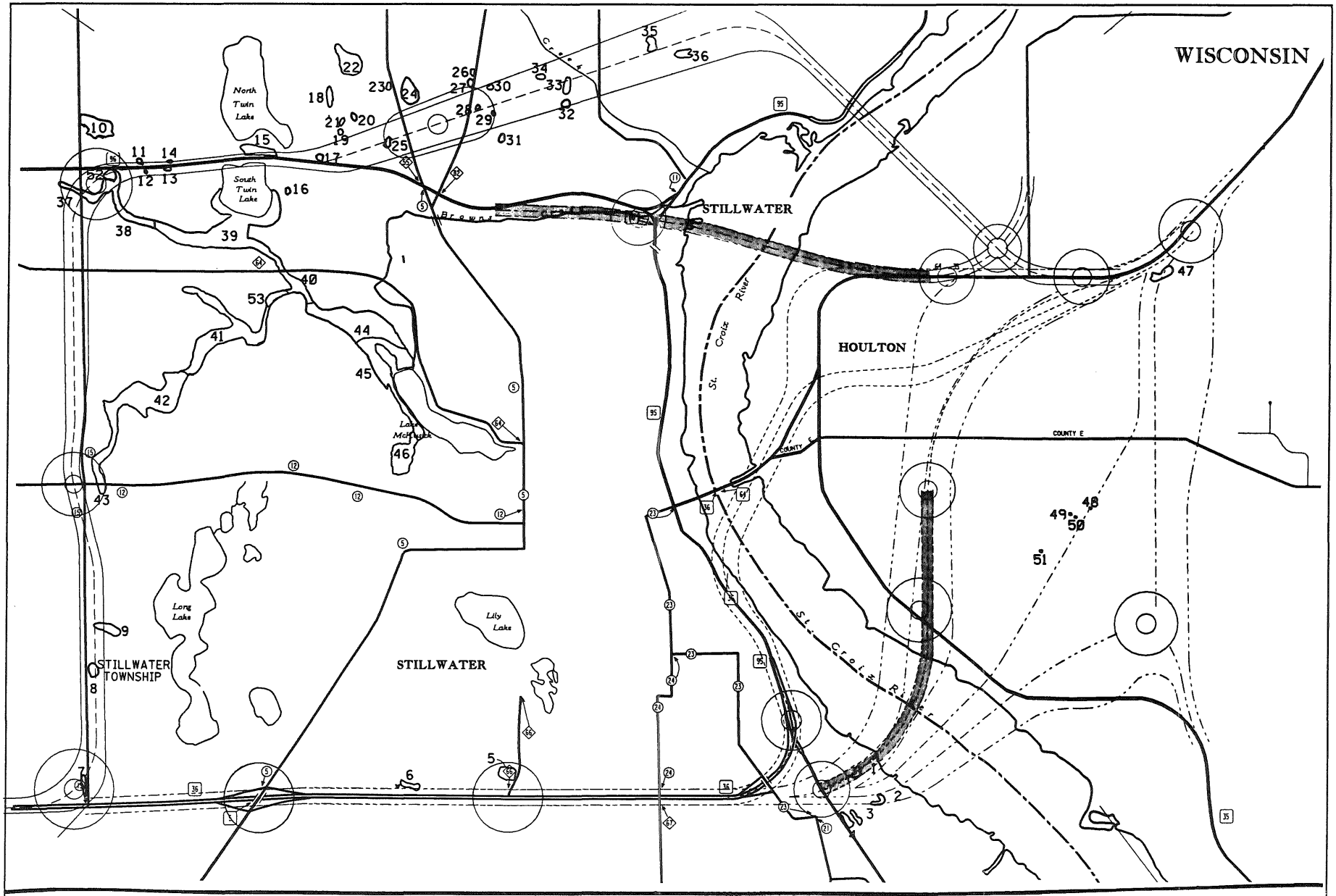


Figure 39
Wetland Location Map

In Wisconsin, there is nothing similar to Mn/DOT's wetland banking program. However, as mentioned earlier, potential wetland impacts in Wisconsin are likely to be very minor, limited to a few small areas along the central alignment of the South Corridor. Mitigation for any wetland impacts in Wisconsin will be developed in cooperation with the Wisconsin DNR and other appropriate agencies.

TABLE 20
WETLAND
CHARACTERISTICS
BY CORRIDOR

Wetland Characteristics	North Corridor	Central Corridor	South Corridor
Number of Wetlands	23	1	5
Total Basin Acreage	57.9	2.4	5.6
Modal Wetland Type *	2	5	5
Most Frequent Size Class(Acres)	0-1	1-10	0-1
Ave. Wetland Basin Size(Acres)	2.5	2.4	1.1

* See appendix 5 for more information on wetland types.

WATER BODY MODIFICATION AND WILDLIFE IMPACTS

The major areas of concern include the St. Croix River, Brown's Creek, and various wetlands. Because impacts to these areas are analyzed in detail elsewhere in this draft EIS, they will not be repeated here. A discussion of various water-related issues is included in the following portions of the environmental consequences section in this document: water quality; wetlands; floodplains; wild and scenic rivers; threatened or endangered species; and construction. Those interested in information beyond what is included in the above subsections should consult the special environmental studies Mn/DOT has released on natural resources, threatened and endangered species, and tunnels.

WILDLIFE IMPACTS

This section will focus on terrestrial wildlife impacts. Effects on aquatic life, including potential impacts on the endangered Higgins' Eye Pearly Mussel, are discussed under other chapters (i.e., floodplains, wetlands, threatened and endangered species, and water quality and fisheries).

It is expected that wildlife impacts resulting from the construction of any of the BUILD alternatives will not be substantial, even at the local level. None of the alternatives under consideration is anticipated to cause the elimination of any wildlife species now using the corridors or adjacent areas. However, construction will permanently remove and/or disrupt some kinds of habitat, and displace wildlife in certain areas.

While some species will be able to utilize habitat created by highway construction, new right-of-way habitat will not fully replicate the territory lost to construction. In most cases, wildlife species which require timbered or brushy habitat will be reduced, while those which favor grassy areas should increase or stay about the same.

In Minnesota, impacts to wildlife habitat resulting from the South and Central Corridor alternatives would be concentrated near the St. Croix River. Because much of the North Corridor would be on new alignment, this alternative would have the greatest impact on wildlife.

In Wisconsin, impacts in all corridors would tend to be similar, varying primarily with the length of the route. These impacts would consist of the transformation of some floodplain forest, but the effects would be primarily associated with the conversion of farmland--including cropped fields, grassland, and wooded parcels--into highway right-of-way.

The NO-BUILD alternative will not have a major effect on wildlife in either state.

WILDLIFE HABITAT AND IMPACTS

Most of the wildlife adversely impacted by any of the BUILD alternatives would be affected by a loss of habitat (i.e., food, water, and cover). Only a relatively small number of animals would be killed as a direct result of construction activities. A new St. Croix River crossing and approach highway could adversely affect habitat and the wildlife that depend on it in the following ways:

* Some wildlife habitat will be permanently lost through its conversion into a paved highway surface.

* Noise and activity from the highway will decrease the attractiveness of habitat adjacent to the highway.

* Some wildlife habitat will be sufficiently altered so that it loses its productivity or capacity to sustain the original wildlife populations.

* Animal movements will be restricted by the new highway.

* The number of wildlife-vehicle accidents is expected to rise over time as traffic volumes increase.

Habitat effects will partially depend on the size of an animal and its home territory, or range. Some small, individual animals such as mice, voles, or ground squirrels living in one of the corridors could have all of their habitat destroyed by a BUILD alternative. On the other hand, larger affected species such as the white-tailed deer or red fox would likely lose only a portion of their range.

Over the long-term, changing land use patterns in the study area as a whole will be a critical determinant of how much habitat is available for each wildlife species. From this perspective, development associated with the new highway (or other factors) will likely have a more important impact on wildlife than the actual facility itself.

For more detailed information about effects on wildlife, see the wildlife section of the natural resources impact special study. In the special study which is summarized here, the potential impacts on a number of representative, indicator species are analyzed. These species include the eastern cottontail, the eastern meadowlark, the American kestrel, the white-footed mouse, the racoon, the gray squirrel, and the brown thrasher.

North Corridor

Wildlife habitat within the North Corridor would be reduced by a BUILD decision, with a corresponding decline in wildlife. In particular, construction in the North Corridor would result in a decrease in the population of species requiring forest or brush habitat. Species such as the gray squirrel, the raccoon, the white footed mouse, the cottontail rabbit, and the brown thrasher are expected to decline in number if the North Corridor becomes the preferred alternative. In addition, the North Corridor contains a large amount of good eastern meadowlark habitat, some of which would be lost with new highway construction. Finally, the American kestrel (a small falcon) would lose some open areas it uses for hunting, as well as oak forest which provides suitable nesting habitat. In general, the North Corridor would have the greatest potential for wildlife impacts of any of the alternatives.

New residential construction is currently taking place within the vicinity of the North Corridor. As a result of this on-going development, it is anticipated that wildlife habitat and numbers will decrease in the area regardless of whether the North Corridor becomes the preferred alternative. However, it is likely that development will increase more rapidly in the area if a new highway is constructed in the North Corridor.

South and Central Corridors

Impacts in the South and Central Corridors are similar enough so that the two can be discussed together. In Minnesota, these corridors are largely developed, with some grassy and wooded land near the St. Croix River. In Wisconsin, agricultural operations are the primary land use. Wherever grassland habitat is disrupted, there could be impacts on meadowlark habitat. Wildlife such as gray squirrels which are dependant on trees in the developed portion of the corridor will be affected. In general, however, the South and Central Corridors would have only minor impacts on wildlife.

MITIGATION

It is anticipated that right-of-way vegetation will be composed primarily of tall grasses. Wildlife species which prefer open, grassy areas should receive some benefits from highway construction. In the future, the encroachment of shrubs into the right-of-way could eventually provide habitat for brown thrashers. Deer mortality associated with traffic on a new highway could probably be reduced by the strategic placement of light reflectors.

North Corridor

Landscaping along the highway will include plants that provide food for fruit and seed eating small mammals and birds. The right-of-way vegetation should benefit species such as meadowlarks, sparrows, robins, and goldfinches. Cottontails which presently use the North Corridor area will lose cover, but this will be partially compensated by open feeding areas along the right-of-way.

The grassy right-of-way created by construction in the North Corridor could also provide some hunting habitat for kestrels, although nearby nesting areas would be a limiting factor. However, it is possible that artificial kestrel nest boxes could be set up in trees or on signposts to provide nesting sites. A cooperative program between the Iowa Transportation Department and the Iowa Conservation Commission has shown that kestrels will use highway right-of-way if suitable nesting areas are provided.

South and Central Corridors

Landscaping along these alternatives will include plants that provide food and cover for small mammals and songbirds. It is possible that new right-of-way in the developed areas will provide an overall net benefit to wildlife, even though some species will become less abundant.

FLOODPLAIN IMPACTS

All of the BUILD options would cross the St. Croix River floodplain. In addition, the North Corridor alternatives could potentially affect a few floodplain areas inland from the river. Based on information included on Federal Insurance Administration flood insurance rate maps and/or flood boundary and floodway maps, the potential floodplain crossings are listed in table 21. Floodplain boundaries are mapped in figure 40. The information in this section is derived from the floodplain chapter in the Natural Resource Impacts Special Study prepared by Mn/DOT.

No major floodplain impacts are expected in any of the corridors, for a number of reasons. First, no notable increase in flooding risk should result from any of the BUILD alternatives. All hydraulic structures will comply with both Minnesota and Wisconsin stream crossing requirements, and will be designed so that headwater and tailwater elevations are essentially unchanged. If flooding is known to occur at a specific location, the hydraulic structure will be constructed to minimize the flooding condition. Should a tunnel be selected as the preferred alternative, the design will take river dynamics (e.g., possible scour effects) into consideration.

Second, there will be no substantial, long-term impacts on natural and beneficial floodplain values as a result of a BUILD alternative, with the possible exception of the North Corridor tunnel. Turf establishment and erosion control measures will be used where appropriate; replanting with native species is preferable. Measures will be taken to protect aquatic life (e.g., the endangered Higgins' Eye Pearly Mussel) during the design and/or construction process. Toward this end, construction debris will be kept out of the river to the extent practicable.

If a bridge becomes the preferred alternative, the aesthetics of the natural landscape will be carefully considered while designing the structure. The bridge type and design process will be coordinated with interested agencies, citizen groups, and the public. If a North Corridor Tunnel is selected as the preferred alternative, any channel changes which are necessary in Brown's Creek will be coordinated with the appropriate agencies. This coordination will insure that impacts to the fisheries resource are appropriately mitigated or minimized.

Third, none of the BUILD alternatives will generate incompatible floodplain development. Zoning ordinances regulating floodplain development are in effect in the cities of Stillwater and Oak Park Heights, in addition to Washington and St. Croix counties. Furthermore, development within the St. Croix River Land Use District is subject to Minnesota Statute 104.25 ("Lower St. Croix National Scenic Riverway").

Finally, there is very little potential for interruption of a transportation facility due to flood-related incidents. All roadway grade elevations, exclusive of tunnels, will be designed above the 100 year flood elevations. Tunnel portals will be placed at high enough elevations so that flood waters will not enter the tunnel.

In addition to the floodplains listed in table 21, all corridor alignments will cross a number of small, intermittent streams. If a BUILD decision becomes the preferred alternative, these intermittent streams will be investigated for flooding potential. If flooding problems are known to occur, the roadway design will incorporate measures to minimize flooding conditions.

The NO-BUILD alternative will have no immediate impact on floodplains. At some point in the future, however, floodplains could be affected by bridge repair or replacement work.

TABLE 21
POTENTIAL FLOODPLAIN CROSSINGS

Floodplain	Type of Crossing	Approx. Length	100 Year Flood Elev.
North Corridor			
Brown's Creek	Transverse	1,000 Feet	896.0
Twin Lakes/North	Transverse	700 Feet	886.2*
Twin Lakes/South	Transverse	700 Feet	891.0*
St. Croix River	Transverse	1,300 Feet	693.0
St. Croix River	Tunnel	3,000 Feet	692.0
Brown's Creek**	Tunnel	1,500 Feet	692.0-712.0
Central Corridor			
St. Croix River	Transverse	2,000 Feet	692.0
South Corridor			
St. Croix River	Transverse	3,000 Feet	692.0
St. Croix River	Tunnel	3,500 Feet	692.0

* Estimated 100 year flood elevation.

** A tunnel in the North Corridor could result in a longitudinal encroachment into the floodplain of Brown's Creek of approximately 1,500 feet. The length of encroachment could vary considerably depending on design features which are not yet developed. In addition, this alternative may necessitate an approximate 1,000 foot channel change of Brown's Creek in the vicinity of the TH 96/TH 95 intersection. The channel change would begin in an as yet undetermined point in the river valley and continue to the Brown's Creek confluence with the St. Croix River.

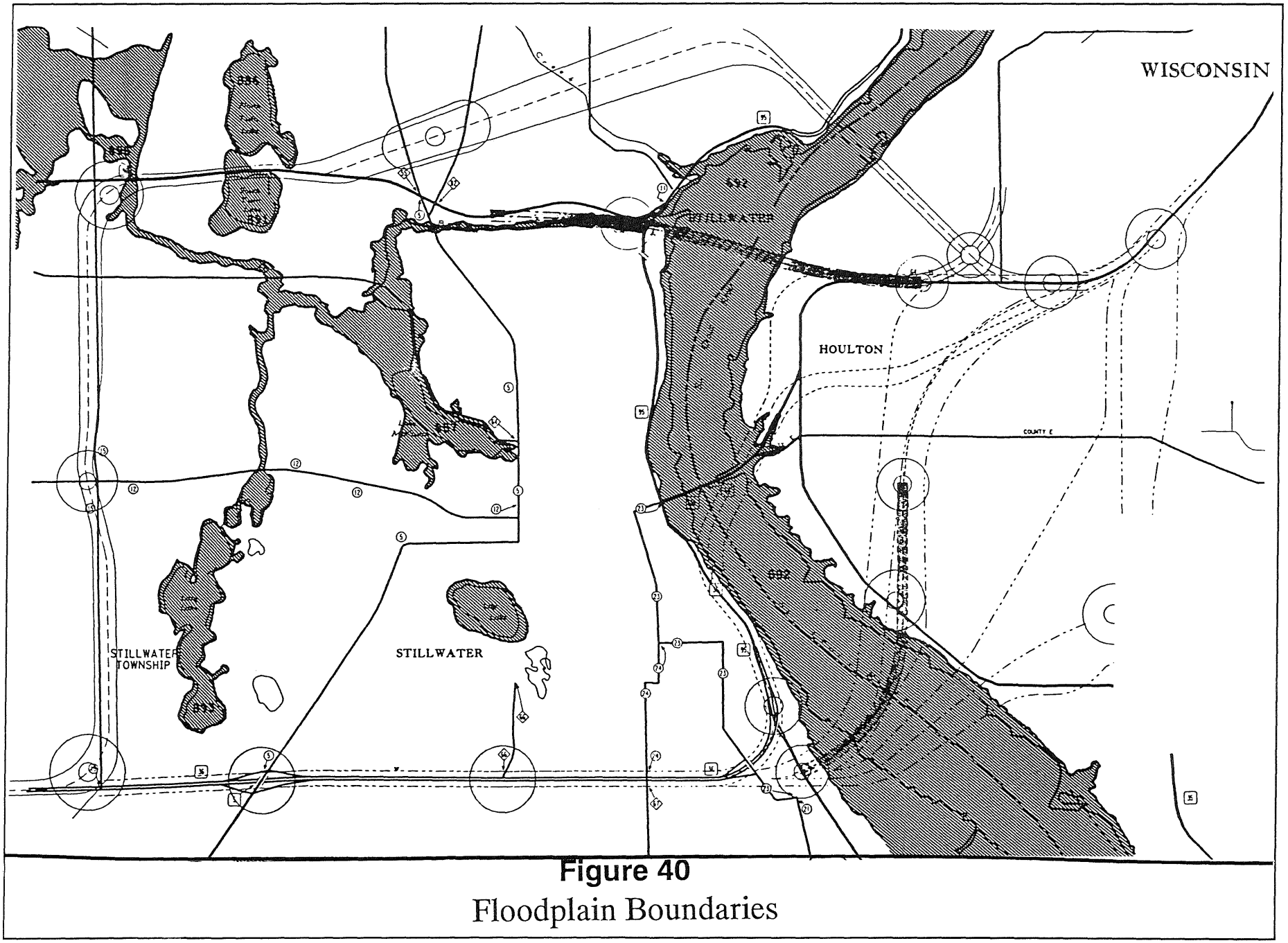


Figure 40
Floodplain Boundaries

WILD AND SCENIC RIVER IMPACTS

Information concerning the St. Croix National Scenic Riverway is discussed in detail in the Section 4(f) documents included with the draft EIS. This chapter will summarize major impacts and mitigation which are addressed in greater depth in those reports.

Before discussing specific impact areas, it is important to note that none of the BUILD alternatives would jeopardize the St. Croix River's status as a National Scenic Riverway. The section of the river included in the study area is classified as "recreational", the least restrictive of the three categories established in the original 1968 Wild and Scenic River Legislation (the other categories are "wild" and "scenic"). Recreational designation permits roads, bridges, and various shoreline developments. Scenic designation is operative on the river above the Washington-Chisago County (north of the study area), and on the Namekagon River, a major St. Croix tributary in northwestern Wisconsin.

One of the principal concerns of the Wild and Scenic Rivers Act was the prohibition of dams in order to maintain the free-flowing state of key rivers; there is no explicit language in the Act which forbids the construction of major transportation facilities. According to a 1974 Senate Committee report on amendments to the Wild and Scenic River Act, the only use "strictly prohibited" by the legislation is impoundment.[1]

In the appendix of the 1975 Final Environmental Statement produced for the Lower St. Croix National Scenic Riverway, the FHWA, Wisc/DOT, and the Metropolitan Council questioned the impact Riverway designation would have on future regional transportation plans, including a new bridge in the vicinity of Stillwater-Houlton. In response, the Final Environmental Statement contained the following observations: "...it is believed that Section 13 (g) of the Wild and Scenic Rivers Act provides the necessary flexibility to satisfy future transportation needs."[2] Additionally, the plan stated that "the Recreation River designation which prevails at Stillwater contemplates ready accessibility to transportation and bars neither bridges nor paralleling rail nor motor vehicle corridors."[3] Planning for a new river crossing at Stillwater-Houlton initially began in the late 1960s, and predates the 1972 designation of the Lower St. Croix as a National Scenic Riverway.

While a new river crossing in the vicinity of Stillwater-Houlton would not be inherently inconsistent with the National Wild and Scenic Rivers Act, there would be some important adverse impacts with any of the alternatives, including the NO-BUILD option. Riverway impacts and potential mitigation can be summarized as follows:

NO-BUILD

* Growing vehicle congestion in downtown Stillwater. This will result in increasing noise, air pollution, blight, and conflicts with pedestrians. Stillwater is a major Riverway destination, and its most important collections of historical sites. Large traffic volumes in downtown Stillwater conflict with the City's historical qualities, and have adverse economic effects on local businesses. One of the aims of the Wild and Scenic Rivers Act is the protection of historical areas in designated river corridors.

* Increasing conflicts between vehicles and large watercraft. Both vehicle and boat traffic are increasing at the lift bridge. Since 1970, watercraft on the Lower St. Croix have been increasing at a rate of 5.6 percent a year, a trend which is expected to continue. Under a NO-BUILD scenario, it is anticipated that vehicle traffic over the lift bridge will grow by over 100 percent between 1986 and the year 2014. The problem is compounded by the fact that peak periods for both vehicles and boats tend to occur at the same times. On Sunday afternoons in the summer,

[1]Hearings before the Senate Committee on Interior and Insular Affairs on amending the Wild and Scenic Rivers Act and the Lower St. Croix River Act of 1972, 93rd Congress, 2nd session, report no. 93-1207 (1974).

[2]U.S. Department of Interior/National Park Service, Final Environmental Statement: Lower St. Croix National Scenic Riverway, August, 1975, p. 107.

[3]Ibid., p. 110.

vehicle traffic can back up for several miles into Wisconsin when the lift is up.

BUILD

* Water Quality Impacts. All of the BUILD alternatives would have short-term adverse impacts on water quality during the construction period. Impacts would mainly be caused by the disturbance of sediments on the St. Croix River bottom; effects caused by tunnel construction would be the most serious. In addition to St. Croix River impacts, the North Corridor tunnel would have a major effect on Brown's Creek. Water quality impacts to the creek would likely be short-term, but major long-term structural changes would be required in the stream bed. Soil erosion around the highway and bridge construction area is another potential cause of short-term water quality impacts.

Specific mitigation procedures for river bottom impacts can not be determined until a BUILD/NO BUILD decision has been made and a specific crossing option chosen within a preferred corridor. This is because construction techniques could vary widely according to crossing type and corridor location. Mn/DOT and the contractor will follow all applicable procedures to limit soil erosion around Brown's Creek and in other construction areas.

* Aquatic/Terrestrial Wildlife Impacts Increased sedimentation downstream from the work area will have an adverse impact on aquatic life. Because of their mobility, fish are likely to be less affected than mussels. Of particular concern is the Higgins' Eye Pearly Mussel, which is on the Federal list of threatened and endangered species. An additional concern with the North Corridor tunnel alternative is the Brown's Creek trout population.

The Bald Eagle and the Peregrine Falcon are also classified as Federal threatened and endangered species, but neither will be affected by any of the BUILD alternatives. In addition to Federal species, there are a number of plants and animals on the Minnesota and Wisconsin threatened and endangered lists which could be affected by a BUILD decision. Along with the Federal species, these are listed and discussed in a Mn/DOT special report and a draft EIS summary chapter on threatened and endangered species.

In cooperation with the U.S. Fish and Wildlife Service, Mn/DOT has agreed to an extensive mitigation procedure to reduce impacts on mussel populations, including locating piers away from mussel beds or relocating mussels to unaffected areas upstream. Mitigation for any impacts on Brown's Creek trout habitat will be coordinated with the Minnesota DNR. Potential mitigation for state-listed species will be decided on a case-by-case basis, but could include adjusting corridor alignments, relocation, or the creation of new or improved habitat.

* Bluff Impacts All of the BUILD alternatives will have some adverse impacts on shore areas. Potential impacts will be the least with the tunnel alternatives and a North Corridor bridge, which would go from one bluff top to another. The amount of bluff cuts necessary with the Central and South Corridors would generally be more extensive on the Wisconsin side, but would depend on the specific alignment. On the Minnesota shore, the greatest potential impact would be with a Central Corridor decision, which would affect the bluffs west of TH 36.

Impacts to bluff areas resulting from a BUILD decision could be reduced by using a sub-aqueous or on-land tunnel, employing a high bridge design, or utilizing natural draws or existing cuts for bridge approaches (e.g., like some of the Central and South Corridor alignments). Whenever feasible, attempts will be made to ensure that cuts blend into the river valley environment as much as possible.

* Recreation/Visual Impacts To a certain extent, these are closely related to bluff impacts. The largest potential recreation impact would be with a North Corridor bridge, which probably would entail placing a pier on Mile Long Island, a heavily used camping and beaching area. As a result, some campsites could be lost on the island, and there would be major visual impacts along a stretch of river which has retained a relatively wild appearance (see the Section 4 (f) on Mile Long Island). In addition to affecting Mile Long Island, a North Corridor bridge would also be a major visual presence from the Boomsite Wayside, a popular recreation area and historical site on the Minnesota shore (see figure 41).

In the Central and South Corridors, overall visual impacts of a new river crossing would be less notable due to the more developed character of the river, even though there is a greater potential for bluff cuts. Piers from a new bridge would have a relatively minor long-term adverse impact on watercraft. A Central Corridor BUILD decision would have an adverse aesthetic impact on Kolliner Park. In all the study corridors, construction ac-

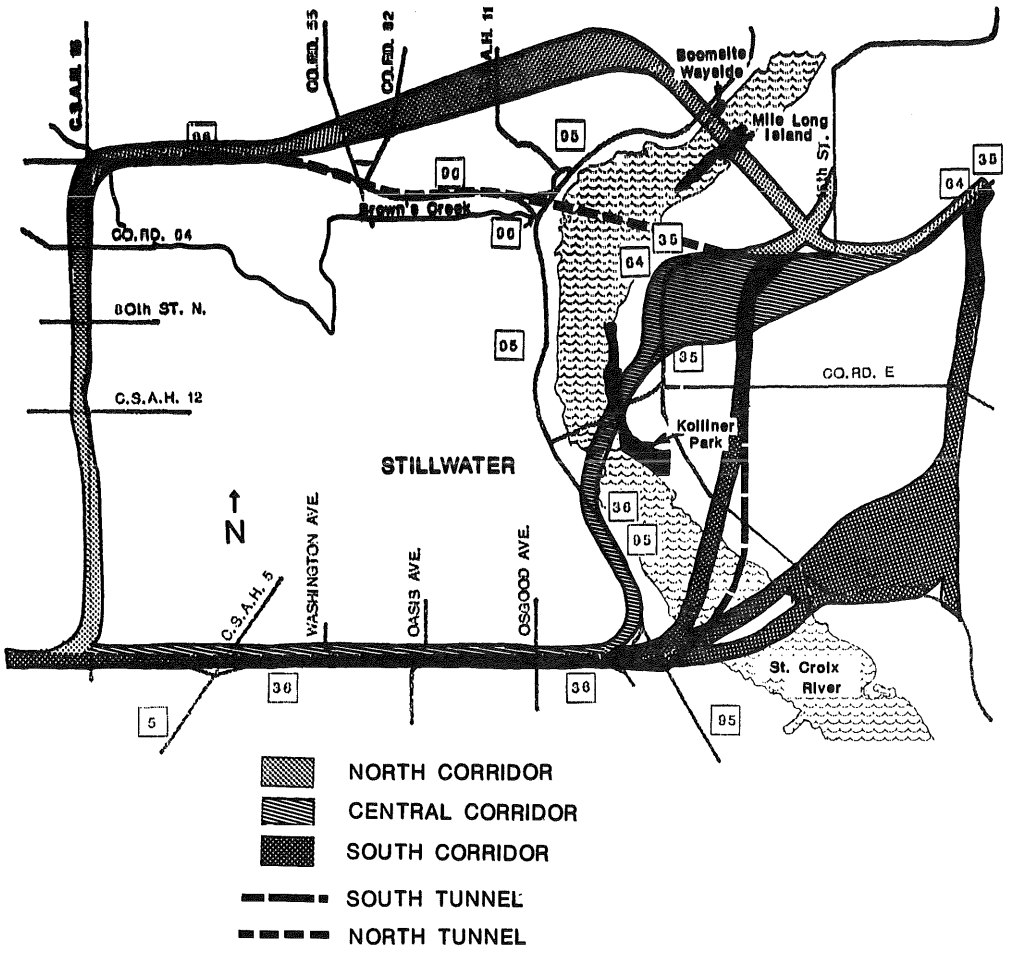


Figure 41
Selected Riverway Recreation Areas

tivities would result in a short-term negative impact on recreation.

For watercraft, a potential benefit of a new river crossing in any corridor would be less conflict with vehicles at the existing bridge site. If a new crossing was constructed, the number of lift openings could be increased, or the old bridge might eventually be removed.

The primary means for reducing the visual impact of a bridge in a specific corridor would occur during the design process. Mn/DOT will solicit the input of citizens, agencies, local governments, and public interest groups in helping to select an appropriate type and design for a new river crossing.

* Noise and Air Quality No noise or air quality standards are expected to be exceeded on the Riverway as a result of any of the crossing corridors. As discussed in the noise and air quality special study, MPCA noise standards which will be met include a 70 L_{10} dBA level for parks and recreation areas, and 65 L_{10} dBA for camping areas (55 L_{10} dBA at night). All corridors will easily meet existing state carbon monoxide (CO) standards; the highest CO levels would be found in downtown Stillwater under the NO-BUILD option. No noise or air quality mitigation will be required along the Riverway for any of the corridors.

* Status of Existing Bridge None of the study alternatives require removal of the existing bridge; replacement in-place was dismissed as an option because it would not solve the congestion problem in downtown Stillwater. Consequently, the disposition of the old bridge is not an issue which necessarily has to be determined prior to a BUILD/NO-BUILD decision.

Important factors affecting the future of the existing bridge are as follows:

1.) Historical importance.

The bridge is a key cultural artifact in the lower St. Croix valley and an important example of an increasingly uncommon engineering style; it was recently added to the National Register of Historic Places. State transportation departments have a Federally mandated responsibility to help preserve historic bridges where ever possible.

2.) Value to Stillwater.

The bridge is a key element in the City's future plans for its downtown area and Kolliner Park. Stillwater's future development of Kolliner Park depends on the easy access afforded by the existing bridge. A new crossing would reduce vehicle traffic on the lift bridge, making it more appealing to bicyclists and pedestrians.

3.) Direct transportation link between Stillwater and the Houlton area.

Keeping this crossing open would have a beneficial impact on the social and economic interaction between Stillwater and Houlton. None of the new crossings would allow such easy access between the two communities. The best solution to the region's transportation problems would be to maintain the existing bridge in conjunction with a new crossing.

4.)Funding.

It is unlikely that either Mn/DOT or Wisc/DOT would be able to indefinitely fund the operation and maintenance of the existing bridge if a new crossing is built. Sometime in the future, the transportation agencies will begin the environmental processes necessary to evaluate the disposition of the lift bridge. Unless a new owner can be located, the agencies will eventually propose to have the structure demolished or relocated to another site.

5.) River-based recreation would benefit from removal.

In particular, large boats would no longer have to wait for the lift, and Kolliner Park would (except with a new Central Corridor bridge) become a more appealing location for beaching watercraft.

6.) Reduced presence of the built environment on the Riverway.

Although removal of the lift bridge would be an important cultural loss, it would help focus attention on the natural characteristics of the river. This would be particularly important under a Central Corridor BUILD scenario; two adjacent bridges could result in adverse visual impacts.

THREATENED AND ENDANGERED SPECIES

The Federal government and the states of Minnesota and Wisconsin have developed lists detailing threatened and endangered species, which have been granted special protection. A species included on the Federal register is at risk in the U.S. as a whole, while those on the state lists may be imperilled only in Minnesota and/or Wisconsin. A given species may be included on both state and Federal listings, in which case the most restrictive classification takes precedence. In addition to individual species, particular kinds of rare or unique habitats are sometimes afforded protection. For more detailed information, see appendix 6, the Threatened and Endangered Species Special Study, and the mussel survey report.

FEDERALLY THREATENED AND ENDANGERED SPECIES

The study area is within the potential breeding range of three Federally threatened and endangered species. These include the following: Higgins' Eye Pearly Mussel (Lampsilis higginsi); Peregrine Falcon (Falco peregrinus); and the Bald Eagle (Haliaeetus leucocephalus). All three of these are also on the Minnesota and Wisconsin state lists.

Higgins' Eye Pearly Mussel

The only species from the Federal listing which could be potentially impacted by any of the BUILD alternatives is the Higgins' Eye Pearly Mussel, a rare species of clam. The Higgins' Eye has historically been reported in major tributaries to the Upper Mississippi River, including the St. Croix.

According to a 1987 survey conducted by a malacologist at the request of Mn/DOT, no live specimens of the endangered mussel were found within the immediate vicinity of the study area corridors. However, a number of dead Higgins' Eye mussels were discovered, and it is highly probable the species is present around Stillwater-Houlton at low densities. No other Federally endangered aquatic species (or any aquatic species proposed for

the Federal list) were found--either dead or alive--during the survey.

Peregrine Falcon

Historically, the Peregrine Falcon nested along the St. Croix River before it was nearly wiped out nation-wide by pesticides. Although the study area lies within the bird's traditional range, U.S. Fish and Wildlife Service (USFWS) biologists have determined that none of the corridors would adversely affect any current Peregrine nesting sites, or disrupt the activities of the falcon in general.

The range of the Peregrine Falcon is currently expanding due to the elimination of DDT from widespread use and efforts to reintroduce the species in some of its former habitat, including selected sites in the Upper Midwest. Attempts are now being made to encourage nesting on tall buildings in downtown Minneapolis and St. Paul, for example. In the vicinity of the study area, Peregrine Falcons have recently been spotted near the Alan King Power Plant, south of Stillwater.

Bald Eagle

Mn/DOT biologists have determined that the study area is within the Bald Eagle's breeding range; an eagle nest is located about four miles upstream of the study area. None of the corridors are considered to be critically close to the nest, and the USFWS has determined that there will be no notable effect on the species.

In both Minnesota and the U.S. as a whole, the Bald Eagle has made an impressive recovery in recent years, and it is becoming a relatively common sight in areas where it was rarely seen even ten years ago. Again, this is partially because of the banning of DDT.

Potential Federal Species

The Lower St. Croix River supports one of the richest mussel populations remaining in Minnesota and Wisconsin, and there is a possibility that other uncommon mussel species inhabit the study area. Recent field surveys by the Wisconsin Department of Natural Resources (DNR) have documented the occurrence of six rare mussels in the Lower St. Croix. A number of these are currently being considered for listing on the Federal List of Threatened and Endangered Species, including the following: Spectacle Case Pearly Mussel (Cumberlandia monodonta); Rough Maple-leaf Pearly Mussel (Quadrula fragosa); and the Salamander Mussel (Simpsoniconcha ambigua). The Fat Pocketbook Mussel--Proptera (Potamilus) capax--is currently on the Federal and Minnesota lists, but probably no longer inhabits the study area.

In addition to mussels, several rare fishes are known to inhabit the Lower St. Croix. Two of these--the Lake Sturgeon (Acipenser fulvescens) and the Blue Sucker (Cycleptus elongatus)--are being considered for the Federal List of Threatened and Endangered Species.

Mitigation for Impacts on Federal Species

According to the best information currently available, the only species listed on the Federal List of Threatened and Endangered Species requiring mitigation is the Higgins' Eye Pearly Mussel. None of the alternatives is expected to affect the long-term existence of the Higgins' Eye in the Lower St. Croix River.

If a BUILD alternative is selected, a pre-construction mussel survey would be supervised by a malacologist along affected portions of the river crossing corridor. This survey would be coordinated with the USFWS under Section 7 of the Endangered Species Act, and would be initiated within nine months of construction.

Mn/DOT is committed to removing all mussel species which could be adversely affected by construction and relocating them in other suitable habitat in the vicinity. This would be particularly important if a tunnel became the selected alternative, as the potential impact on mussel populations would be greater than for a bridge. This is because a much larger area of the bottom would be disturbed, with more sediment being dislodged and drifting to downstream areas.

If a North or Central Corridor Bridge is the selected alternative, areas around any bridge piers plus a twenty foot buffer zone would be cleared of all mussels immediately prior to construction. (It is possible that a North Corridor Bridge would not require any river piers.) If a North Corridor Tunnel became the selected alternative, a mussel salvage operation would be conducted from the main channel east to the Wisconsin shoreline, the area with the greatest concentration of mussels. The collected mussels would be transplanted upstream from the construction site.

Should a South Corridor Bridge became the selected alternative, the mussel population could be protected by avoiding the placement of any piers within 300 to 500 feet of the respective shorelines. If the chosen bridge design does not allow this, all

mussels likely to be adversely affected would be relocated to suitable upstream habitat.

If a tunnel were to be constructed in the South Corridor, it would be necessary to relocate a large number of mussels to avoid having them destroyed by construction activities. Again, salvage operations would be focused on the Wisconsin side of the river. The area searched would depend upon the specific method of tunnel construction selected, but would necessarily require going some distance downstream from the actual construction site to avoid the likelihood of sediment-induced damage.

In consultation with the USFWS, Mn/DOT would arrange for follow-up research on the transplanted mussels.

SPECIAL STATE-LEVEL CONCERNS

Both Minnesota and Wisconsin afford legal protection for species and habitats considered to be threatened or endangered within their boundaries. Minnesota also has a third, less critical category for species "of special concern" which are uncommon or have unique or highly specific habitat requirements. It is possible that a plant or animal might have protected status in one state but not the another. (A listing of threatened and endangered species in the Minnesota and Wisconsin sections of the study area is located in appendix 6. The list does not include any of the species discussed above in the Federal section which are also on the state registers.)

Impacts

In the North Corridor, construction of the bridge or tunnel alternatives would not directly impact any state threatened or endangered plants or animals. However, depending on the exact alignment, there could be an effect on the Virginia Water Horehound (Lycopus virginicus). This species is fairly common in wet meadows in southern Wisconsin, but its status in Minnesota is unknown.

The most serious concern in the North Corridor is the potential for harming Brown's Creek, a Minnesota designated trout stream which has been afforded "protected water" status by the DNR. Any work affecting the trout stream or the large wetland along its upper reaches would require a permit from the DNR.

While trout are neither threatened nor endangered in Minnesota, they are not common in this part of the state and deserve special consideration. In addition to trout, the valley contains several distinct ecological communities, with the potential for several rare plants being present.

The North Corridor routes could increase siltation in the creek, particularly during construction. The greatest impact to Brown's Creek and its trout fishery would be with the tunnel alternative. This option would permanently alter a section of the lower creek and its scenic valley. If a North Corridor Bridge is the selected alternative, the lower creek would be directly affected by a new access connecting the river crossing approach highway with TH 95/96. Further upstream, the new highway for both the North Corridor options would cross the creek at the current TH 96 bridge.

In and around the South Corridor on the east side of the river, there are several sites containing the Dotted Blazing Star (Liatris punctata), a species classified as endangered in Wisconsin. Should the South Corridor become the selected alternative, it is possible that an alignment can be chosen which will avoid damaging the Dotted Blazing Star.

The Central Corridor would not affect any known threatened or endangered species in either state. It could, however, have an effect on an unusual exposed sedimentary rock formation in the City of Stillwater, located along the western edge of TH 95, in addition to impacting the river shoreline on the other side of the highway.

Mitigation

In general, conflicts with state-listed threatened and endangered species in the study area can be avoided. None of the alternatives under consideration is expected to have an effect on the long-term survival of any state threatened or endangered species. If it is not possible to route an alignment around a unique species, impacts could be mitigated by transplanting. This might be an option in the case of the Dotted Blazing Star or the Virginia Water Horehound.

In the North Corridor, impacts to Brown's Creek can be reduced by employing standard erosion control measures during construction. If the North Corridor Tunnel becomes the selected alternative, efforts to mitigate any alterations to the Brown's Creek channel would be coordinated with the DNR.

HISTORIC AND ARCHAEOLOGICAL IMPACTS

OVERVIEW OF STILLWATER-HOULTON AREA HISTORY

The Lower St. Croix River Valley is an area with a rich Native American and European-influenced cultural heritage. Well before the time of European settlement, the land around Stillwater-Houlton was used by Dakota and Ojibway Indians, who were removed from the area as a result of treaties ratified in 1838. Stillwater was founded in 1843, and is known as the "birthplace of Minnesota." This title is a reference to the Territorial Convention which was held in the city in 1848 to petition Congress for a new territory, a move which resulted in the organization of the Minnesota Territory a year later.[1]

Stillwater grew rapidly during the last half of the nineteenth century, fueled by its location on a navigable river and a great lumber boom which began after the town's first sawmill was constructed in 1844. Logs from the vast forests to the north were floated down the St. Croix River to Stillwater, where they were removed from the water and processed into lumber at the city's mills. The lumber was then placed in the river again and floated downstream to finishing mills on the Mississippi River. Today, the Boom Site Wayside north of the city limits marks the point where the logs were removed from the river.

In addition to helping support the lumber industry, the St. Croix also provided a corridor for sternwheelers, which carried passengers, goods, and mail up and down the river. Regular steamboat service was available from Prescott and St. Paul up the St. Croix as far as Taylor's Falls. At this time, Stillwater was the principal supply depot for the entire St. Croix Valley.

Although steam powered lumber mills were the most efficient, Stillwater's first mill utilized power from water flowing down from Lake McKusick into the town. During the wet spring of 1852, disaster struck when the Lake McKusick dam broke, sending a cascade of mud and water down into the town, burying buildings. One long-term effect of the flood was that more land was made available for construction along the river, due to the accumulation of sediment and debris. Sawdust from the mills was also used to build up land along the river, a factor which even today contributes to soggy foundations in the downtown area.

In the mid-nineteenth century, Stillwater had the distinction of being the lumbering capital of Minnesota. However, the main logging areas began to move further north in the 1860s, and the output from mills in Minneapolis began to outdistance Stillwater's, which nonetheless continued to flourish.

The arrival of the railroad to Stillwater in 1871 diminished the importance of steamboats and precipitated a major change in the local economy. The mills shifted their emphasis from turning out raw lumber to shingles, lathe barrels, and other finished wood products. The wood-based economy was bolstered by the spin-off development of breweries, foundries, masonries, retail outlets, and manufacturing plants. The railroads greatly expanded the markets for Stillwater's lumber and manufactured goods, making the city a major wholesale distribution point for northwestern Wisconsin and northeastern Minnesota. When the Lumber Era economy peaked in the 1880s and 1890s, the population of Stillwater was an estimated 12,000, slightly less than the 1988 population of 13,485.

During the main Lumber Era period, lumber barons, bankers, and business owners contributed their resources to a wealth of new construction. Numerous Victorian homes in the Federal, Italianate, Greek Revival, Gothic, Second Empire, and Queen Anne styles rose on the slopes back from the river. During this period, the wooden clapboard commercial buildings previously found in the Stillwater downtown area were replaced by structures in the Italianate, Gothic and Greek Revival styles, some with Queen Anne towers and bays.

After the turn of the century, the Lumber Era in Stillwater quickly declined. As logging continued to move further north, it became uneconomical to transport logs to the city for processing. Addition-

[1]Much of the information in this section has been adapted from two documents, the Stillwater Downtown Plan: Committee Review Draft, released in November, 1987, and Historical Reconstruction of the Riverfront: Stillwater Minnesota, a study completed for the U. S. Army Corps of Engineers in 1985 by Historical Research, Inc. and John A. Fried Associated Architects and Engineers, Inc.

ally, the frontier pushed relentlessly westward, and markets for the lumber became more distant. The last log passed through the St. Croix Boom in 1914.

Because the economy of Stillwater had diversified during the Lumber Era, the city managed to avoid becoming a ghost town after the timber industry's decline. Local entrepreneurs who had amassed fortunes in lumber wisely put capital into flour milling, manufacturing, wholesaling, and banking. Manufacturing plants rose along the river, and Stillwater became noted for producing freight passenger cars, farm engines, threshers, and other agricultural implements. Stillwater grew to be the largest producer of agricultural machinery in the region, shipping its products by rail to newly homesteaded lands in the Dakotas and other plains states.

Homes built during this period tended to be more practical and less grand than those erected during the Lumber Era. New areas were platted back from the central city which included homes in the Bungalow, American Foursquare, English Revival, Craftsman, Prairie, and Princess Anne styles. In the Commercial District, buildings in the Classic Revival Style became common.

In conjunction with the City Beautiful Movement, Stillwater's first city plan was completed in 1918. The Movement's emphasis on formal gardens, parks, and green spaces is visible today in Lowell Park, located along the river in the downtown area.

In 1931, the existing lift bridge opened for traffic, replacing a wooden pontoon toll bridge dating from 1876. The lift bridge has long been a symbol of Stillwater-Houlton, and was recently added to the National Register of Historic Places (NRHP). According to the NRHP inventory-nomination form submitted to the Minnesota Historic Preservation Officer, the Stillwater-Houlton bridge "is associated with events which have made a substantial contribution to the broad patterns of regional history, and embodies the distinctive characteristics of a given style of construction."

Of the six vertical lift bridges existing in Minnesota and Wisconsin before the Second World War, the Stillwater-Houlton structure is one of three which remain. One of these (located at Prescott, Wisconsin) will be torn down in the early 1990s. The other (at Duluth Harbor) was rebuilt in the 1930s. Consequently, the Stillwater-Houlton bridge will soon be the only remaining original example of a tower-and-cable, through-truss drawbridge in Minnesota and Wisconsin. Aside from some necessary functional modifications and repairs, the original integrity of the lift bridge has been preserved.

Stillwater's Manufacturing Era ended with the Great Depression. During the 1930s mills and manufacturing plants were demolished, their former spaces along the river left vacant. By the 1940s the population of the City had declined to a low of around 7,000.

In the 1950s, Stillwater began to revive. The Twin Cities were growing, and the advent of the Automobile Era put Stillwater within reasonable commuting distance of the metropolitan area. As a result of growth during the 1960s and 1970s a number of impressive old buildings were demolished in the downtown area, and many other storefronts were remodeled. Perhaps the most notable loss was Union Station, which was one of the most architecturally significant train depots in Minnesota.

This period of change has come full-circle in recent years, with a growing emphasis on historical preservation. Historic structures which have been rehabilitated for new uses include the Freight House Restaurant, the Old Post Office, the Staples Mill, and the Grand Garage. A survey of historic structures in Downtown Stillwater was recently completed, and there is a possibility that portions of the central core could eventually become a National Register Downtown Historic District. It has become increasingly clear that historical resources are extremely important to Stillwater's present and future viability, making it an attractive place to live as well as a popular destination for tourists.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES IN THE STILLWATER-HOULTON AREA

Federal laws and regulations require that harmful impacts to important historical and archaeological resources be avoided, minimized, or mitigated. Reconnaissance surveys were conducted to supplement the list of known sites and properties. As a result, a number of historic and archaeological sites have been identified in the vicinity of the new river crossing study corridors.

The majority of the sites are located on the Minnesota side of the St. Croix in Stillwater, including eighteen historic sites and standing structures which are listed on the National Register of Historic Places

(NRHP). In addition, there are a number of structures which have been listed in the Minnesota Inventory of Historic Places. Minnesota also has five known archaeological sites, one of which is listed on the NRHP. In Wisconsin, a potentially important archaeological site is present in the North Corridor. Major historic and archaeological sites are listed below, and are mapped in figure 42.

Supporting documents for this section are assembled in the appendix of the Historical and Archaeological Impacts Special Study. A selection of this correspondence is included in appendix 7 of this draft EIS. In addition, a special report summarizing archaeological survey work in the Wisconsin portion of the study area was completed in 1989 by the State Historical Society of Wisconsin.

HISTORIC SITES/STANDING STRUCTURES CURRENTLY LISTED ON THE NATIONAL REGISTER

(A.) C. M. and St. P. Freight House and Depot, 233-335 Water St.

(B.) Roscoe Hersey House, 416 South 4th St.

(C.) Captain Austin Jenks House, 504 South 5th St.

(D.) Albert Lammers House, 1306 South 3rd St.

(E.) Minnesota State Prison (old), Main at Laurel St.

(F.) Ivory McKusick House, 504 North 2nd St.

(G.) Nelson School, 1018 South 1st St.

(H.) Pest House, County Highway 11.

(I.) St. Croix Boom Company House and Barn, 9666 North St. Croix Trail.

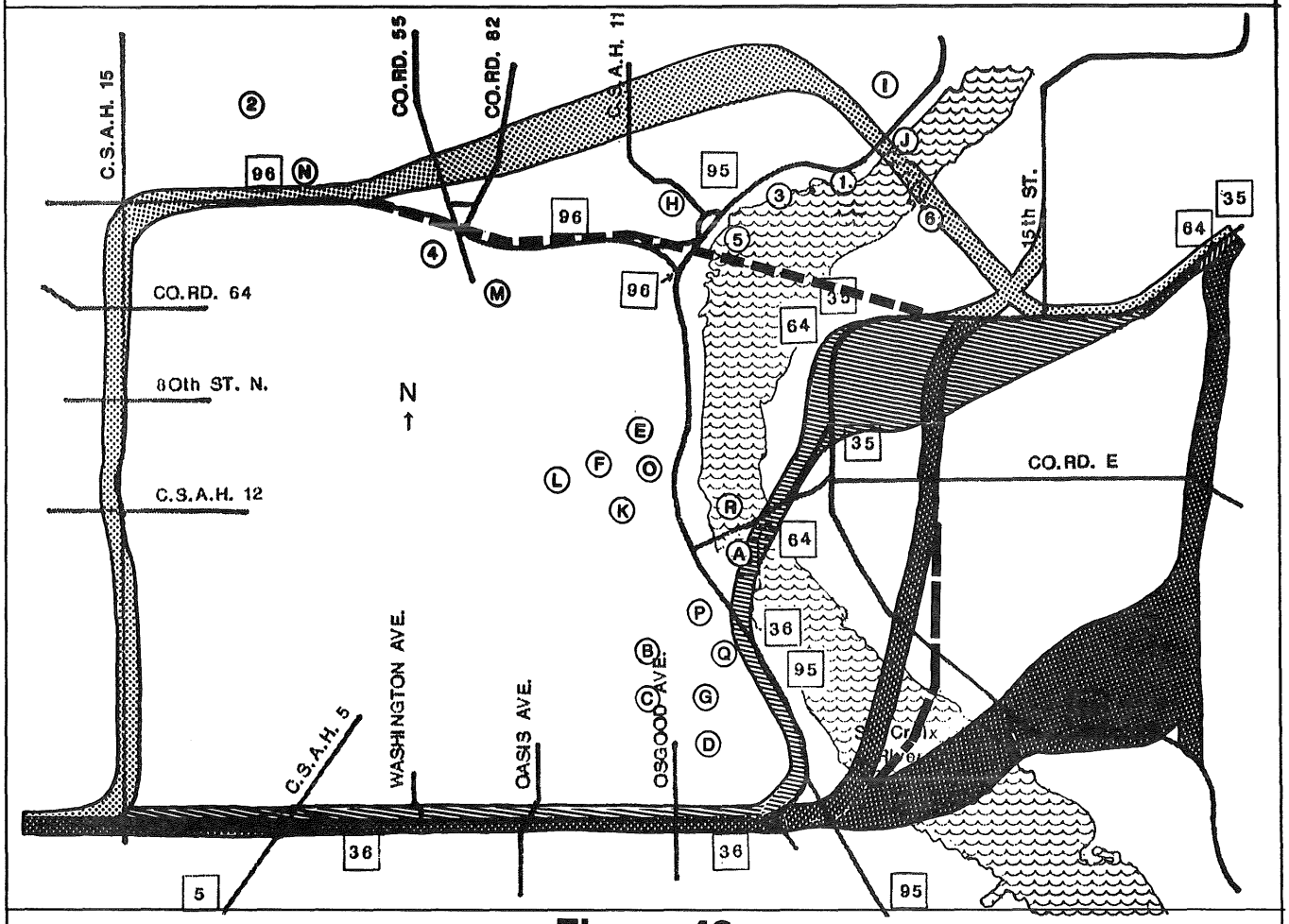


Figure 42
Historical and Archaeological Sites

(J.) St. Croix Boom Site, TH 95 North, (National Historic Landmark).

(K.) St. Croix Lumber Mills/Stillwater Manufacturing Company, 318 North Main Street.

(L.) William Sauntry House and Recreation Hall, 626 North 4th St. and 625 North 5th St.

(M.) Stone Arch Bridge, off County Road 5.

(N.) Henry Stussi House, 9097 Mendel Road.

(O.) Warden's House, Minnesota State Prison (old), 602 North Main St.

(P.) Washington County Courthouse, West Pine Street and South 3rd St.

(Q.) Mortimer Webster House, 435 South Broadway.

(R.) Stillwater-Houlton Lift Bridge

KNOWN ARCHAEOLOGICAL SITES

(1.) Prehistoric Burial Mound.

(2.) Prehistoric Habitation Site.

(3.) Prehistoric Habitation Site.

(4.) Prehistoric Habitation Site.

(5.) Prehistoric Habitation Site, (listed on National Register).

(6.) Twin Springs Prehistoric Campsite
(Note: Some potential archaeological sites in Minnesota and Wisconsin are still under investigation.)

In addition to the sites listed above, there are a number of other structures of historic significance, some of which might someday be included on the National Register. The following list, which does not necessarily include all remaining historic structures in the study area, was adapted from the 1987 Stillwater Downtown Plan: Committee Review Draft:

* Lowell Park and Pavilion
* Main Street, from Nelson to Commercial
* Old Post Office
* Lowell Inn
* Stillwater Gazette Building
* Piper, Jaffray, and Hopwood Building
* 106 East Chestnut
* Brick Alley
* Commander Elevator
* Lumber Exchange
* Vittorio's
* Connolly Shoe Building
* 226 East Myrtle
* The Arlington
* Junior High School (South Hill)
* Various Homes and Churches
* Pioneer Park
* Stillwater Library

POTENTIAL IMPACTS

The North Corridor bridge and tunnel routes could directly or indirectly affect a number of known cultural resources. Both North Corridor alternatives would pass close to the Henry Stussi House, located between TH 96 and North Twin Lake. Although precise impacts will not be certain until an exact alignment is known (if the North Corridor becomes the selected alternative), it is unlikely that the structure would be physically affected. Other notable properties which are located within several blocks of the two North Corridor alignments include two archaeological sites, an old stone arch bridge off of County Road 5, and the Boomsite Wayside. Perhaps the greatest potential for impacts would be at the historical Boomsite, which is also a popular recreation area. Although the location would not be physically impacted by a North Corridor bridge, the structure would dramatically alter views of the river valley downstream from the site.

Archaeological investigations in the North Corridor have not been completed. According to the Minnesota DNR, human bones and artifacts have been discovered on land near the Minnesota touch-down point of the North Corridor bridge. These reports are being examined. In the Wisconsin North (bridge) Corridor, there is an archaeological area known as the Twin Springs Site. According to investigations, this prehistoric campsite is potentially eligible for listing on the National Register. Additional work will be necessary to determine more details about its importance.

Of the three corridors, the Central Corridor would come closest to the large concentration of historical structures in the study area. One National Register structure--the Mortimer Webster House--is located

on the bluff above TH 36, but is unlikely to be directly affected by a Central Corridor decision. While the Central Corridor would not enter downtown Stillwater, its proximity to the core of the city would have an important indirect impact on important historical resources.

The single most important historical impact resulting from a Central Corridor decision would be the effect on the existing bridge. The lift bridge would not be physically impacted by a new crossing, but the proximity of a new bridge could have a very serious negative visual impact. Two river crossings converging across a relatively small area would produce a congested appearance, diminishing the strong visual lines of the existing bridge and reducing views from the historic Stillwater waterfront.

Based on current information, the South Corridor alignments would have the least potential for adversely affecting historical and archaeological resources. No notable historic or archaeological sites are known to exist in any of the South Corridor alignments.

The NO-BUILD alternative has the potential for the most serious long-term adverse impacts on Stillwater's historical character. The noise, air pollution, and congestion created by an increasingly high volume of vehicular traffic through downtown Stillwater threatens the historical ambiance the city is attempting to preserve. Downtown Stillwater is highly dependant on pedestrian traffic; the ease with which people are able to drive into town, park, get out of their cars, and walk around in the core area will directly affect the continued economic vitality of many of the local businesses, including the historical structures which have been renovated. Removing through traffic from downtown Stillwater--which is a major aim of all the BUILD alternatives--will help protect the historical values of the city.

The disposition of the lift bridge is closely connected to a BUILD/NO-BUILD decision. However, it is also a separate issue, as none of the BUILD alternatives require that the existing structure be removed. Because of its historical significance, the lift bridge is covered by the procedures in Federal Sections 4(f) and 106. If a new river crossing is constructed, Mn/DOT and Wisc/DOT will initiate the above study processes when the structure becomes unsafe and is closed for continued vehicular use (5-15 years, without major work). Neither transportation department is in a position to assume the cost of owning and maintaining two river crossings at Stillwater-Houlton. After the existing bridge has been declared unsafe, the structure will not be rehabilitated for further transportation use unless a local government and/or private owner can be found.

MITIGATION

At this time, no mitigation for historical impacts is being proposed. Most potential conflicts with cultural resources have already been avoided; the location of historic and archaeological sites was an important factor early in the study corridor selection process, when the present corridors were chosen for further analysis.

If there is BUILD decision, the precise corridor alignment of the selected alternative will be determined. Any historical and/archaeological impacts resulting from the selected route will be analyzed in detail in the final EIS; at that time, specific mitigation will also be discussed. Presently, available information indicates that there is a high probability that the South Corridor and--to a lesser extent--the Central Corridor, would result in no direct historical or archaeological impacts requiring mitigation.

If it is necessary to remove the existing bridge at some point in the future, the mitigation procedures will follow those set forth in Sections 4 (f) and 106.

CONTAMINATION SITES

According to information supplied by the Minnesota Pollution Control Agency (MPCA), there are a number of existing and/or potential hazardous waste sites scattered throughout the study area. In addition, the MPCA provided a list of sites where underground storage tank leaks have been reported, and where hazardous substances and/or petroleum products have spilled.

For the Wisconsin portion of the study area, the Department of Natural Resources examined its lists of active and abandoned landfills, as well as its hazardous material spill files. The DNR had no sites listed for the area reviewed. There are no Superfund (Comprehensive Environmental Response, Compensation, and Liability Act/CERCLA) sites, and no reports of leaking underground storage tanks or hazardous wastes stored in the area.

Most of the sites supplied by the MPCA are located well outside any of the possible corridor locations. There are three potential contamination sites, however, which are very close to a study corridor. The NSP King Plant Slag Disposal Area No. 1 is located immediately south of TH 36, west of Beach Road. Depending on exact alignments, one or more of the South Corridor options could require right of way from the edge of this area. Should a South Corridor route become the preferred alternative, a more detailed analysis of this site would be necessary in the final EIS.

Two other potential contamination sites are located near Brown's Creek Valley, in the vicinity of the North Corridor tunnel route. It is not known at this point whether they would be affected by right of way acquisition. The sites include a railroad dump, located north of Hazel court near Dellwood Road, and a city demolition dump, located northeast of Hazel Street East and 2nd Street North. As in the case of the South Corridor, a more thorough site evaluation would be required if this became the preferred alternative

The information supplied by the MPCA and the Wisc./DNR does not necessarily include all existing or potential sites in the area. In the event of a BUILD decision, the selected corridor will undergo a detailed evaluation for the potential presence of soil and/or groundwater contamination. Properties found to be contaminated will be investigated to determine the type and extent of contamination, the remedial action necessary to clean up the site, and the estimated cleanup costs that could be incurred.

For correspondence with the MPCA and Wisc./DNR regarding hazardous waste sites, refer to appendix 8.

LIST OF POTENTIAL/EXISTING HAZARDOUS WASTE SITES

The following list includes the existing or potential hazardous waste sites obtained through the MPCA's file search. The list includes the name of the site, its approximate location, and its classification(s). The classification descriptions are listed beneath the sites, which are mapped in figure 43.

(1.) Stillwater City Dump, County Road 12 and Eagle Ridge Trail, (categories B, H)

(2.) Stillwater Gas Manufacturing Site, near Nelson St. and South Main St., (category B).

(3.) Stillwater Gas Manufacturing Site II, 423 South Main St, (category B).

(4.)UFE Industries, Inc., 1850 Greeley St., (category B).

(5.) NSP King Plant Slag Disposal Area No. 1, King Power Plant, south side of TH 36, near junction with TH 95, (categories E, G, H).

(6.) Railroad Dump, north of Hazel Court, near Dellwood Road, (category G).

(7.) City Demolition Dump, northeast of Hazel St. East and 2nd St. North, (category G).

(8.) Stillwater Dump, north side of County Road 12, west of Birchwood Drive, (categories G, H).

(9.) Lake McKusick Dump, northwest of Boutwell Rd. North and County Road 12, (categories G, H).

Categories

(A.) EPA National Priorities List (NPL)

(B.) EPA Comprehensive Environmental Response, Compensation,and Liability Information System (CERCLIS).

(C.) MPCA Permanent List of Priorities (PLP).

(D.) MPCA Regulatory Compliance, Hazardous Waste Enforcement Log

(E.) MPCA List of Permitted Solid Waste Facilities.

(F.) MPCA Hazardous Waste Permit Unit Project Identification List

(G.) MPCA 1980 Metropolitan Area Waste Disposal Site Inventory.

(H.) MPCA 1980 Statewide Open Dump Inventory

LEAK/SPILL SITES

The following list includes sites from the MPCA's Underground Storage Tank Information System Data Base. It includes both leaking underground storage tanks, as well as sites where hazardous substances and/or petroleum products have been spilled. The MPCA supplied Mn/DOT with the name of the business or site, and its address. Figure 43 illustrates the site locations.

All of the known leak/spill sites are outside the study corridors, and should have no bearing on a BUILD/NO-BUILD decision. It is probable, however, that there are additional leak/spill sites in the study area which have not yet been identified.If there is a BUILD decision, a property history evaluation and site reconnaissance should be under-

taken to identify any currently unlisted leak/spill sites in the preferred corridor.

(1.)Ammerman, 1815 S. Greeley St.

(2.) Burlington Northern, East Mulberry and North Water Streets.

(3.) Croix Oil, 1749 South Greeley St.

(4.) Culligan, 826 South 4th St.

(5.) Press On, 1987 Industrial Blvd.

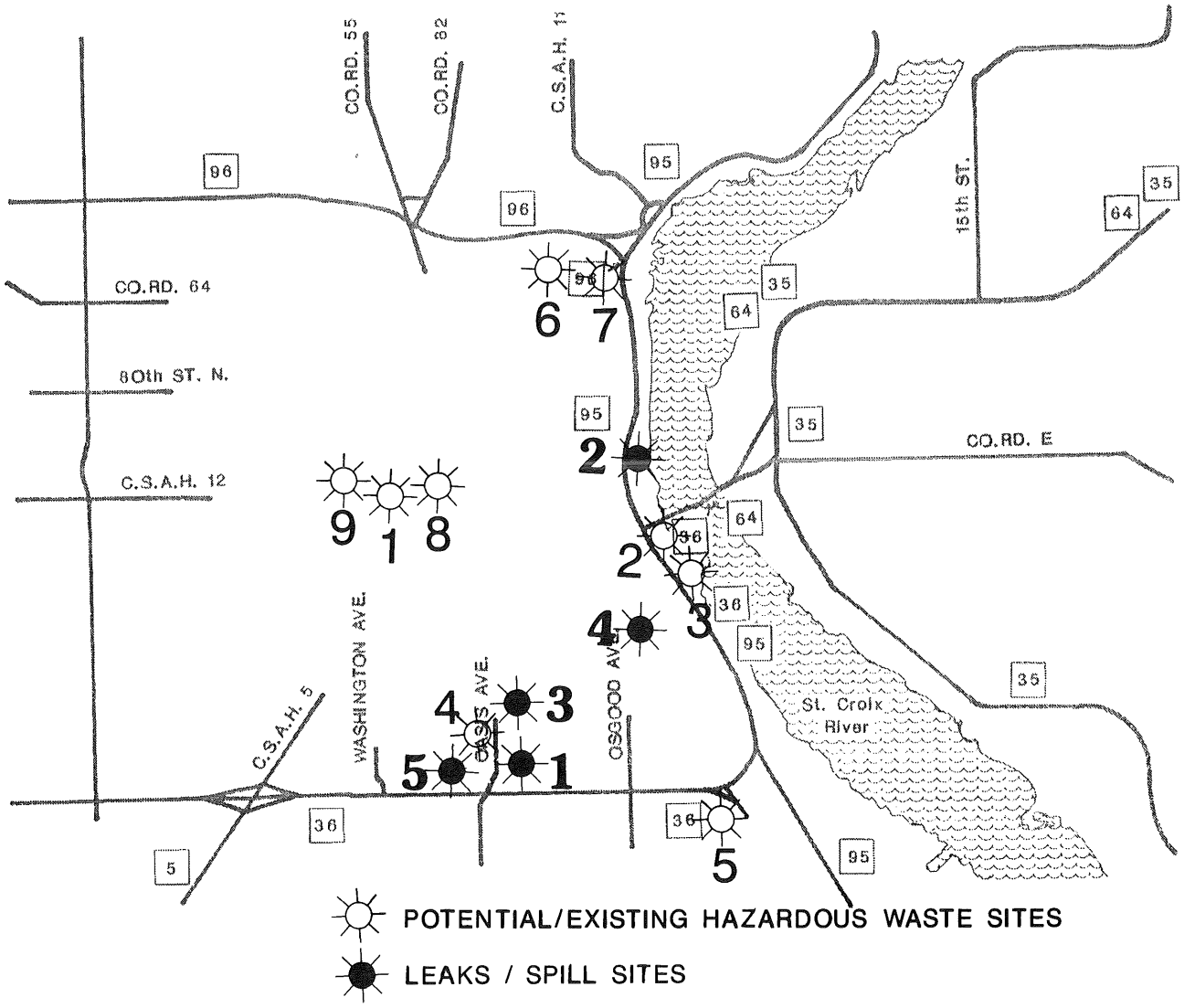


Figure 43
Contamination Sites

VISUAL IMPACTS

Visual impacts are highly subjective. In the case of a St. Croix River crossing, aesthetic perceptions of a given crossing location and design are likely to vary markedly depending on whether the viewer lives, works, or recreates near the facility, or travels on it as a tourist or commuter/hauler. Of course, people do not necessarily fit neatly into a single category. An individual's perception of a river crossing will often vary depending on where they are and what they are doing at a particular time.

Depending on a person's relationship with a river crossing, different aspects of the structure and its environment will assume greater or lesser importance. To a person canoeing or fishing on the river, for example, impacts on the natural environment would likely be the most notable. To the owner of a business in historical downtown Stillwater, the effects of a new river crossing corridor on the built or cultural environment might assume the greatest importance. To auto-based tourists, both the natural and cultural environment are likely to be of interest, along with the geometric design of the highway and its relationship to the landscape.

This section will provide an overview of the major visual impacts which can be expected in each corridor. At this stage in the planning process, it is not feasible to discuss specific bridge or tunnel designs because of the number of type and design variations that are potentially available. Design criteria are highly site-specific, and will be fully addressed if and when a BUILD decision is made and a specific corridor selected. For a more detailed analysis of visual concerns, consult Mn/DOT's special studies on visual effects and wild and scenic river impacts.

NORTH CORRIDOR

The North Corridor bridge and tunnel routes would directly affect the most sensitive natural landscape in the study area. In the North Corridor area, in particular, the St. Croix River Valley is distinguished by its scenery. The river here is bounded by forested bluffs and broken by numerous, undeveloped islands in the middle. Of the two North Corridor alternatives, a bridge would have the most substantial and noticeable impact.

Because of the bluffs on both sides of the river, a new bridge would be built high above the river, going from one ridge to another. Little bluff cutting would be required. However, for some people, a bridge in this area has the potential for being an intrusion in a river valley which has remained surprisingly unspoiled.

A North Corridor bridge would pass directly over Mile Long Island, a popular camping and picnicking destination. The presence of a new bridge could dramatically alter the current ambiance on the island; the bridge would be visible from all parts of the island and its shadow would shade portions of it at various times of the day. At night, lights from the structure would be visible to campers. In addition, it is probable that a pier would have to be constructed on the island.

A North Corridor bridge would also be very prominent from the nearby Boomsite Wayside, located on the Minnesota shore. The Boomsite is listed on the National Register of Historic Places, and is a popular place for picnickers, tourists, and boaters.

It is probable that a North Corridor bridge could be constructed without the need for piers in the river, diminishing its effect on boats and canoes. Nonetheless, a high bridge along this stretch of the St. Croix would necessarily be a powerful, dominating visual presence for people enjoying the river in the immediate vicinity of the structure. However, it is likely that from a distance, a North Corridor bridge would be more obscured by river bends, islands, and trees than the more open Central and South Corridor bridge alternatives, which cross Lake St. Croix.

For people who live and work in the St. Croix Valley near Stillwater, a North Corridor bridge would have the least impact in the sense that few would see it from their residences or work place. Compared to the South or Central Corridors, development in the area is sparse, with a scattering of homes on the ridge-tops above the river. For these homeowners, a new bridge would likely be seen as an adverse impact on the natural beauty of the river valley.

The effect of a North Corridor bridge on motorists would be quite different from the impact on people in the valley. Travelers would be rewarded by outstanding vistas--the wild, forested river valley to the north, and Stillwater and Lake St. Croix to the south. For motorists, the North Corridor bridge would unquestionably offer the most scenic views of the river valley of any of the crossing alternatives. The North Corridor bridge crossing would also have virtually

no grade, and would be the shortest and straightest of the bridges.

A tunnel in the North Corridor would have a much less pronounced visual impact on the St. Croix River Valley than a new bridge. However, as in the other tunnel segments, the potential exists for cut and cover work on the bluffs, because it is not known at this point how conducive the rock is for boring. Back from the St. Croix on the Minnesota side, the tunnel approach and portal would have a major adverse impact on the scenic beauty of Brown's Creek Valley.

For motorists, a tunnel would lack the visual interest afforded by a bridge. While the structure would be unique in the region, it is unlikely that a tunnel would become a cultural symbol for the Lower St. Croix Valley in the same sense that the existing lift bridge has been for many years.

Like all of the BUILD options, the North Corridor routes would have a beneficial impact on the visual environment in downtown Stillwater; a large amount of traffic would go around rather than through it, reducing congestion. However, the North Corridor bridge and tunnel would be less successful in accomplishing this transportation goal than the other BUILD alternatives. Furthermore, the North Corridor would provide an incentive for businesses to relocate along County Road 15 and TH 96. Without appropriate land use controls, these areas could rapidly lose their present rural/exurban visual ambiance.

CENTRAL CORRIDOR

In contrast to the North Corridor, the Central Corridor involves a much more developed portion of the study area. For motorists traveling on the Central/South Corridor common section of TH 36 in Minnesota, a new limited-access freeway would create a greater sense of order out of the built landscape; the confusing array of visual distractions such as stop lights, intersections, and signs would be eliminated, standardized, or made less apparent. For people working or shopping along this stretch, a lower grade on the highway would reduce the sights and sounds of traffic along a high volume corridor.

Like the South Corridor, the Central Corridor would require the acquisition of a large number of homes in Oak Park Heights; residences left along the fringe of the new right-of-way would be affected by the visual presence of the river crossing corridor. Above the current TH 36 in Stillwater, a few homes along the top of the bluff would be acquired for right-of-way in the Central Corridor, and many other residents in the area would be able to see the approach and/or new bridge. Many residents would probably consider this to be an adverse visual impact.

Some bluff cutting might be necessary in sections of the cliff below the homes in this area, although the potential for this could be reduced if the railroad tracks below were relocated closer to the river. If an elevated Central Corridor roadway became the chosen design option, views of the Minnesota bluff from the river would be at least partially blocked, and the view of Stillwater from the east would lose some of its appeal.

Because of the lack of space between the river and the Minnesota bluffs, a Central Corridor bridge approach would have a more crowded appearance than the other corridors. This effect would be intensified if the old bridge remains in place; the two structures would form a kind of triangle on the river, diminishing the aesthetic integrity of the old lift bridge and the view from the Stillwater waterfront. A Central Corridor bridge could adversely affect plans Stillwater has for a future waterfront park/parking area south of downtown.

If the existing bridge was eventually removed, it is unlikely that the new structure would be able to soon acquire the same historic and symbolic presence that the old bridge had for residents, business people, and visitors. On the other hand, visual clutter on the St. Croix would be reduced. As with all the BUILD alternatives, removal of the existing bridge would diminish the presence of civilization on the river.

On the Wisconsin shore, impacts to the bluffs could be minimized by using the existing road corridor as much as possible, although additional cuts into the bluff could be necessary. The presence of the two bridges coming together on the Wisconsin shore would increase visual impacts to Kolliner Park, and diminish its appeal as a semi-wild recreation area. As in two of the South Corridor alignments, an on-land tunnel could be constructed to reduce bluff cuts below Houlton.

Of the new bridge options, the Central Corridor alignments have the least amount of clearance above the river; the lowest bridge would have 45 feet of clearance over the channel. The proximity of a Central Corridor bridge to the river surface would have a strong visual impact on people in nearby boats.

To motorists using the bridge, the Central Corridor would lack the visual drama of a high bridge, although a good view of Stillwater would be available to those approaching from the east.

SOUTH CORRIDOR

The South Corridor "common" section along TH 36 would share the same attributes discussed above. On the Minnesota side, a South Corridor bridge would rise above a landscape of mixed residential and industrial land uses. Nearby riverfront developments which would be visible from the bridge include the Alan S. King Power Plant, the Stillwater Wastewater Treatment Plant, the Sunnyside Marina, the Andersen Window factory, and--on the bluffs above the river--residential and commercial portions of Oak Park Heights and Stillwater. Because of the large amount of development, the South Corridor bridge alignments would have the least visual impact on Minnesota natural areas of any of the new bridge alternatives.

The Wisconsin shore is much less developed, with forested bluffs dropping abruptly into the river from the flat farm and residential areas above. To a large extent, impacts to bluffs will be determined by the height of the bridge at the Wisconsin shore. In general, a lower and shorter bridge would require more bluff cutting in order to build the approach, but all of the South Corridor alignments would require at least some cutting. Two of the Wisconsin crossing alignments in the South Corridor include optional tunnel segments which would reduce bluff impacts. In addition, the northern alignment takes advantage of a natural draw, which would help minimize the need for cutting, and partially shield the approach from river users up and downstream.

A South Corridor bridge would be visible from a large number of residences in the area, on both sides of the river. For motorists, a South Corridor bridge would provide expansive views of the Lower St. Croix, upstream to Stillwater, and south to Bayport and the next bend in the river.

Of all the crossing alternatives, a South Corridor tunnel would have the least visual impact on the St. Croix River and surrounding natural environment. Although the west approach would be visible from the river, it would be affecting an area which is already heavily developed, unlike the North Corridor tunnel. The east portal in Wisconsin would be a considerable distance inland, shielded from the river by the bluffs. (For more details on tunnels, see the special Mn/DOT tunnel study.)

One potential visual effect of all the South Corridor alignments is that they would pass through undeveloped agricultural land in Wisconsin. Without adequate zoning controls, these areas could lose their rural character as new development locates along the new route.

NO-BUILD

A major visual effect of the NO-BUILD option would be increasing congestion and clutter on TH 36, both in downtown Stillwater and along the commercial strip in Oak Park Heights. In Stillwater, congestion is already affecting the ambiance of the historical downtown area, and this can be expected to increase substantially if the old bridge remains the only river crossing in the area. Changes which could affect the visual environment include an increase in signs, traffic signals, concrete islands, safety barriers, turn-lanes, and other incremental traffic improvements.

A major benefit of the NO-BUILD option is that it would not by itself precipitate any major visual changes in the St. Croix River Valley, although auto and boat congestion at the lift bridge would continue to increase. The NO-BUILD alternative would also help to keep new development concentrated along the existing corridors.

MITIGATION

If a BUILD decision is the preferred alternative, a number of mitigation measures are available to better integrate a new highway corridor and bridge into the existing landscape. Bluff cuts will be minimized; if they are unavoidable, cuts should be varied, with some rock left exposed to add vitality to the visual experience and illustrate the area's geology. When feasible, the cutting of trees and shrubs along the right-of-way will also be limited; when cutting is required, irregular clearing and feathering of vegetation will add visual interest to the road. Plantings on the right-of-way will take advantage of opportunities for developing native plant diversity.

Locating corridors along natural and cultural boundaries will help reduce impacts. Vegetation, reduced grades, and earth mounds will be used to reduce visual impacts on the surrounding community.

Alignments will maximize the use of potential scenic vistas, such as an approach leading down to a bridge. If a new bridge is the selected alternative,

railings and safety barriers will be designed so that they do not unduly restrict views.

Various geometric design techniques will be employed to help formulate an alignment which is both easy to drive and aesthetically pleasing. In certain types of terrain, for example, a divided highway might best be constructed with separate alignments with a forested strip in between them. This would heighten both safety and visual interest.

The design of a bridge critically influences the visual impact it has on its surrounding environment. A well-designed structure which is carefully integrated with the adjacent natural and cultural environment can function like a giant sculpture and a community symbol. A poorly designed bridge, however, can be an intrusion which detracts from its surroundings.

The height of a bridge, and the number and placement of its piers are important visual considerations, particularly for people on the river. Fewer piers, in conjunction with a high bridge, would tend to reduce the proximity of the structure to river users and diminish the potential impact on their activities. Conversely, a high bridge would be visible for a greater distance up and downstream.

Location should be an important factor in determining bridge materials and style. By using natural materials such as native stone on piers, for example, connections to the natural environment can be emphasized; this could be especially useful in the comparatively unaltered North Corridor. In an area like the Central Corridor (which is close to an extensive concentration of historical architecture), a bridge design employing motifs from the past would probably be more appropriate than a modern-looking structure. In the relatively industrialized South Corridor, a wider range of design choices could be appropriate.

With either of the tunnel alternatives, an important visual concern would be the location of on-land ventilation structures and utility buildings. These would have to be carefully integrated into the landscape in order to minimize adverse visual impacts. In addition, visual impacts would be a consideration in the design of the portals. If a North Corridor tunnel became the selected alternative, extensive aesthetic mitigation would be necessary in and around Brown's Creek.

If a BUILD decision is made and a bridge becomes the selected alternative, the DOTs will make every effort to ensure and encourage public input into the bridge type and design selection process. The DOTs will produce a design guide detailing aesthetic mitigation options if a BUILD alternative is selected.

ENERGY USE

Energy use is an important consideration in evaluating the impacts of a transportation project. Because a significant quantity of the oil used in the U.S. must be imported from abroad, energy consumption is a critical national security concern. In addition, there are a number of important environmental considerations related to energy conservation.

The various river crossing options analyzed in this study would have a wide range of energy use impacts. The main factors affecting this disparity in vehicle fuel consumption include total miles traveled, the number of starts and stops required, speed-ups and slow-downs, congestion, and grade steepness.

The numbers in this section are estimates of comparative differences in annual ("direct") fuel consumption by vehicles which would use, or be affected by the various new river crossing alternatives. The figures assume similar amounts of traffic, and use the NO-BUILD option as a basis of comparison The calculations do not include "indirect" energy uses such as the fuel needed to construct and maintain the roadway. The amount of fuel used to construct and maintain a new road would typically be small compared to direct energy consumption, and would be relatively similar for all of the alternatives except for NO-BUILD.

As illustrated in table 22, the greatest fuel savings would be afforded by a new South Corridor bridge. As with all the BUILD options, the largest energy savings would be gained by maintaining the existing bridge for local traffic in conjunction with a new structure. Over the course of a year, a South Corridor bridge would save 285,000 gallons of fuel a year compared to maintaining existing conditions, providing the lift bridge is left in place. If the old bridge was removed, the savings would be 237,000 gallons per year.

The Central Corridor would have the second most beneficial energy impacts. If this became the preferred corridor, the energy savings would be 197,000 gallons per year with the old bridge left in place, compared to 172,000 gallons per year if the structure was removed.

Of the new bridge options, the North Corridor would have the least beneficial impacts from an energy perspective. If the lift bridge were left in place, the annual energy savings would be 11,000 gallons; if the old bridge were taken out, there would be an increase in energy use of 84,000 gallons per year over the NO-BUILD alternative.

Both of the tunnels would be associated with high energy use, in part because of their steep grades. (Aside from vehicle energy consumption, tunnel lighting and ventilation would also consume considerable amounts of energy.) The North Corridor tunnel would have the most adverse energy impacts of all the alternatives: The increase in annual fuel consumption would range between 1,011,800 and 1,884,000, depending on whether the lift bridge were retained. The South Corridor tunnel would be slightly more conserving, with the annual increase over the NO-BUILD option ranging between 835,600 gallons of fuel with the old bridge left in place, to 1,173,500 gallons if it were removed.

TABLE 22
FUEL USE SUMMARY

Alternatives	Fuel Consumption Change			
	Gallons per Day		Gallons per Year	
	Decrease	Increase	Decrease	Increase
North Corridor (new br./retain existing br.)	30		11,000	
North Corridor (new br./remove existing br.)		230		84,000
North Corridor (tunnel/retain existing br.)		2,770		1,011,800
North Corridor (tunnel/remove existing br.)		5,160		1,884,000
Central Corridor (new br./retain existing br.)	540		197,000	
Central Corridor (new br./remove existing br.)	470		172,000	
South Corridor (new br./retain existing br.)	780		285,000	
South Corridor (new br./remove existing br.)	650		237,000	
South Corridor (tunnel/retain existing br.)		2,290		835,600
South Corridor (tunnel/remove existing br.)		3,210		1,173,500

* These estimates predict changes in fuel consumption for each alternative, compared to the perpetuation of existing conditions over an equal period of time.

The methodology used in the analysis was largely derived from a manual entitled Energy and Transportation Systems, published in 1983 by the Transportation Laboratory of the California Department of Transportation. Because of the difficulty in accurately forecasting the relevant variables, the estimates have a 10 to 20 percent margin of error.

CONSTRUCTION IMPACTS

All applicable precautions will be taken to limit impacts connected with highway and bridge construction activities. Major environmental effects associated with construction include noise, air, water quality, and visual impacts. In addition, there will be impacts on traffic flow and access. A detailed discussion of construction impacts will not be possible until a specific corridor is chosen, providing a BUILD decision becomes the selected alternative.

NOISE

Construction noise is not expected to be a problem, or violate any standards. Mn/DOT's Standard Specification 1717 states in part that the contractor shall comply with all applicable laws, ordinances, regulations, orders, and decrees during the construction period. In Wisconsin, contractors will be obliged to follow the rules set forth in the Wisconsin Standard Specifications for Road and Bridge Construction, Section 107.

AIR

Construction of a new river crossing and approach corridors would have a temporary impact on air quality, for the following reasons:

1.) Vehicle delays during the reconstruction of an existing road segment will result in higher vehicle emission levels.

2.) Construction vehicles and related equipment will increase emissions.

3.) Disruption of ground cover due to grading and other activities will generate dust.

Vehicle delays caused by construction activities are not expected to be serious. Every effort will be made to minimize these impacts by maintaining a smooth traffic flow in each direction during the construction period. Temporary lane closures will probably occur, but will be short-term.

Emissions from construction equipment will be minimal. Equipment will not be concentrated at locations near any sensitive receptor sites, and any single piece of machinery will not result in significant pollution concentrations. Most construction equipment is diesel powered; diesel engines generate only minor levels of CO.

Dust generated by construction activities will be minimized by controlled adherence to transportation agency specifications and MPCA regulations. Dust control measures will include watering, the application of calcium chloride, and/or street sweeping. Paving and the replacement of vegetation will be completed as soon as possible after site preparation.

WATER QUALITY

The most serious construction-related impacts involve water quality. Potential impact sources include bridge or tunnel construction in the river, wastewater from materials preparation, accidental spills of petroleum products or chemicals, and runoff water muddied by erosion. Construction-related water quality concerns are covered in Mn/DOT's Standard Specification 1717 for Highway Construction and Wisc/DOT's Standard Specifications for Road and Bridge Construction.

Construction on the river bed has the largest potential for creating water quality impacts. Of the various corridor alternatives, tunnel construction would have the greatest effect on the river bottom, the magnitude depending on the construction technique which is selected. With any tunnel construction method, some sediment will be dislodged, carried downstream, and eventually redeposited on the river floor. Benthic organisms in the immediate construction area, in particular, will be negatively impacted. Dredged material collected from the bottom of the river will be deposited at a safe on-shore location.

River bed impacts associated with bridge construction would be less severe than those resulting from tunnels, as work would be focussed around the pier placements rather than along the entire crossing. As with the tunnel alternatives, special care would be taken to protect mussel populations in the area; details are included in the threatened and endangered species section of the draft EIS. In the North Corridor, it is possible that a bridge could be constructed with a pier on Mile Long Island, eliminating the need for one on the river floor.

Every practicable effort will be made to minimize the disruption and redistribution of sediments along the river bottom. Water quality impacts and mitigation associated with river crossing construction are discussed in more detail in the water quality section

of the draft EIS, and the special studies Mn/DOT completed on natural resource impacts and tunnels.

Construction-related wastewater generation and spills will be carefully controlled according to the relevant DOT standard specifications. The contractor will take all necessary precautions and actions to prevent contaminating water with any substance which is harmful to fish and wildlife, or detrimental to public use. Water containing sediment from wash operations will not be allowed to enter public waters until its sediment content has been reduced to not more than that of the water into which it is discharged, or will eventually enter. Wash water or waste from concrete mixing operations will not be allowed to enter streams.

Ground left uncovered by construction activities is vulnerable to sheet and rill erosion. Sediment carried away by runoff can easily enter adjacent streams, rivers, and lakes, with potential impacts on fish, wildlife, navigation, and recreation. As stated in Mn/DOT's Standard Specification 1717, the contractor will be required to conduct operations so as to minimize erosion and the deposition of silt in neighboring water bodies. Where erosion is expected to be a problem, the contractor will be asked to submit an erosion control plan prior to construction. The contractor will be requested to construct necessary permanent erosion control measures at the earliest possible time, in addition to any temporary techniques which may be required. Erosion control might include measures such as mulch, berms, dikes, slope drains, sedimentation basins, and diversions. Restoration work will include cleanup, shaping, replacement of topsoil, and establishment of vegetative cover on all disturbed areas where erosion potential has been increased by construction activities.

VISUAL

Aside from the visual impacts which would accompany the completion of any of the BUILD alternatives, construction activities themselves will have visual impacts. The presence of heavy equipment, detour signs, uncovered earth, and construction materials will have an important visual impact on the area surrounding the immediate corridor. There is little which can be done to mitigate these impacts, aside from keeping the construction area as orderly as possible. Excess excavated materials will be disposed of in accordance with applicable DOT procedures. The visible effects of the completed BUILD alternatives are discussed in the visual impacts section of the draft EIS.

TRAFFIC

A traffic control plan will be developed prior to construction. If a BUILD decision is made, details will be worked out after a specific corridor alignment has been chosen.

Increased congestion and temporary driver confusion can be expected as travel patterns are altered and existing access points are either modified or closed. The traffic control plan will include provisions for adequate signing and strategies for maintaining safe traffic flow. The DOTs will work to ensure that drivers are made aware of any detours, alternate routes, or other inconveniences resulting from construction.

THE RELATION BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

SHORT-TERM EFFECTS

Primary adverse short-term effects of a new river crossing would include the following:

1.) Construction-related environmental impacts, including increased noise, air, and water pollution. Of these, the one with the potential for causing the most harm is water contamination caused by the disruption of sediments on the river bottom, particularly with a tunnel. This could temporarily harm populations of benthic organisms in and around the work area, and make certain types of recreation less desirable. Construction will also temporarily increase noise and air pollution. In addition, the work area will be less visually attractive during the construction period.

2.) Construction-related travel impacts. Construction will cause relatively minor, short-term inconveniences for motorists in the area.

3.) Right-of-way acquisition and relocations. If a BUILD decision becomes the preferred alternative, it is estimated there will be between 30 and 61 relocations, mainly residences. A large percentage of these people are likely to relocate in or near the study area; any fiscal or school impacts resulting from relocations are likely to be short-term.

LONG-TERM EFFECTS

Beneficial long-term effects would be as follows:

1.) Improved interstate traffic flow and safety. Because through traffic would be able to avoid the lift bridge and traffic signals in downtown Stillwater, travel times between Minnesota and west-central Wisconsin would be reduced. This reduction would be aided by improvements in the approach corridors in both states. Another important benefit will be improved safety for motorists using the new facilities.

2.) Reduced congestion in downtown Stillwater. Traffic not having an origin or destination in Stillwater would be routed away from the downtown area. The reduced congestion would help Stillwater implement its comprehensive plan, and make the downtown area an easier and more attractive place to visit and shop.

3.) Reduced conflicts between vehicles and watercraft at lift bridge site. If the old bridge is left in place after a new crossing is completed, there would be less conflict between vehicles and watercraft than under a NO-BUILD decision, due to the large amount of traffic which would be diverted. In the event a new river crossing is built and the old structure is removed, boats could proceed upstream unhindered by the need to wait for the lift.

4.) Greater opportunities for growth and development. Because access to the Twin Cities and Stillwater area would be improved, a new river crossing would result in increased interest in residential, commercial, and industrial development in portions of west-central Wisconsin. Wisconsin residents would find it easier to commute to jobs in Minnesota, while Wisconsin businesses would have better access to markets in the Twin Cities. In general, residents of west-central Wisconsin would have improved access to a wide range of cultural, social, and economic opportunities. (On the other hand, growth and development are sometimes associated with substantial negative impacts.)

5.) Long-term fiscal benefits. Because a new river crossing would stimulate new development, especially in Wisconsin, the long-term fiscal advantages would more than compensate for minor short-term fiscal impacts.

6.) Opportunity to move forward on long-term local and regional plans. A new river crossing in the vicinity of Stillwater-Houlton has been a topic of discussion and study between the two state transportation agencies since the 1960s. If a NO-BUILD decision becomes the preferred alternative, the issue of a new river crossing is almost certain to emerge again at some point in the future because of continued regional growth, vehicle congestion, increasing boat traffic, and the age of the existing structure. A BUILD decision, on the other hand, would enable communities to directly confront important planning issues which they might otherwise have to postpone. The status of the Stillwater-Houlton river crossing(s) is an integral component of local and regional development plans.

In addition to the long-term benefits mentioned above, a new river crossing would also result in effects which could be considered long-term disadvantages:

1.) Facilitate the long-term trend away from farming in St. Croix County. While St. Croix County has adopted a farmland preservation plan, pressure to convert agricultural land to other uses would increase if a new river crossing were constructed. In the Midwest, as well as in other parts of the country, there has been growing concern over the wisdom of converting prime farmland to transportation, residential, commercial, and/or industrial uses. Aside from the loss of farmland, important social changes could occur as rural agricultural areas are developed. The degree to which a new river crossing indirectly affects agriculture and rural life styles will be strongly influenced by local farmland preservation and planning efforts.

2.) Impacts on the Lower St. Croix National Scenic Riverway. A new crossing would change the existing appearance of the river valley. The effect would be most pronounced with a North Corridor bridge, which would be located on a stretch of river which appears relatively wild. If the existing bridge remains in place, a new crossing would increase the number of cultural artifacts along the river.

3.) Impacts on flora and fauna. A new river crossing has the potential for relatively minor long-term impacts on plants and wildlife, mainly with the North Corridor alignments. Some habitat will be permanently lost due to right-of-way acquisition, although mitigation techniques are available to offset some of these losses. Aquatic life is of greatest concern, especially the Higgins' Eye Pearly Mussel, which is listed on the Federal Threatened and Endangered Species List. Because of the extensive mitigation agreed to by Mn/DOT and Wisc/DOT, there should be no substantial long-term impact on St. Croix mussel populations. A North Corridor tunnel has the potential for a long-term adverse impact on trout in Brown's Creek.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS WHICH WOULD BE INVOLVED IN THE SELECTION OF A BUILD ALTERNATIVE

All of the BUILD alternatives will require commitments of natural, physical, human, and financial resources which, for all practical purposes, must be considered to be irretrievable and irreversible. The most important commitments include the following: land and the resources on it; fuel, labor and construction material; and financing.

All of the BUILD alternatives will require the purchase of new right-of-way. In the case of the North Corridor in Minnesota and all of the Wisconsin corridors, much of the land that would be acquired is agricultural, some of which is classified as prime farmland. Once this property is procured for right-of-way, there is little chance that it could be used for agricultural purposes in the foreseeable future.

Although agricultural land represents the largest potential land use which would be affected, there are a variety of others, including residential, commercial, and park/recreational property. While it is possible that certain residential or commercial structures could be transported to new locations, most of the affected buildings would be razed. Over the short-term, property acquisition could result in a small amount of lost jobs and residents. From a long-term perspective, however, employment and population in the area will grow as a result of a new river crossing; many people in the affected corridors will likely relocate in or near the study area.

Some park, natural, and/or recreational areas on the St. Croix River would be directly affected by the BUILD alternatives. All of the BUILD alternatives, for example, will require that piers or other structures be placed on the river bottom or on islands. Depending on the alignment, natural features such as trees, geological formations, and animal habitat could be lost or modified, although mitigation will at least partially compensate for features such as wetlands and mussel beds on the river bottom.

In addition to direct impacts on land and the river, there will be some permanent indirect effects on areas not actually acquired for right-of-way. Scenic vistas along the river, for example, will be altered in some places by a new crossing. In general, farmland preservation will be more difficult in areas adjacent to a new highway corridor because development pressure will be more intense. The extent to which indirect development occurs as a result of a new river crossing is, to a large degree, dependent on local land use controls.

Considerable amounts of fossil fuel and labor, as well as construction supplies such as steel, cement, aggregate, and bituminous materials would be required by all of the BUILD corridors. The energy, labor, and material used to construct, plan, and design a new river crossing would, for the most part, be irretrievable.

A new river crossing will require a considerable state and Federal financial commitment. Construction cost estimates alone range from approximately $57,000,000 for a North Corridor bridge to $173,000,000 for a South Corridor tunnel. These figures do not include the preliminary and actual design costs, or the expenditures required to maintain the facility.

While these public funds are not directly recoverable, money spent on this new infrastructure should be considered to be a long-term investment in the future safety and economic vitality of the region. Ideally, the considerable planning preceding any BUILD decision will act as a stimulus for local communities to carefully consider their own future development plans; this should help reduce some of the costs typically associated with unplanned growth.

LIST OF PREPARERS

The following people were responsible for preparing and reviewing the draft EIS.

NAME	AREA(S) OF CONTRIBUTION	EXPERIENCE	EDUCATION
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LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS DRAFT EIS ARE SENT

FEDERAL AGENCIES

Advisory Council on Historic Preservation

Council on Environmental Quality

Department of Agriculture

- Soil Conservation Service

Department of the Army

- Corps of Engineers, St. Paul District

Department of Commerce

Department of Energy

Department of Housing and Urban Development

Department of the Interior

- Fish and Wildlife Service
- National Park Service
- Office of Environmental Project Review
- Regional Environmental Review Officer

Department of Transportation

- Urban Mass Transportation Administration

Environmental Protection Agency

Federal Power Commission

Federal Public Health Service, Center for Disease Control

U.S. Coast Guard

STATE AGENCIES

Board of Water and Soil Resources (MN)

Department of Agriculture (MN)

Department of Health (MN)

Department of Natural Resources (MN and WI)

Department of Public Service (MN)

Environmental Quality Board (MN)

Legislative Reference Library (MN)

Lower St. Croix Management Commission (MN and WI)

Minnesota-Wisconsin Boundary Area Commission (MN and WI)

Pollution Control Agency (MN)

REGIONAL, COUNTY, AND LOCAL AGENCIES

Baytown Township (MN)

City of Bayport (MN)

City of Oak Park Heights (MN)

City of Stillwater (MN)

Grant Township (MN)

Stillwater Township (MN)

St. Croix County (WI)

Town of St. Joseph (WI)

Town of Somerset (WI)

Twin Cities Metropolitan Council (MN)

Twin Cities Metropolitan Waste Control Commission (MN)

Washington County (MN)

West Central Wisconsin Regional Planning Commission (WI)

OTHER

Environmental Conservation Library

Leonard, Street, and Deinard

Northern States Power Company

Sierra Club (St. Croix Valley Group)

St. Croix River Association

Stillwater Business Association

Stillwater Development Committee

Stillwater-Houlton Bridge Task Force

Voyageurs Region National Park Association

COMMENTS AND COORDINATION

The Stillwater-Houlton river crossing studies have involved substantial coordination with the public, agencies, communities, and special concern groups. The major areas of coordination and public input include but are not limited to the following: scoping/early coordination; the Stillwater-Houlton Bridge Task Force; formal resolutions; public petitions and mail-in comments; public informational meetings and newsletters; and cooperating agencies and their review comments of the special studies.

SCOPING ACTIVITIES

Although a new river crossing was studied in the late 1960s and early 1970s, these efforts were discontinued due to lack of funding. The current round of studies began with scoping activities in 1984. The first major product of this phase--the Draft Study Outline and Scoping Document--discussed the justification for the study and outlined its proposed schedule and likely development path. In addition, it introduced potential location alternatives, as well as environmental concerns which might require further study. Public scoping meetings were held shortly after the report was released. The second scoping document--the Scoping Decision Document Final Study Outline--was finished in January, 1987. This report represented a record of the decisions which had been reached through the scoping process about the breadth of the issues and alternatives to be analyzed in the draft EIS.

STILLWATER-HOULTON BRIDGE TASK FORCE

One of the major areas of public involvement and coordination has been carried out through the Stillwater-Houlton Bridge Task Force, which was formed in 1985 during the scoping process. The Task Force is composed of members and alternates which were appointed by the 11 communities that could be affected by the various alternatives. The Task Force was charged with a number of assignments, including the following:

* To discuss and analyze all relevant information that might influence the eventual BUILD/NO-BUILD decision.

* To communicate information between the Task Force and the communities represented.

* To facilitate community input and discussion during the draft EIS process.

* To make a BUILD/NO-BUILD recommendation to the Minnesota and Wisconsin Departments of Transportation after reviewing all the environmental documents.

In June, 1989, the Task Force released an evaluation of the most important advantages and disadvantages of the various BUILD alternatives. Task Force Chair Sally Evert summarized her group's analysis as follows:

> Overall, the South Corridor received the most support as the best BUILD alternative from the Task Force. The Central Corridor was slightly behind the South, and the North Corridor was a distant third...Our goal in releasing the results of our review is to provide some assistance to our citizens that will hopefully aid them in their own review of the studies.

COMMUNITY RESOLUTIONS

Because of the large potential impact of a new river crossing, a number of communities have been closely involved with the environmental review process. Several have passed formal resolutions supporting or rejecting specific alternatives. In October, 1988, the St. Joseph Town Board unanimously passed a motion which stated that if a new river crossing is built, it should be located along the northern align-

ment of the South Corridor (the "Buckhorn" site). According to the resolution, the northern alignment "is the only route in the Southern Corridor that the Board finds acceptable."

In April, 1988, the Stillwater City Council passed a resolution supporting the South Corridor as the preferred location for a new river crossing. According to the resolution, "there is a documented regional and local need for a new bridge across the St. Croix River." The statement observed that "the South Corridor Bridge location has the fewest detrimental impacts to the City," and that "the Central or North locations would be detrimental to the health, welfare and economy of the Stillwater community." In addition to the City Council resolution, the Stillwater Planning Commission, the Downtown Plan Steering Committee, the Heritage Preservation Commission, the Chamber of Commerce, the Downtown Business Association, and the Downtown Development Corporation recommended a South Corridor bridge location as well as continued operation of the existing lift bridge.

Grant Township passed a resolution in April, 1987 opposing the selection of a North Corridor route. According to the statement, a North Corridor route "would have serious ramifications on the setting and atmosphere of the Township of Grant."

In May, 1987, Stillwater Township took a position which held that "the Northern Corridor is not a viable site for a new bridge." According to the Township, a North Corridor route would "potentially have significant negative impacts on several environmentally sensitive areas," and would be "totally inconsistent" with the National Scenic Riverway designation of the St. Croix. Furthermore, a North Corridor BUILD decision would have "an adverse effect on the economics of the TH 36 service area and be detrimental to the community as a whole." The statement specifically expressed concern about the historical, archaeological, and social impacts associated with a North Corridor route, adding the following:

> In the one-hundred plus years which this community has developed, the emphasis has been on creating and maintaining a rural atmosphere. Regional and Township comprehensive plans have all followed a distinct and consistent pattern by providing for the continuance of this rural atmosphere...Hundreds of families have relied upon this planning effort...and stand united in their opposition to a Northern Corridor that would cause such a significant and unacceptable change to our community.

PETITIONS AND MAIL-IN COMMENTS

Two petitions have been circulated in support of various alternatives. The largest contains over 400 signatures, mainly from residents living in the Minnesota portion of the study area. This petition advocates locating a new bridge "over the St. Croix River south of Stillwater as an extension of State Highway 36." According to the statement, a South or Central Corridor location "would best accommodate traffic, including the Andersen Corporation employees." The petition added that the "the scenic quality of the comparatively untouched area north of Stillwater would be seriously impaired" by the North Corridor alternatives. An additional adverse impact of the North Corridor is that it would "isolate" Stillwater.

Another letter was received by the transportation departments which included 37 signatures from St. Joseph Township residents. The signees expressed their support for the Central Corridor and/or the northern alignment of the South Corridor. Objections to the two southern-most South Corridor alternatives included extensive farmland impacts, the expense of not using existing corridors, and impacts to wildlife, particularly along the western edge of the heavily wooded Birch Park Ski Area. The petition noted that the Birch Park forest is popular with hunters, and expressed concern about the safety of passing motorists if one of the two southern alignments of the South Corridor became the preferred alternative.

As of January, 1989, Mn/DOT had received nearly 200 separate public comments on the various alternatives. Many of these were in the form of mail-in comment cards supplied by Mn/DOT. Others were letters, some of them several pages in length. In general, the commentary was impressive for the degree of interest shown in the outcome of the river crossing studies. Also notable was the affection expressed for the cultural and natural attributes of the St. Croix River Valley. It is clear that citizens in the area are concerned about the issues associated with a new river crossing, and want to be involved in the decision-making process.

Although the opinions expressed in the mail-in comments were varied, a number of themes emerged

from Mn/DOT's tabulation of the responses. The top five "alternatives" in terms of number of comments received are as follows: oppose North Corridor (76); support South Corridor (60); support Central Corridor (17); support NO-BUILD (11); and support North Corridor (10).

The comments were also categorized according to what concerns people thought were most important in weighing the alternatives. The nine issues most frequently stated were as follows: aesthetics (57); environment (45); access (44); rural lifestyle (42); "disruption" (40); business concerns (37); traffic congestion (36); cost (33); and wildlife (31).

NEWSLETTERS AND PUBLIC INFORMATION MEETINGS

Mn/DOT has periodically sent newsletters to interested area residents which detailed the study process and reviewed the results of some of the special environmental studies. Since the beginning of the scoping process, Mn/DOT and Wisc/DOT have also held a number of informational meetings for the public, special concern groups, communities, and agencies. Additional public hearings and information meetings will be scheduled in 1990 to discuss the material included in the draft EIS.

COOPERATING AGENCIES AND THE ENVIRONMENTAL REVIEW PROCESS

During the environmental review process, a number of state and Federal governmental bodies have acted as cooperating agencies with Mn/DOT, Wisc/DOT, and the FHWA.[1] These agencies have reviewed project documents in their areas of expertise and/or interest, providing critical commentary and information. Cooperating agencies include the following: the U.S. Fish and Wildlife Service; the National Park Service; the U.S. Army Corps of Engineers; the U.S. Coast Guard; the Minnesota Department of Natural Resources; and the Wisconsin Department of Natural Resources. The National Park Service and the two State Departments of Natural Resources have been the most actively involved.

In addition to cooperating agencies, a number of other Federal, state, regional, and local governmental bodies, as well as various private organizations, have played roles in the study process. Some of these include the Minnesota-Wisconsin Boundary Area Commission, the Lower St. Croix Management Commission, the City of Stillwater, the Voyageur's Region National Park Association, and the Sierra Club.

Although the issues raised by these agencies and groups are too numerous to summarize in their entirety, a number of themes have emerged. The National Park Service (NPS), the State Departments of Natural Resources (DNRs), and the environmental organizations have focussed their concern on impacts to the St. Croix National Scenic Riverway. Issues raised include (but are not limited to) visual and noise impacts along the river, endangered species, effects on Mile Long Island and the Boomsite, and the disposition of the existing bridge.

For individuals interested in the coordination between the transportation departments and other participants in the review process, Mn/DOT has assembled a volume which includes correspondence not included in the appendix of this draft EIS.

[1] A cooperating agency is a Federal, state, or local governmental body with a formal role as a participant in the environmental review process. The term does not imply that the cooperating agency necessarily shares the views of the lead agency or is trying to promote the project being reviewed.

INDEX

(Note: List does not include minor references)

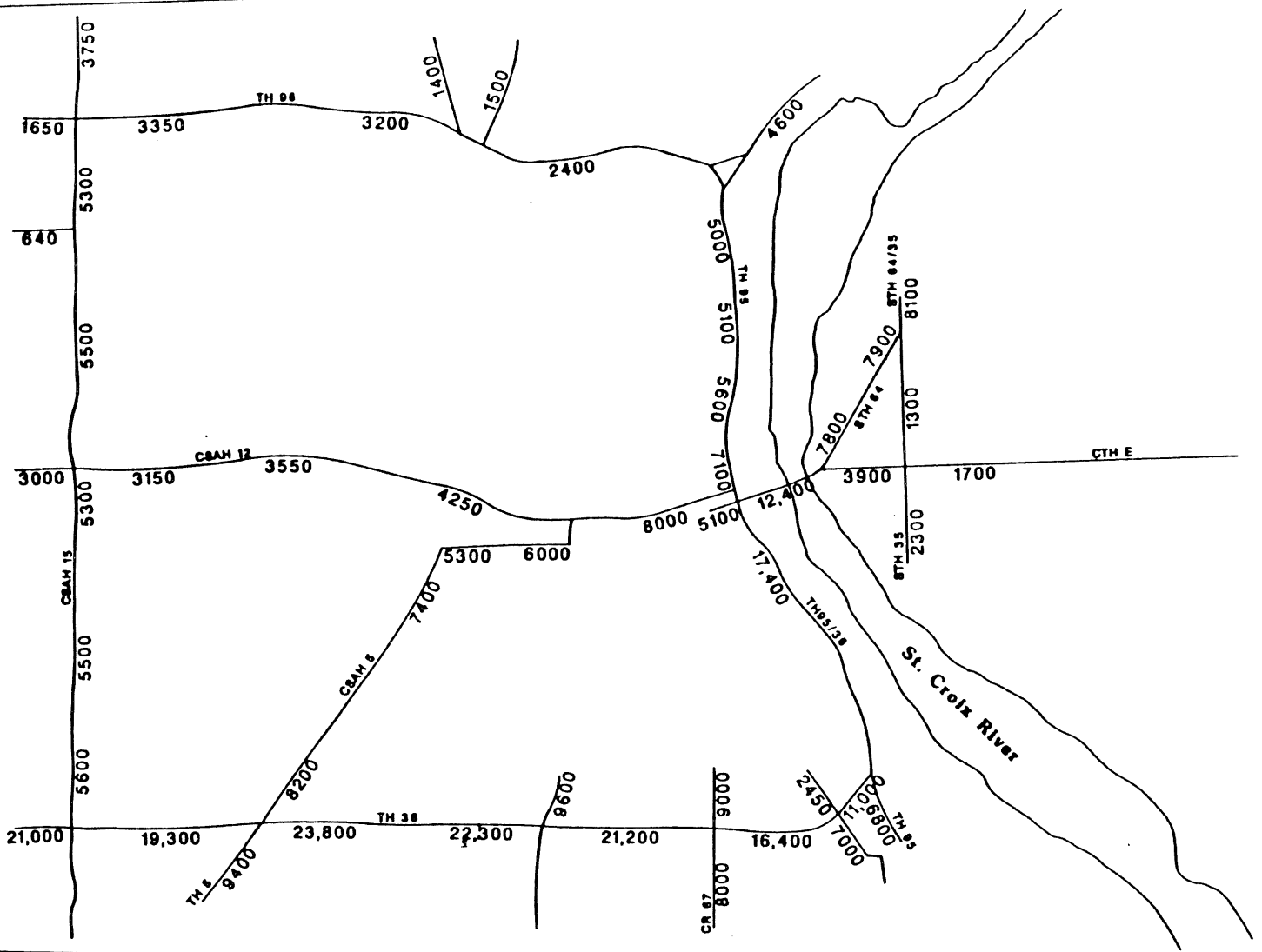
Topic	Page(s)
Accessibility	2-4,63-66
Accident Rates	7-9
Age Groups	48-50, 58-63, 71
Agriculture	46-47, 54-57
Air Quality	83-85
Alternatives (BUILD/NO-BUILD)	13-37
Andersen Corporation	37-38, 59-60
Archaeological Sites	111-114
Bald Eagle	107-109
Bayport	41-45
Baytown Township	41-43
Bicyclists	64-66, 81-82
Boomsite Wayside	50, 105-106, 110, 112-113, 117
Brown's Creek	52, 101-103, 105, 109
Businesses	71-77
Census Tracts	48-50, 59-63
Community Cohesion	59-63
Community Facilities	66-69
Commutershed (Twin Cities)	11, 64
Construction Impacts	122-123
Cooperating Agencies	131
Coordination	129-131
Costs (Crossing Options)	15-32
Department(s) of Natural Resource (DNR)	95, 131
Drawbridge	2, 4-7, 50, 106-107, 111-114
Economic Impacts	73-80
Energy Use	120-121
Fire Protection	67-68
Fiscal Impacts	77-80
Floodplains	101-1-3
Grant Township	39-43, 130
Joint Development	80

Topic	Page(s)
Hazardous Waste	114-116
Higgens' Eye Pearly Mussel	94, 105, 107-109
Historical Impacts	113-114
History (Stillwater)	50, 110-113
History (River Crossing Studies)	1, 13-14, 129-131
Houlton	45, 51, 58-69, 74
Households	43
Kolliner Park	52, 105-106, Section 4(f) Evaluations
Land Use	39, 54-57
Land Use Impacts	54-55
Lift Bridge	(See Drawbridge)
List of Preparers	126-127
Lowell Park	52, 111
Lower St. Croix Management Commission (LSCMC)	131
Mass Transit	4, 36-37
Medical Services	8, 67-68
Metropolitan Council	46-48, 54
Minnesota-Wisconsin Boundary Area Commission (MWBAC)	131
Mile Long Island	52, 105-106, 117
Modal Interrelationships	4
National Park Services (NPS)	131
Neighborhoods	51, 58-62
Noise	88-92, 106
Police Protection	67-68
Oak Park Heights	42-44, 58-72, 74-75
Pedestrians	69, 81-82
Peregrine Falcon	108
Permits	95
Petitions	130
Population	42

Topic	Page(s)
Recreation Areas and Parks	52, 104-106, 117-118 Section 4(f) Evaluations
Relocations	70-73
School Districts	66-68, 77-80
Scoping Studies	1, 129
Social Characteristics	48, 58-63
Social Impacts	58-63
Somerset	8, 11, 66-68
Somerset Township	11, 42, 43, 45, 66-68, 78-79
St. Croix County	11, 42-43, 45-46, 56, 61
St. Croix River	52, 93-93, 99, 101-107, 117-120 122-123, Section 4(f) Evaluations
St. Joseph Township	11, 42, 43, 45, 78-79, 129-130
Stillwater, City of	5, 10-11, 33-38, 42-44, 58-80 110-114, 130
Stillwater Township	42-43, 78, 130
Task Force, Stillwater-Houlton River Crossing	1, 129
Threatened and Endangered Species	107-109
Tax Base Impacts	77-80
Topography	39
Traffic Forecasts	10
Transportation System	2-7
Transportation System Management (TSM)	20, 35-37
Tunnels	16, 19, 23, 32, 93-94, 101-102
Visual Impacts	105-106, 117-119
Washington County	42-43, 67-68, 77
Water Quality	52, 93-94, 95-99, 101-105
West Central WI Regional Planning Commission (WCWRPC)	48
Wetlands	95-99
Wild and Scenic River Impacts	104-107, 117-119, Section 4 (f) Evaluations
Wildlife	93-94, 99-101, 107, 109

APPENDIX

Appendix 1



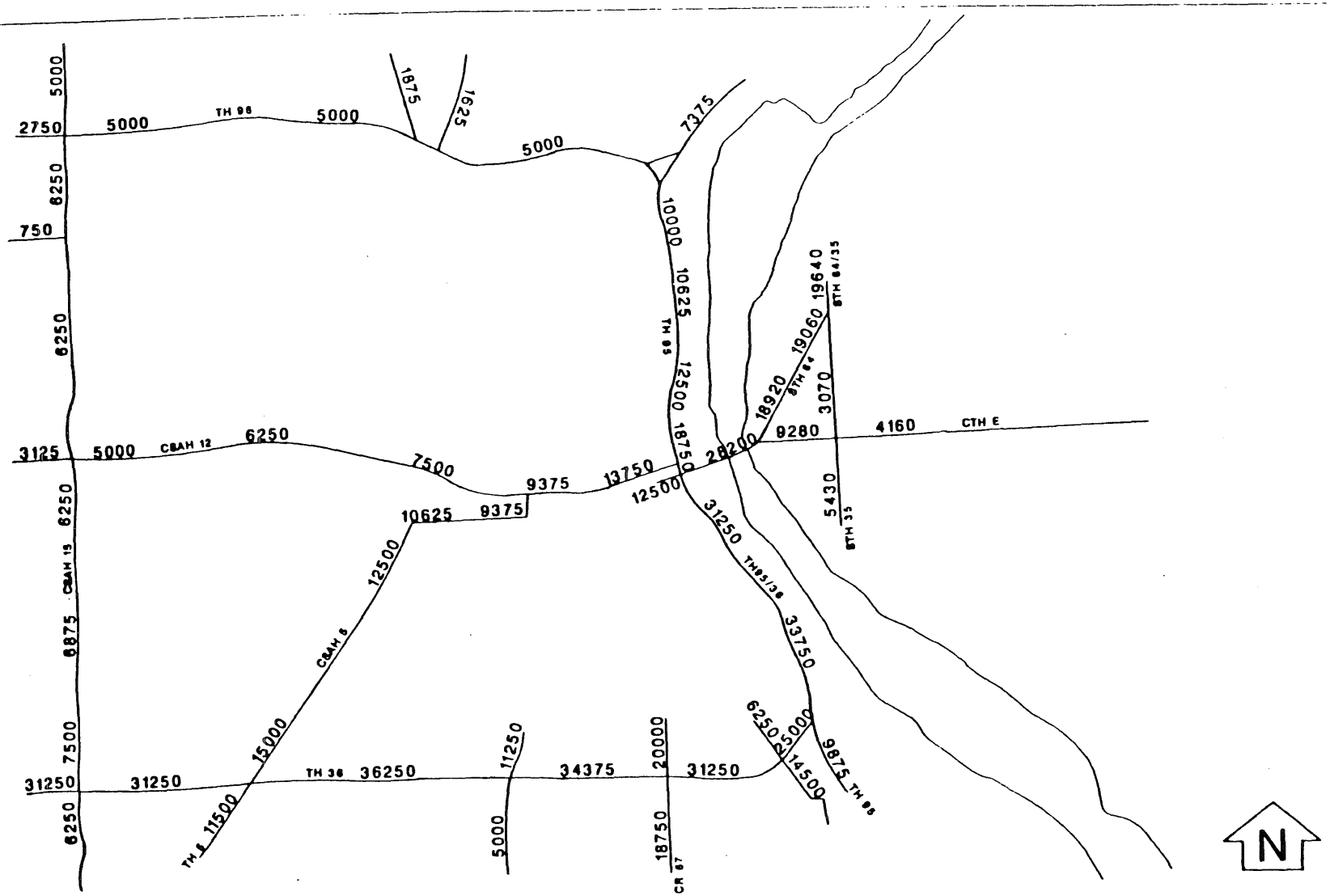
EXISTING NETWORK

ESTIMATES OF 1986 ADT (AVERAGE DAILY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN STH 35/64

FIGURE



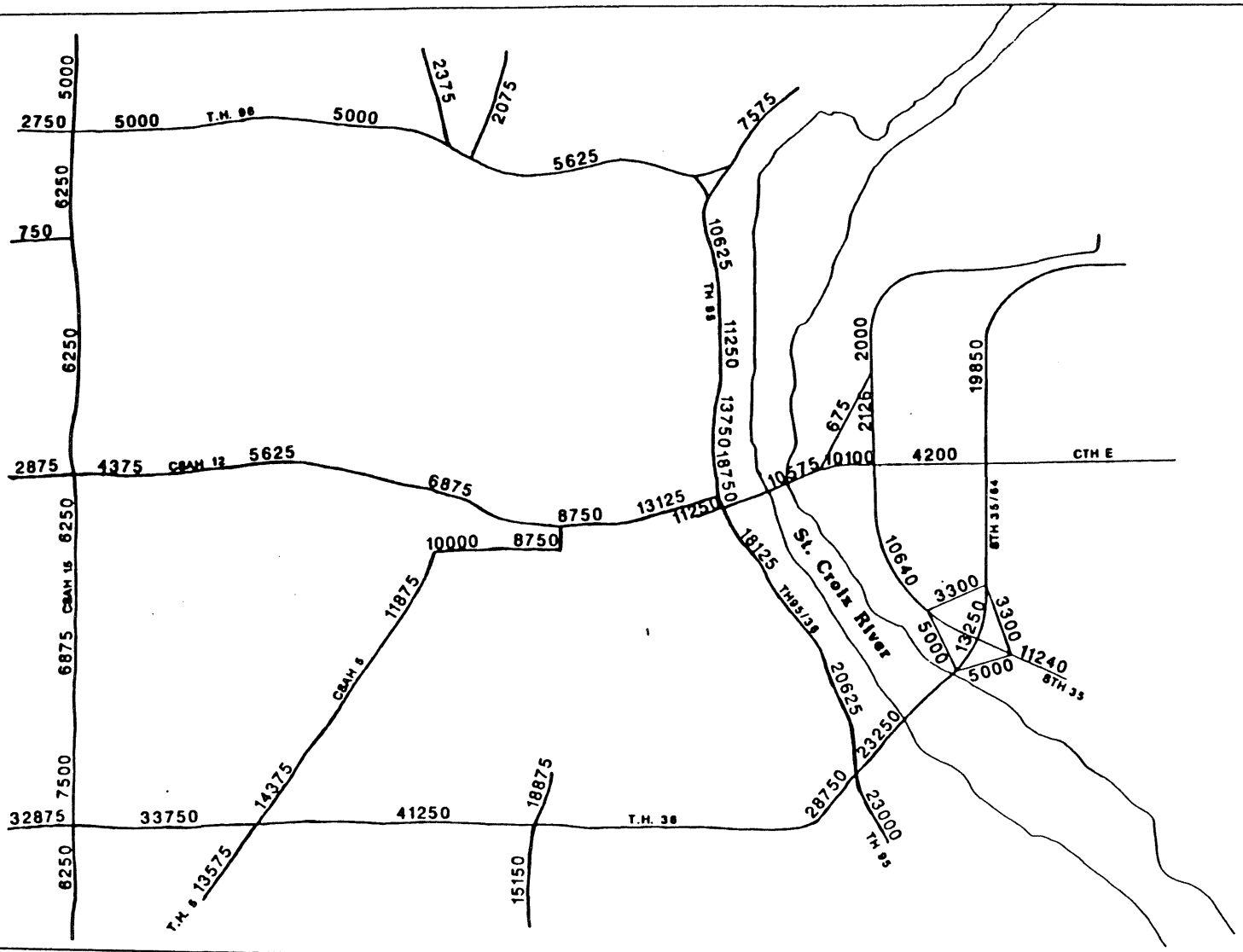
EXISTING NETWORK/NO BUILD

PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN STH 35/64

FIGURE



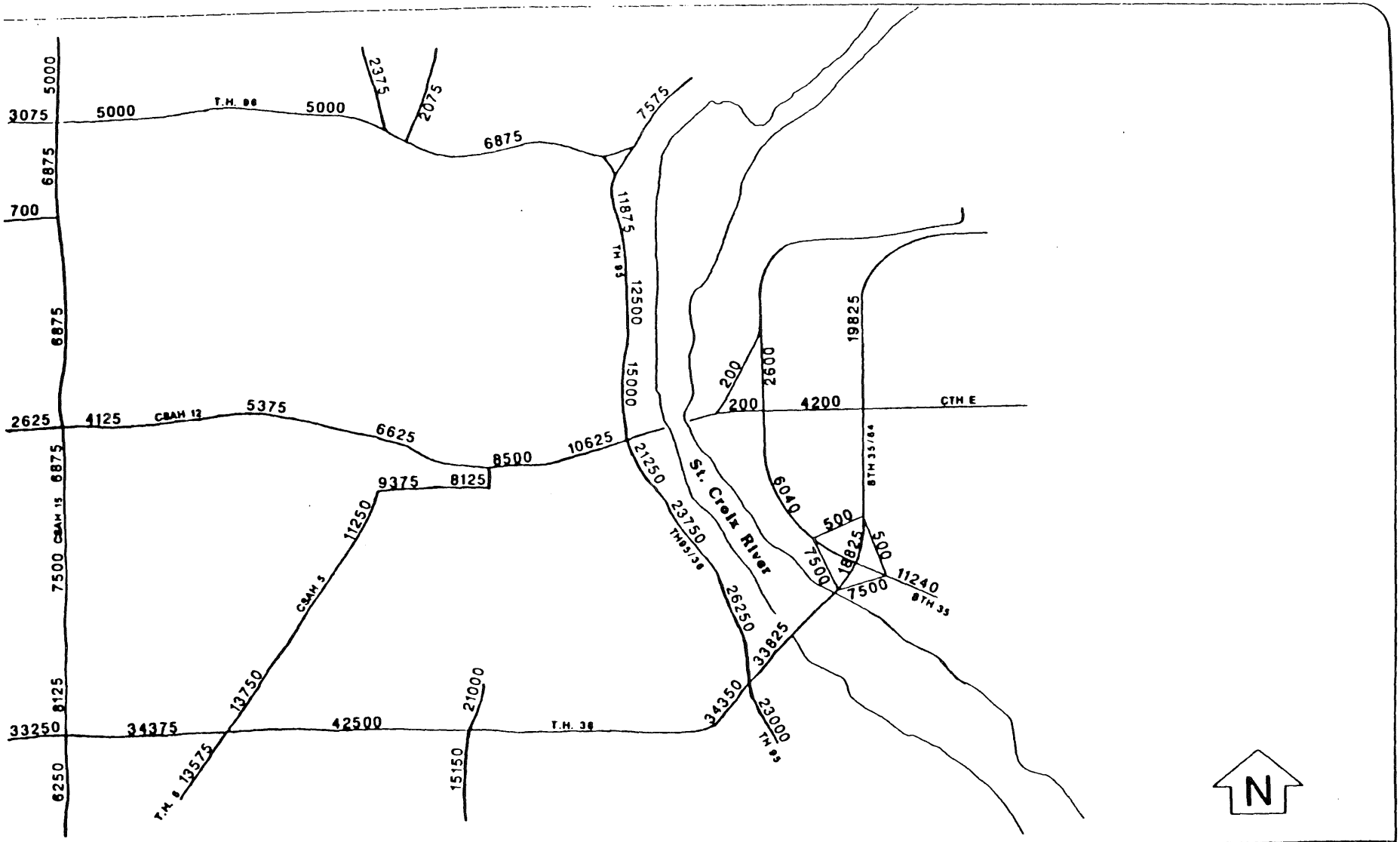
EXISTING BRIDGE + SOUTH CORRIDOR BRIDGE

PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN STH 35/64

FIGURE



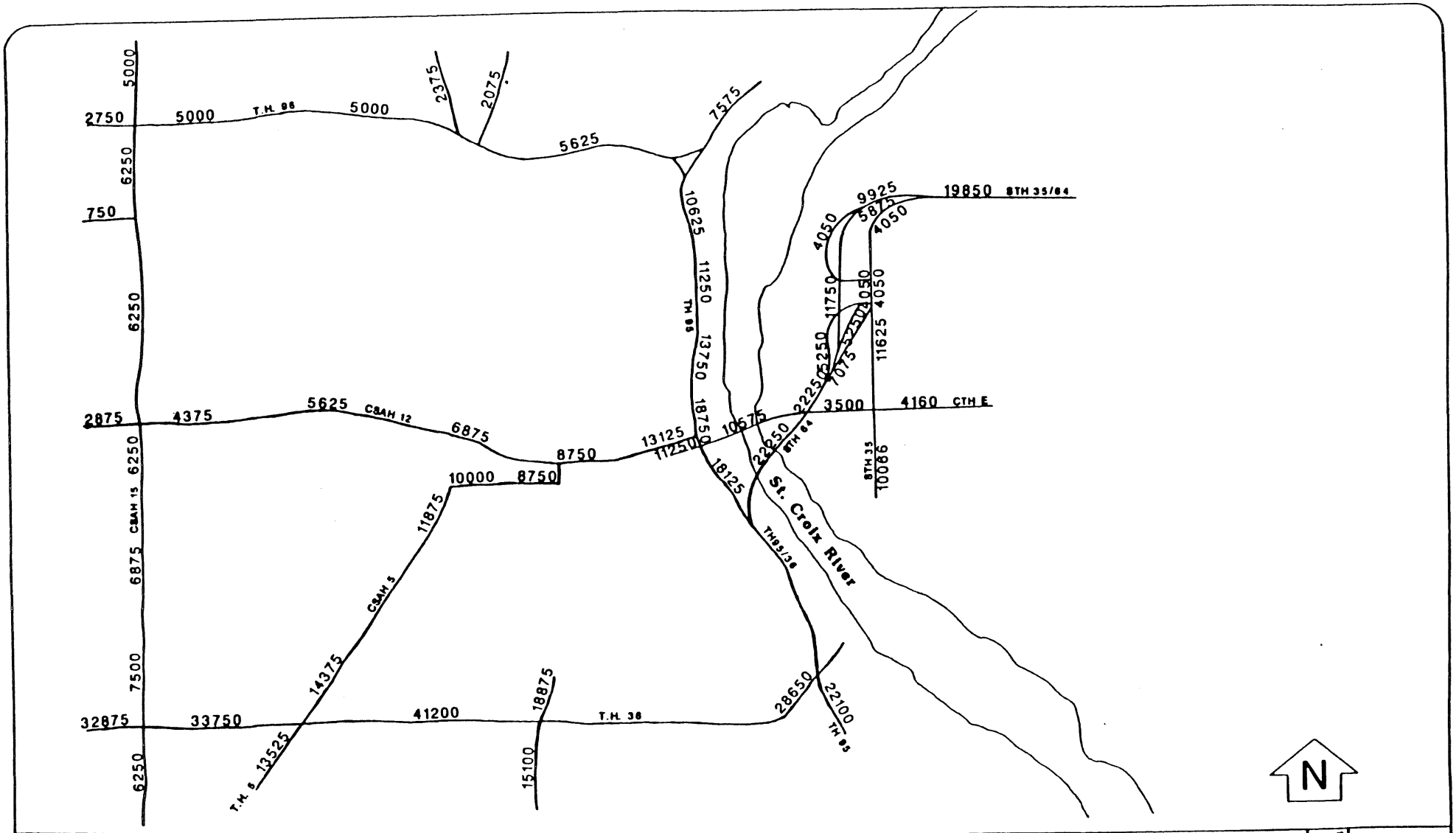
SOUTH CORRIDOR BRIDGE

PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN BTH 35/64

FIGURE

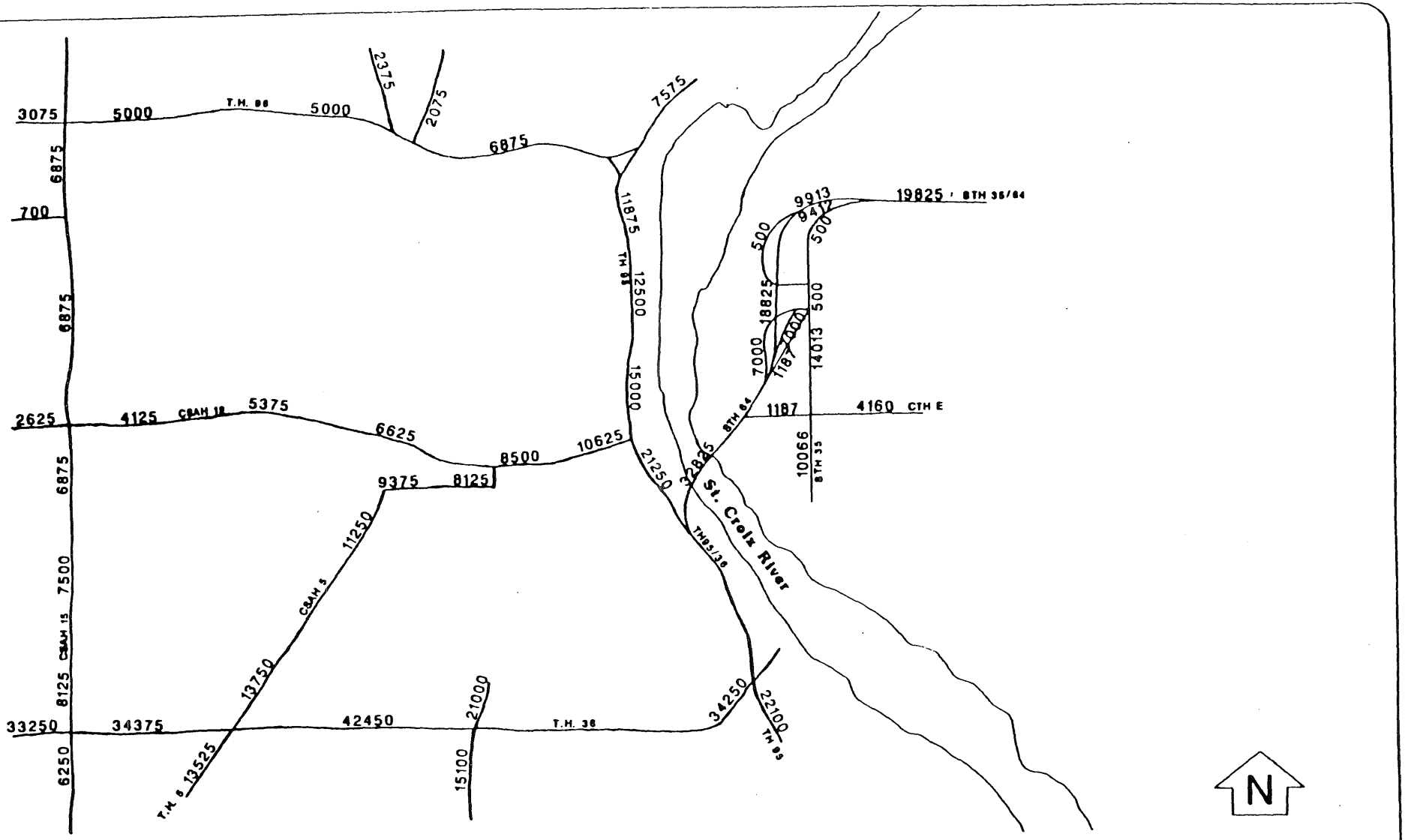


EXISTING BRIDGE & CENTRAL CORRIDOR BRIDGE
PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN STH 35/64

FIGURE



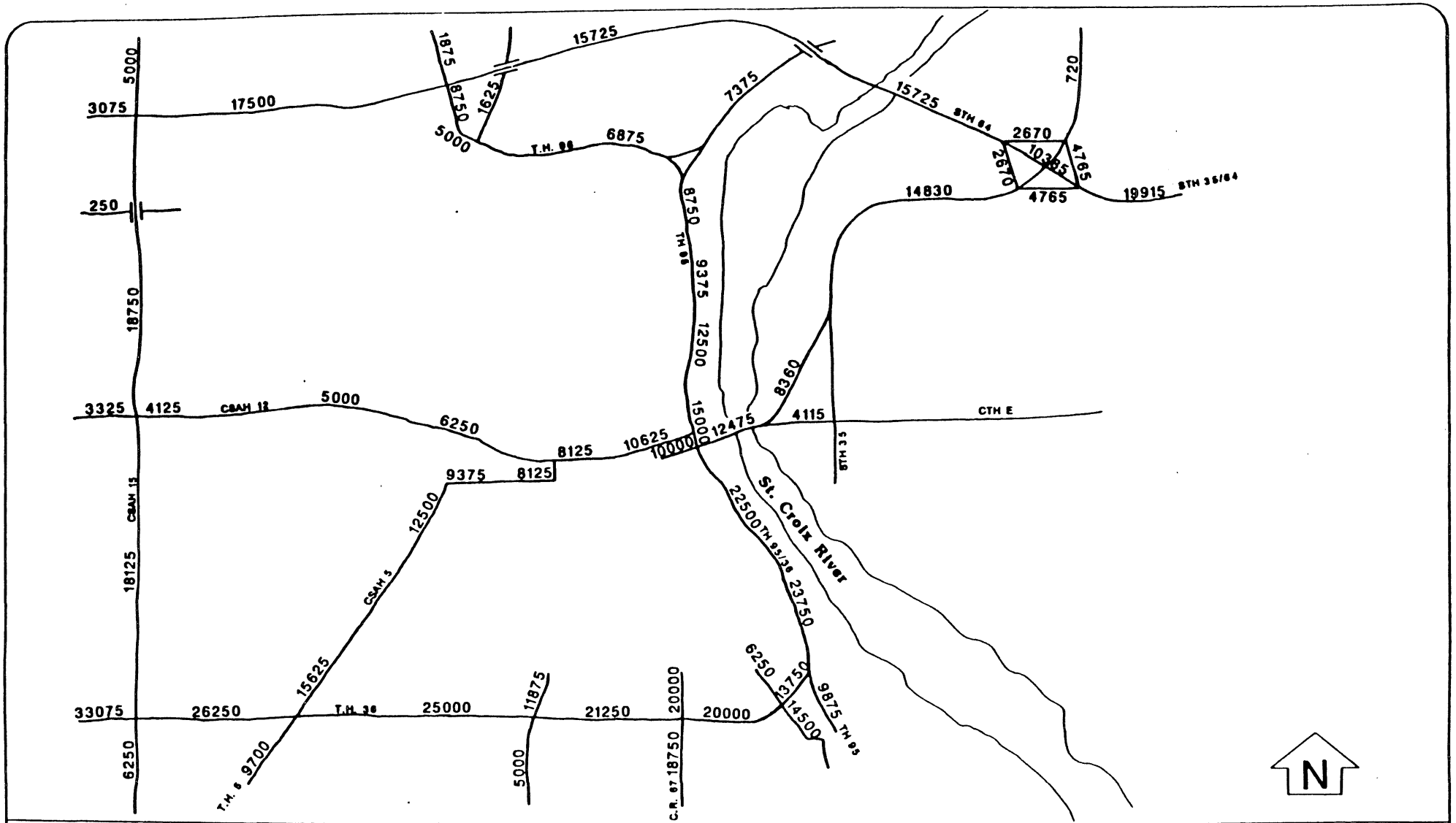
CENTRAL CORRIDOR BRIDGE

PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN BTH 36/64

FIGURE

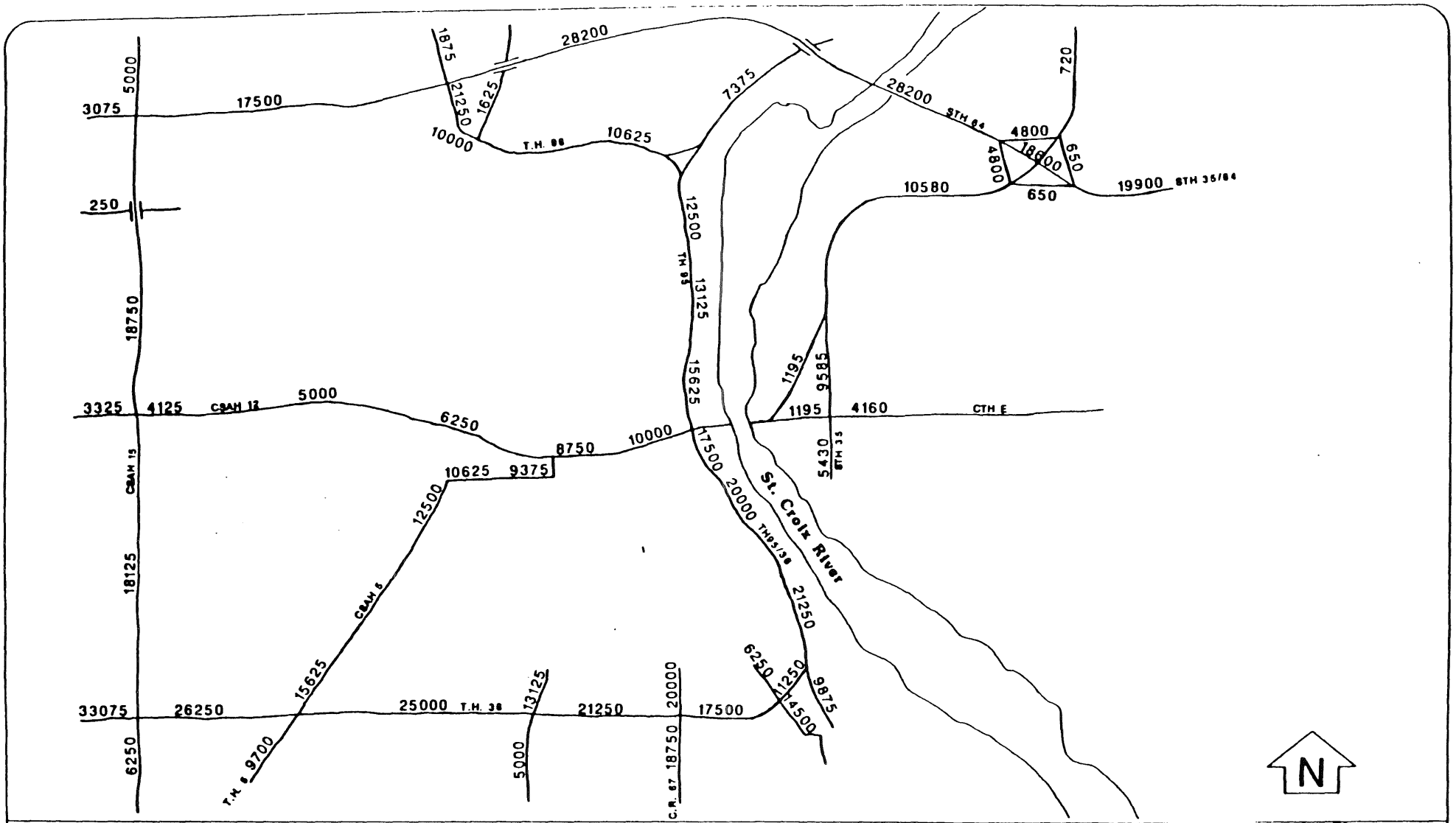


EXISTING BRIDGE + NORTH CORRIDOR BRIDGE
PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

STILLWATER
HOULTON
BRIDGE

MINNESOTA TH 36
WISCONSIN STH 35/64

FIGURE



NORTH CORRIDOR BRIDGE

PROJECTIONS FOR 2014 AWDT (AVERAGE WEEKDAY TRAFFIC)

Appendix 2

United States Department of Agriculture

Soil Conservation Service

1825 Curve Crest Blvd.
Stillwater, MN 55082

Gerald Larson
Environmental Service
704 Transportaion Bldg.
St. Paul, MN 55155

September 14, 1988

Dear Mr. Larson,

This letter is in response to your request for completion of AD1006, Farmland Conversion Impact Rating for the new crossing of the St. Croix River in the vicinity of Stillwater.

At the present time we do not have all the statistics necessary to complete the form. However, the following figures do apply to Site C, the " North " route:

Acres of cropland = 85
Acres of Prime Farmland =67

As you can see, 79% of the cropland in the project area (north site) is considered prime farmland. This represents 19% of the total project area. The approximate boundaries of the prime farmland are colored green on the aerial photographs.

With the South and Central sites there is no impact on prime farmland.

I hope this information is of value to you in selection of a site. If you have any questions, feel free to call me at 439-6361.

Sincerely,

Howard J Moechnig

Howard Moechnig
District Conservationist

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request: AUGUST 22, 1988
Name Of Project: STILLWATER/HOULTON RIVER CROSSING	Federal Agency Involved: FHWA - MN/DOT
Proposed Land Use: TRANSPORTATION	County And State: WASHINGTON MINNESOTA
PART II *(To be completed by SCS)*	Date Request Received By SCS: 8-24-88

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes	No	Acres Irrigated	Average Farm Size
	X	☐	NONE	

Major Crop(s)	Farmable Land In Govt. Jurisdiction	Amount Of Farmland As Defined in FPPA
	Acres: %	Acres: %
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: SOUTH	CENTRAL	NORTH	
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0	0	350	
B. Total Acres To Be Converted Indirectly	0	0	0	
C. Total Acres In Site				
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*				
PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points			
1. Area In Nonurban Use				
2. Perimeter In Nonurban Use				
3. Percent Of Site Being Farmed				
4. Protection Provided By State And Local Government				
5. Distance From Urban Builtup Area				
6. Distance To Urban Support Services				
7. Size Of Present Farm Unit Compared To Average				
8. Creation Of Nonfarmable Farmland				
9. Availability Of Farm Support Services				
10. On-Farm Investments				
11. Effects Of Conversion On Farm Support Services				
12. Compatibility With Existing Agricultural Use				
TOTAL SITE ASSESSMENT POINTS	160			
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland *(From Part V)*	100			
Total Site Assessment *(From Part VI above or a local site assessment)*	160			
TOTAL POINTS *(Total of above 2 lines)*	260			

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

United States Department of Agriculture

Soil Conservation Service

6515 Watts Road, Suite 200
Madison, WI 53719-2726

June 13, 1989

John Roslak, Director
Bureau of Environmental & Data Analysis
Wisconsin Department of Transportation
4802 Sheboygan Avenue
P. O. Box 7916
Madison, WI 53707-7916

RECEIVED
JUN 15 1989
OFFICE OF
ENV. ANALYSIS

Dear Mr. Roslak:

Re: Agricultural Impact Statement for:
Project 1550-00-02
Stillwater Bridge and Approaches
STH 64
St. Croix County

We are returning your AD-1006 Farmland Conversion Impact Rating form for the listed project. We have not yet developed a Land Evaluation System for St. Croix County and so can give only limited guidance.

We have noted on part IVA of Form AD-1006 the acres of Prime and Unique Farmland that will be affected by the various proposed corridors. We have also done this in part IVB for acres of Statewide and Local Important Farmland.

Sincerely,

Frank L. Anderson

FRANK L. ANDERSON
Acting State Soil Scientist

Enclosure

cc: L. L. Natzke, SS, SCS, Eau Claire, WI
S. W. Payne, SSS, SCS, Madison, WI

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request: APRIL 25, 1989
Name Of Project: STILLWATER BRIDGE	Federal Agency Involved: FEDERAL HIGHWAY ADMINISTRATION (FHWA
Proposed Land Use: HIGHWAY	County And State: ST. CROIX COUNTY, WISCONSIN
PART II *(To be completed by SCS)*	Date Request Received By SCS: May 16, 1989

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes	No	Acres Irrigated	Average Farm Size
	☒	☐	None	195

Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A N(1)	Site B C(1)	Site C S(1)	Site D S(3a)
A. Total Acres To Be Converted Directly	38.3	28.2	103.3	92.0
B. Total Acres To Be Converted Indirectly	11.2	1.4	28.3	1.0
C. Total Acres In Site	232.2	1497.1	1119.2	999.0
PART IV *(To be completed by SCS)* Land Evaluation Information	285,000	285,000	285,000	285,000
A. Total Acres Prime And Unique Farmland	13.2	19.7	35.2	75.4
B. Total Acres Statewide And Local Important Farmland	-	5.2	31.6	6.2
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	.01	.01	.01	.01
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*				
PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points			
1. Area In Nonurban Use				
2. Perimeter In Nonurban Use				
3. Percent Of Site Being Farmed				
4. Protection Provided By State And Local Government				
5. Distance From Urban Builtup Area				
6. Distance To Urban Support Services				
7. Size Of Present Farm Unit Compared To Average				
8. Creation Of Nonfarmable Farmland				
9. Availability Of Farm Support Services				
10. On-Farm Investments				
11. Effects Of Conversion On Farm Support Services				
12. Compatibility With Existing Agricultural Use				
TOTAL SITE ASSESSMENT POINTS	160			
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland *(From Part V)*	100			
Total Site Assessment *(From Part VI above or a local site assessment)*	160			
TOTAL POINTS *(Total of above 2 lines)*	260			

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

Appendix 3

BANK OF NEW RICHMOND
A Full Service Bank · Member F.D.I.C.

May 24, 1984

Mr. David Lennander, Associate Planner
West Central Wisconsin Regional Planning Commission
124½ Graham Avenue
Eau Claire, WI 54701

Dear Mr. Lennander:

As per our telephone conversation, I am writing to express my concern over the lack of highway access to the twin city market area.

The Stillwater bottleneck on highway 64 has been a real deterrent in the ability to attract industry and develop our industrial park over the last several years.

We have lost several industries because of the impossible traffic problems at the Stillwater bridge and the conjestion in downtown Stillwater and their inability to gain access to the twin cities market for finished goods or to obtain supplies routed through the eastern suburbs.

Our most recent disappointment came when Phillips Plastics of Phillips, Wisconsin decided to locate their 40,000 square foot manufacturing plant in Hudson, Wisconsin rather than New Richmond. The major reason given by Mr. Cervenka, president of Phillips Plastics Corporation, was a lack of easy access in and out of New Richmond for toolmakers and supply people located in the twin cities area.

I am convinced that the future economic development of New Richmond and particularly the industrial park, depends on improving the highway access to the twin cities area and particularly solving of the Stillwater bridge and downtown Stillwater bottleneck.

Sincerely,

Richard J. Schurtz
President

em

TABLE 1
ESTIMATED FISCAL IMPACTS IN MINNESOTA *

Bridge Alternatives	Assessed Value	Estimated Market Value	Gross Taxes	County Taxes	City/Twp. Taxes	School Taxes	Other Taxes
South Corridor							
Oak Park Heights/ Worst Case	$626,100	$3,059,500	$67,400	$17,600	$10,800	$35,100	$4,600
Oak Park Heights/ Least Case	457,000	2,158,900	49,200	12,800	8,000	25,500	3,800
Central Corridor							
Stillwater	160,300	554,900	18,700	3,400	3,900	5,200	3,500
Oak Park Heights	280,700	1,569,200	30,200	7,900	4,700	15,800	1,500
Combined Total	441,000	2,124,100	48,900	11,300	8,600	21,000	5,000
North Corridor							
Grant Township	225,800	1,146,600	21,500	6,300	1,700	12,400	1,100
Stillwater Township	304,800	1,523,900	29,900	8,600	3,400	17,200	600
Lake Elmo	200	10,500	------	------	-----	------	-----
Combined Total	530,800	2,681,000	51,400	14,900	5,100	29,600	1,700
Tunnel Alternatives							
North Tunnel							
Grant Township	225,800	1,146,600	21,500	6,300	1,700	12,400	1,100
Stillwater Township	235,600	1,273,100	24,000	6,500	3,500	13,300	700
Lake Elmo	200	10,500	------	------	-----	------	-----
Combined Total	461,600	2,430,200	45,500	12,800	5,200	25,700	1,800
South Tunnel							
Oak Park Heights	626,100	3,059,500	67,400	17,600	10,800	35,100	4,600

* Based on taxes payable in 1988 for improved properties. Values rounded to nearest hundred.

TABLE 2
PERCENT LOSS OF LOCAL PROPERTY TAX RECEIPTS BY CORRIDOR

Minnesota Corridors	Local Property Tax Levies *	Local Tax Losses	Percent Loss of Local Property Tax Revenues
Bridge Alternatives			
South Corridor			
South/Central Alignments			
(Least Case) Oak Park Heights	$770,800	$8,000	1.04%
North Alignment (Worst Case)			
Oak Park Heights		10,800	1.40
Central Corridor			
Stillwater (City)	2,144,300	3,900	.02
Oak Park Heights		4,700	.61
North Corridor			
Grant	137,900	1,700	1.23
Stillwater (Twp.)	152,400	3,400	2.23
Lake Elmo	489,700	-----	-----
Tunnel Alternatives			
North Corridor			
Grant		1,700	1.23
Stillwater (Twp.)		3,500	2.30
Lake Elmo		-----	-----
South Corridor			
Oak Park Heights		10,800	1.40

* Data for the Cities of Stillwater, Oak Park Heights, and Lake Elmo is based on taxes payable in 1987. Data for Grant and Stillwater townships is based on taxes payable in 1986. Local tax losses were computed from taxes payable in 1988. Values have been rounded to the nearest hundred in the first two columns and the nearest hundredth in the last column.

Source: Minnesota State Auditor

TABLE 3

PERCENT LOSS OF PROPERTY TAX RECEIPTS IN MINNESOTA SCHOOL DISTRICT #834 *

Corridors	School District 834 Property Tax Revenue	School District 834 Property Tax Revenue	Percent Loss of School District 834 Property Tax Revenues
Bridge Alternatives			
South Corridor			
South/Central Alignments	$17,025,200	$25,500	.15%
North Alignment		35,100	.21
Central Corridor		21,000	.12
North Corridor		29,600	.17
Tunnel Alternatives			
North Corridor		25,700	.15
South Corridor		35,100	.21

* All corridors fall within Minnesota School District 834. Values are based on taxes payable in 1988. Figures rounded to nearest hundred in the first two columns and the nearest hundredth in the last column.

TABLE 4
ESTIMATED FISCAL IMPACTS IN WISCONSIN *

Bridge Alternatives	Assessed Value	Estimated Market Value	Gross Taxes**	County Taxes	City/Twp. Taxes	School Taxes	Other Taxes
South Corridor							
South Alignment/ St. Joseph	$613,200	$684,100	$15,400	$3,600	$700	$12,300	$100
Central Alignment/ St. Joseph	137,100	153,000	3,600	800	200	2,900	100
North Alignment/ St. Joseph	535,000	596,900	13,600	3,200	700	10,900	100
Central Corridor							
South Alignment/ St. Joseph	669,100	746,500	17,000	4,000	800	13,600	100
North Alignment/ St. Joseph	1,012,200	1,129,300	26,700	6,000	1,200	20,400	200
North Corridor							
St. Joseph	373,400	416,600	9,600	2,200	500	9,600	100
Somerset	97,400	96,000	2,300	500	200	1,900	---
Combined Total	470,800	512,600	11,900	2,700	700	11,500	100
Tunnel Alternatives							
North Tunnel							
St. Joseph	474,500	529,400	12,100	2,800	600	9,700	100
South Tunnel							
St. Joseph	474,500	529,400	12,100	2,800	600	9,700	100

* Based on taxes payable in 1988. Values rounded to the nearest hundred.

** Wisconsin tax credits are reflected in the gross taxes column only.

TABLE 5
PERCENT LOSS OF LOCAL PROPERTY TAX RECEIPTS BY CORRIDOR *

Wisconsin Corridors	Local Property Tax Levies	Local Tax Losses	Percent Loss of Local Property Tax Revenues
Bridge Alternatives			
South Corridor			
South Alignment			
St. Joseph	$2,273,300	$700	.03%
Central Alignment			
St. Joseph		200	.01
North Alignment			
St. Joseph		700	.03
Central Corridor			
South Alignment			
St. Joseph		800	.04
North Alignment			
St. Joseph		1,200	.05
North Corridor			
St. Joseph		500	.02
Somerset	729,600	200	.02
Tunnel Alternatives			
North Corridor			
St. Joseph		600	.03
South Corridor			
St. Joseph		600	.03

* All figures based on taxes payable in 1988. Values rounded to the nearest hundred in the first two columns and the nearest hundredth in the last column.

Source: St. Croix County Treasurer

TABLE 6
PERCENT LOSS OF WISCONSIN SCHOOL DISTRICT RECEIPTS BY CORRIDOR *

Corridors and School Districts	School District Property Tax Revenues	School District Property Tax Losses	Percent Loss of School District Property Tax Revenues
Bridge Alternatives			
South Corridor			
South Alignment			
Hudson	$1,551,600	$9,600	.62
Somerset	252,700	1,500	.59
Vo-Tech #1	152,200	1,100	.72
Central Alignment			
Hudson		1,100	.07
Somerset		1,500	.59
Vo-Tech #1		300	.19
North Alignment			
Hudson		6,900	.44
Somerset		3,000	1.18
Vo-Tech #1		1,000	.65
Central Corridor			
South Alignment			
Hudson		9,400	.60
Somerset		3,000	1.18
Vo-Tech #1		1,200	.79
North Alignment			
Hudson		15,500	1.00
Somerset		3,000	1.18
Vo-Tech #1		1,900	1.24
North Corridor			
Hudson		4,000	.26
Somerset		4,700	1.85
Vo-Tech #1		900	.59
Tunnel Alternatives			
North andSouth Corridors			
Hudson		5,900	.38
Somerset		3,000	1.18
Vo-Tech #1		900	.59

* All figures based on taxes payable in 1988. Values rounded to the nearest hundred in the first two columns and the nearest hundredths in the last column.

Source: St. Croix County Treasure

Appendix 4

SF-00006-03

STATE OF MINNESOTA

DEPARTMENT Transportation

Office Memorandum

TO: Mike Louis
Project Manager

DATE: September 26, 1988

FROM: Norman Mellem
Air Quality Engineer NEM

PHONE: 296-1656

SUBJECT: T.H. 36, Stillwater-Houlton, Wisconsin Project, Tunnel Option

The amount of ventilation air needed for an 8800 ft. tunnel was calculated using the TUNVEN computer model. The model has been modified so that up-to-date emission values can be entered into it. The emission values used for this analysis are issued on the EPA Mobile 3 model which is the most up to date information available.

Input values for each barrel of the tunnel are as follows:

Length	8800 feet
Cross Section Area	702 feet^2
Perimeter	119 feet
Traffic Volumes:	(1) 1500 vph avg pk hr (2) 4000 vph max pk hr (3) 22 ft. headway per stopped vehicle
Vehicle Coefficient	0.49 avg. (cars, vans, trucks)
Year Opened	1995
CO at Tunnel Entrance	15 ppm
Ambient CO	3 ppm

The carbon monoxide (CO) standard for tunnels is presently 125 ppm for tunnels less than 3000 ft. above sea level. The standard is soon expected to be lowered to 120 ppm, according to the report by the ventilation consultant for the I-35 Erickson Tunnel in Duluth.

The following are the CO levels for various situations in the tunnel. The 1500 vph traffic volume is based on a two-way ADT of 25,000 with the peak hour having 10% if the ADT and a 60-40 directional split. The ventilation rate of 1,760,000 cfm is based on the ASHRAE guideline of 100 cfm/lane-ft needed for fire:

Vehicle Speed	Traffic Volume	Ventilation Rate (cfm)	Ambient Temperature	Max CO (PPM)
5	1500	0	0	673
30	1500	0	0	121
35	1500	0	0	92
35	4000	(Capacity) 0	0	159
Stopped	22 ft/veh	1,760,000	0	84
Stopped	22 ft/veh	1,760.000	75	35
Stopped	22 ft/veh	1,760,000	100	65
5	1500	1,760.000	0	54
35	4000	1,760,000	0	57

The above analysis shows that the ventilation rate of 1,760,000 cfm into each barrel and 1,760,000 out of each barrel, which is required for fire will be enough to prevent excedance of the anticipated CO standard. If ventilation buildings can be constructed at both ends of the tunnel, then only one-half of this volume of air would need to be moved through ducts along side the tunnel, thus reducing the size of the ducts to half.

Some items that are recommended for discussion in an EIS are as follows:

1) CO standard for tunnels (125 ppm or other if changed) will be met with a ventilation system.

2) CO levels in the tunnel for peak traffic under normal and congested conditions.

3) Analysis of whether there would be any CO problems adjacent to the tunnel.

4) Hazardous materials truck routing.

5) Emergency procedures will be developed.

If there are any questions please feel free to contact me.

NM:ep

cc: Larry Erb

Appendix 5

COMPARISON TABLE
WETLAND CLASSIFICATION SYSTEMS

SYSTEM	
U.S.F.W.S. Circular 39 (1971)	Classification of Wetland and Deepwater Habitats of the United States (Cowardin, et al. (1979))
	Palustrine System
Type 1	Nonpersistent Emergent Wetland or Forested Wetland. Water regimes are temporarily or intermittently flooded. Erect, rooted, herbacious plants or lowland hardwoods are dominant.
Type 2	Persistent Emergent Wetland. Water regime is saturated. Erect, rooted, herbacious plants are dominant.
Type 3	Persistent Emergent Wetland. Water regimes are semipermanently or seasonally flooded. Erect, rooted, herbacious plants are dominant.
Type 4	Aquatic Bed with floating vascular plants, fringed by Persistent Emergent Wetland. Water regimes are permanently f l o o d e d , intermittently exposed or semipermanently flooded.
Type 5	Aquatic Bed with floating vascular plants, and Unconsolidated Bottom, consisting of mud. Water regimes are permanently flooded and intermittently exposed.
Type 6	Scrub-Shrub Wetland, with predominantly broad- leaved deciduous plants. Water regimes are temporarily flooded, seasonally flooded, semipermanently flooded, intermittently exposed and permanently flooded.
Type 7	Forested Wetland, with broad-leaved deciduous needle-leaved deciduous and needle-leaved evergreen plants. Water regimes are identical to those for Scrub-Shrub Wetland, above.
Type 8	Scrub-Shrub Wetland, Forested Wetland, Moss- Lichen Wetland with broad-leaved deciduous, needle-leaved deciduous and needle -leaved evergreen plants. Water regime is saturated.

Appendix 6

MINNESOTA/WISCONSIN SPECIES WHICH ARE ENDANGERED, THREATENED, OR OF SPECIAL CONCERN

The following state-listed species are located in and/or around the proposed corridors, and have the greatest chance of being directly impacted:

Species	Scientific Name	Minnesota	Wisconsin
Crystal Darter	Ammocrypta asprella	Sp. Conc.	Endangered
Goldeye	Hiodon alosoides	Not Listed	Endangered
Speckled Chub	Hybopsis aestivalis	Not Listed	Threatened
Black Buffalo	Ictiobus niger	Not Listed	Threatened
Pallid Shiner	Notropis amnis	Sp. Conc.	Endangered
Gilt Darter	Percina evides	Sp. Conc.	Threatened
Paddlefish	Polyodon spathula	Sp. Conc.	Threatened
Shovelnose Sturgeon	Scaphirhynchus platorynchus	Sp. Conc.	Not Listed
Buttonbush	Cephalanthus occidentalis	Sp. Conc.	Not Listed
Kittentails	Besseya bulli	Endangered	Threatened
Dotted Blazing Star	Liatris punctata	Not Listed	Endangered
Brook Lamprey	Lampetra appendix	Sp. Conc.	Not Listed
River Redhorse	Moxostoma carinatum	Not Listed	Threatened
Blue Sucker	Cycleptus elongatus	Sp. Conc.	Threatened
Buckhorn	Tritogonia verrucosa	Not Listed	Threatened
Monkey-face	Quadrula metanevra	Not Listed	Threatened

The following state-listed species are likely to utilize corridor habitat, and are found within the St. Croix National Scenic Riverway:

Species	Scientific Name	Minnesota	Wisconsin
Toothcup	Ruellia humilis	Endangered	Not Listed
Fame Flower	Talinum rugospermum	Endangered	Not Listed
Elephant Ear	Elliptio crassidens	Sp. Conc.	Endangered
Ebony Shell	Fusconaia ebena	Sp. Conc.	Endangered
Snapping Turtle	Chelydra serpentina	Sp. Conc.	Not Listed
Wood Turtle	Clemmys insculpta	Threatened	Threatened
Fox Snake	Elaphe vulpina	Sp. Conc.	Not Listed
Blandings Turtle	Emydoidea blandingi	Threatened	Threatened
Red Shouldered Hawk	Buteo lineatus	Sp. Conc.	Threatened
Cooper's Hawk	Accipiter cooperii	Not Listed	Threatened
Great Egret	Casmerodius albus	Not Listed	Threatened
Warty Back	Quadrule nodulata	Not Listed	Threatened

Source: National Park Service, 1988

There are also a number of species in the study area which are considered to be uncommon, but have not yet been classified by the states. These include the Virginia Water Horehound (Lycopus virginicus), Unknown Grass (Paspatum spp.), the False Map Turtle (Graptemys pseudogeographica), and two mussels--Alasmidonta marginata and Plagiola triquetra.

Minnesota Department of Transportation

Transportation Building, St. Paul, MN 55155

September 26, 1986

Phone 296-1642

Mr. Robert Welford
Director, St. Paul Field Office
U.S. Fish and Wildlife Service
50 Park Square Court
400 Sibley Street
St. Paul, MN 55101

Dear Mr. Welford:

We would like to initiate informal consultation under Section 7 of the Endangered Species Act regarding the potential impacts of constructing a replacement crossing of the St. Croix River at or near Stillwater, Minnesota, and Houlton, Wisconsin. The project, if a Build alternative is selected, will extend between the junction of TH 36 and CSAH 15 in Minnesota, and a point in Wisconsin on STH 35/64 which is approximately two and one-half miles east of the existing river bridge. Project length would vary from six to nine miles, depending on the corridor alternative selected (Figure attached). Under all of the Build alternatives, the existing vertical lift drawbridge, which connects the City of Stillwater, Minnesota with the village of Houlton, Wisconsin, could remain in place to serve local traffic.

The only aquatic endangered species which could be potentially impacted by the bridge construction is the Higgins Pearly Eye Mussel (Lampsilis higginsi). These impacts (if any) would likely be the same for any of the proposed corridors and are likely to have no bearing on the choice of alignment. During construction, impacts (if any) would be localized within the river channel in the immediate areas of bridge pier placement. Following construction, no further impacts would be expected.

L. higginsi has been historically reported from the major tributaries of the Upper Mississippi River. The mussel has been reported in the St. Croix River by Dawley (1947), Fuller (1980) and recently in preconstruction surveys near Prescott, Wisconsin. Stillwater, Minnesota is within the expected range of L. higginsi, but to date, no specimens have been found in the river. Recently, one fresh shell was found on the river bank near river mile 25 just north of Stillwater and identified by Marian Havlik, a malcologist from La Crosse, Wisconsin. The origin of the shell is unknown but it is reasonable to suspect that it was local.

Three alternative alignment corridors have been proposed for construction of the new Trunk Highway 36 bridge. In addition, numerous designs have been proposed within each corridor. Thus, there is a great deal of uncertainty as to where the bridge and its piers might be placed, and this magnifies the potential preconstruction survey problems for extant populations of (L. higginsi). These issues are to be resolved following the publication of the DEIS and before the FEIS.

After receiving public and agency comments on the DEIS, one of the proposed corridors would be chosen for the bridge alignment under a Build alternative. Following the choice of alignment and before the final bridge design is chosen, we propose to survey for L. higginsi on the river bottom in the alignment corridor.

The survey would be completed by an approved malcologist using divers. Mussels would be identified and enumerated. Specimens of L. higginsi would be returned as closely as possible to the area of collection and placed by hand on the river bottom. Following the completion of the environmental assessment and the survey, formal consultation with USFWS would be initiated for a biological determination as to the possible impacts of the bridge construction. The survey, the environmental assessment, and the biological opinion of USFWS under Section 7 of the Endangered Species Act, would become part of the FEIS. Should this survey suggest that further investigations are needed immediately prior to construction (similar to the Prescott Bridge), an additional preconstruction survey would be conducted. This survey, within nine months of contract letting, would utilize a malcologist and divers and would investigate the river bottom in the immediate vicinity of pier placement. Mussel relocation could be an option of this survey.

We would appreciate comments on this proposal. This department is currently conducting studies that will lead to a DEIS published by the spring of 1987, and an FEIS by the spring of 1988. If necessary, I and members of my staff are available to meet to discuss this proposal. If you have any questions or comments, please contact me or Dr. Greg Busacker (296-1640), our aquatic biologist.

Sincerely,

Frank Pafko, Chief
Environmental Development Unit

References:

Dawley, C. 1947. Distribution of aquatic mollusks in Minnesota. American Midland Naturalist, 38:671-697.

Fuller, S.L.H. 1980. Freshwater mussels (Mollusca: Bivalvia: Unionidae) of the Upper Mississippi River: observations at selected sites within the 9-foot navigation channel project for the St. Paul District, United States Army Corps of Engineers, 1977-1979. Final Report No. 79-24F. Volumes I and II. The Academy of Natural Sciences of Philadelphia - Division of Limnology and Ecology. Philadelphia, Pennsylvania.

bcc:
D. Smilonich
L. E. Foote
R. Winter
M. Louis
G. Busacker
ES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ST. PAUL FIELD OFFICE, (ES)
50 Park Square Court
400 Sibley Street
St. Paul, Minnesota 55101

IN REPLY REFER TO:

October 22, 1986

MN/DOT
ENVIRONMENTAL
SERVICES

Mr. Frank Pafko
Environmental Development Unit
Office of Environmental Services
Minnesota Department of Transportation
Transportation Building, Room 704
St. Paul, Minnesota 55155

Dear Mr. Pafko:

This is in response to your request for informal consultation under Section 7 of the Endangered Species Act concerning possible impacts to federally listed endangered and threatened species from construction of TH-36 bridge over the St. Croix River from Washington County, Minnesota, to St. Croix County, Wisconsin.

Washington and St. Croix Counties are within the potential breeding range of the endangered peregrine falcon (Falco peregrinus) and the wintering range of the threatened bald eagle (Haliaeetus leucocephalus). In addition, the St. Croix River is in the range of the endangered Higgins' Eye Pearly Mussel (Lampsilis higginsi).

Based on available information, the proposed project will not affect peregrine falcons or bald eagles. This precludes the need for further action on these two species for this project as required under Section 7 of the Endangered Species Act of 1973 as amended. However, should this project be modified or new information becomes available which indicates peregrine falcons or bald eagles may be affected, consultation with this office should be reinitiated. Because of the possibility of Lampsilis higginsi being present within the project area and the nature of the proposed work, we cannot provide a "no effect" determination for this species.

We agree with your conclusion that a more comprehensive survey for L. higginsi should be conducted in the immediate vicinities of proposed permanent and temporary structures. This survey should be conducted

by a qualified biologist familiar with the identification of L. higginsi. A copy of the survey should be provided to this office as part of your biological assessment and request for formal consultation.

Sincerely,

Robert F. Welford
Field Office Supervisor

cc: MN DNR, St. Paul
MN PCA, St. Paul
US COE, St. Paul
US EPA, Chicago
WI DNR, Prairie du Chein

Minnesota Department of Transportation

Transportation Building, St. Paul, MN 55155

(612) 296-1637
Phone

5 April, 1989

Mr. Robert Welford
Director, St. Paul Field Office
U.S. Fish and Wildlife Service
50 Park Square Court
400 Sibley Street
St. Paul, MN 55101

Subject: No effect determination for aquatic endangered species in the St. Croix River at or near Stillwater, Minnesota. (MN/DOT Projects: SP 8214-92 & 8217-10)

Dear Mr. Welford:

In September of 1986, the Minnesota Department of Transportation (MN/DOT) requested the initiation of informal consultation under Section 7 of the Endangered Species Act regarding the potential impacts of constructing a replacement crossing of the St. Croix River. If a build alternative is selected, the new crossing would be at or near Stillwater, Minnesota, and Houlton, Wisconsin. At the present time, the alternative corridors are still being evaluated under the EIS process, and a preferred corridor has not been chosen.

During the informal consultation process, MN/DOT proposed with your concurrence (see attached letter) that a comprehensive survey for the naiad mollusk Lampsilis higginsi be undertaken in the vicinities of proposed permanent and temporary structures to meet conditions of the federal Endangered Species Act. Subsequently, MN/DOT contracted with Malacological Consultants of La Crosse, Wisconsin, to conduct a survey for L. higginsi. The malacologist is Ms. Marian E. Havlik and she is experienced with surveys for L. higginsi in the Mississippi River and its tributaries.

The survey was conducted in the summer of 1987, and a copy of the final report is attached to this letter. Using the information in the contractors final report and other available information, our office has prepared an Biological Assessment to determine

possible impacts to aquatic endangered species (see attached copy). Particular emphasis was given to L. higginsi, commonly known as the Higgins' Eye Pearly Mussel because it is the only federally listed aquatic endangered species which could be potentially impacted by the proposed river crossing. The Fat Pocketbook Mussel, Potamilus capax is on the federal list, but it is generally considered extirpated in Minnesota. A summary of the key findings is given below.

Summary:

L. higginsi was not found alive during this study and no other federal aquatic endangered species, or any other proposed federal aquatic endangered species were found, either dead or alive. Five L. higginsi were represented by empty shells at three locations.

In the southern alignments, L. higginsi was represented by four empty shells at two locations. Several of the specimens found along the Wisconsin shoreline opposite the King Plant were fairly fresh-dead, and it is very likely that this species still lives in that area. In the northern alignments one specimen was found in the water along the Minnesota shoreline at the North Bridge site. It was worn and probably had been empty for more than 10 years. Additional evidence for living L. higginsi in both of the two northern alignments comes from recent findings of fresh-dead specimens upstream at Marine on St. Croix, Minnesota, and just upstream of the existing Stillwater bridge. The identity of both of these specimens, which are at the Science Museum of Minnesota, St. Paul, has been confirmed (see attachments).

Mussel reproduction occurs at all sites near Stillwater, Minnesota. The living shell density was low to moderate, as compared to the best bivalve beds in the Mississippi River at Prairie du Chien, Wisconsin, where shells nearly cover the bottom of the river in some places. Estimated densities in the St. Croix River near Stillwater ranged from less than one/square meter to an actual density of 21 live and 23 dead specimens/square meter along the Wisconsin shoreline at South Bridge 4A (see attachments).

A number of fairly rare naiad species were found, but there were no concentrations of rare species at any one site as have been recently discovered in some other areas on the St. Croix River upstream of Stillwater and outside of this study area.

Biological Determination:

Based upon the Biological Assessment, the Aquatic Biologist for the Minnesota Department of Transportation has concluded that the proposed project will have no effect on the aquatic endangered species L. higginsi, if the recommendations given below are followed. Recommendations are specific to the possible construction corridors and crossing types being proposed in the Draft EIS. MN/DOT requests your concurrence in this analysis. Further, should a bridge crossing be identified as the preferred alternative in one of the three southern bridge corridors, MN/DOT proposes that no further survey work be done for any bridge design where pier placements are 300 to 500 feet from the shorelines; the reasons are given below. If this type of design is not feasible, the options given in the recommendations section would apply.

The general contour of the river in the southern corridor area is like a steep-sided, flat-bottomed bowl. The bottom sediments are predominantly flocculent silts and fines with bands of bark in the deeper near shore areas. These materials are not suitable mussel habitat; only an occasional empty naiad valve was found in either the bark or the flocculent silt areas by divers in MN/DOT's mussel survey (see attachments). If a bridge can be designed so that all piers in the water would be 300 to 500 feet from the shorelines, there would be no impacts to mussel populations in the near shore environment.

Recommendations:

Due to the apparent low densities of L. higginsi populations, none of the alternatives under consideration should affect the continued existence of the species in the lower St. Croix River. MN/DOT, working with USFWS approval, would take the following precautions in the specified corridors to avoid harm to any possible existing L. higginsi:

North Bridge or Central Bridge.

If the North Bridge or the Central Bridge alignment is chosen, areas of bridge piers plus a 20 foot buffer zone would be cleared of naiades immediately prior to construction. Naiades would be relocated to suitable habitat upstream from the site.

South Bridge 4A, South Bridge Modified 6, or South Bridge 5/5A.

If South Bridge 4A, South Bridge Modified 6 or South Bridge 5/5A were chosen for the bridge site, no additional

action would be necessary if bridge piers are placed at least 300 to 500 feet from the respective shorelines. Any bridge design requiring pier placements in the near shore environment would require naiad salvage operations immediately prior to construction for all mussels likely to be adversely impacted. These mussels would be moved to suitable habitat upstream from the site.

North Tunnel

If the North Tunnel were to be constructed, more diving would be needed, particularly in the main channel eastward towards the Wisconsin shoreline. A naiad salvage operation would be conducted immediately prior to construction from the main channel east to the Wisconsin shoreline. These mussels would be relocated to suitable habitat upstream from the site.

South Tunnel

If the South Tunnel were to be constructed, a naiad salvage operation would be conducted on the Wisconsin shoreline from the edge of the water outward to the band of submerged bark. The area would vary with the type of construction chosen. All mussels would be moved to suitable habitat upstream or downstream depending upon existing population densities.

Handling Endangered Species.

Any endangered species found in naiad rescue operations would result in an immediate Section 7 consultation with USFWS. With USFWS concurrence, endangered naiads would be marked with an identifying number on both valves, measured, aged, sexed, weighed and photo vouchered prior to their hand replacement by divers at a marked transplant site. If female L. higginsi are found, the gills would be visually inspected to determine if the animal is gravid.

Follow-up.

Provisions would be made by MN/DOT with USFWS for follow-up studies on any transplanted federal endangered specimens.

If you have any questions or comments, please contact me or Dr. Greg Busacker (296-1651), our aquatic biologist. I, members of my staff, and MN/DOT bridge engineers are available to meet and discuss this proposal.

Sincerely,

Frank Pafko

Frank Pafko, Chief
Environmental Development Unit

Attachments:

cc: R. Hill
L. Foote
M. Louis
R. Winter
L. Hegland
F. Pafko
G. Larson

Appendix 7

STATE OF MINNESOTA

Office Memorandum

DEPARTMENT MINNESOTA HISTORICAL SOCIETY
Trunk Highway Archaeology

TO: Ted Lofstrom
Environmental Review Officer

DATE: June 28, 1985

FROM: Leslie Peterson
Trunk Highway Archaeologist

PHONE: 726-1171

SUBJECT: MnDOT
S.P. 8217-10 (T.H. 36)
Wisc. Proj. ID 1550-0.5-00
From Jct. CSAH 15 & T.H. 36 West of Stillwater, Minn.
To 3 Mi. N.E. of Houlton, Wisconsin
Including Replacement of Bridge #4654
over the St. Croix River
Washington County, Minn. and St. Croix County, Wisconsin

As the enclosed correspondence indicates, C.P. Kachelmyer has requested a listing of known cultural resource sites in the vicinity of the broad study area for the proposed revision of the T.H. 36 crossing of the St. Croix River at Stillwater. This study area currently encompasses three possible crossing areas and four approach corridors on the Minnesota side. MnDOT has requested information regarding known cultural resource sites by 1 July 85 for inclusion in scoping studies. Following refinement of corridors during the scoping process, we will be provided data sufficient to conduct any required field surveys and site evaluation.

Stillwater is, of course, an area steeped in history. Previous inventories have resulted in the recording of seventeen standing structures which have been placed on the National Register of Historic Places. Surveys have also recorded five archaeological sites in the study area. One of these, 21 WA 49, has also been listed on the National Register. These sites, as documented on the enclosed Figure 1, are as follows:

Historic Sites/Standing Structures Currently Listed on the National Register

A. C.M. & St. P. Freight House and Depot, 233-335 Water Street
B. Roscoe Hersey House, 416 South 4th Street
C. Capt. Austin Jenks House, 504 South 5th Street
D. Albert Lammers House, 1306 South 3rd Street
E. Minnesota State Prison (old), Main at Laurel Street
F. Ivory McKusick House, 504 North 2nd Street
G. Nelson School, 1018 South 1st Street
H. Pest House, County Highway 11
I. St. Croix Boom Company House & Barn, 9666 North St. Croix Trail
J. St. Croix Boom Site, Minnesota Highway 95 North [National Historic Landmark]

K. St. Croix Lumber Mills/Stillwater Manufacturing Co., 318 North Main Street
L. William Saumtry House and Recreation Hall, 626 North 4th Street and 625 North 5th Street
M. Stone Arch Bridge, off County Road 5
N. Henry Stussi House, 9097 Mendel Road
O. Warden's House, Minnesota State Prison (old), 602 North Main Street
P. Washington County Courthouse, West Pine Street and South 3rd Street
Q. Mortimer Webster House, 435 South Broadway

Known Archaeological Sites in the T.H. 36 Study Area:

1. 21 WA 12, 1 Prehistoric Burial Mound
   NW¼, SW¼, SE¼, Section 15, T30N, R20W

2. 21 WA 26, Prehistoric Habitation Site
   SW¼, NE¼, Section 18, T30N, R20W

3. 21 WA 29, Prehistoric Habitation Site
   NE¼, SW¼, SE¼, Section 15, T30N, R20W

4. 21 WA 30, Prehistoric Habitation Site
   NW¼, NW¼, NE¼, Section 20, T30N, R20W

5. 21 WA 49, St. Croix Access Prehistoric Habitation (listed on National Register) SW¼, SW¼, Section 15, T30N, R20W

In addition to these known archaeological sites and historic sites listed on the National Register, there are numerous standing structures within the study area which have been listed on the State Inventory of Historic Places and may also be eligible for inclusion on the National Register. File data are incomplete on these sites at the present time, however, and accurate locations and relationship to the project cannot be defined with available information.

A preliminary evaluation is also required for Bridge 4654, as it is to be replaced under this planned construction. Bridge 4654 was built in 1931 and includes 7 Parker Through Truss spans and one lift span as documented in the MnDOT submittal. This structure was placed in Category 3 by the Historic Bridge Study recently completed by Dr. Robert Frame III and, thus, appears to be potentially eligible for nomination to the National Register of Historic Places. It would be wise to define the status of this structure early in the planning process.

Within the current corridors, you will note that the north corridor (1) affects the most known resources including two or three National

Register standing structures and two unevaluated archaeological sites as well as indirect impact on bridge 4654. The central corridor (3) involves three National Register standing structures in the area of the greatest historical and archaeological potential and threatens direct impact on the bridge. Corridor segment 4 threatens another National Register structure in additional high potential areas and similarly threatens the bridge. On the basis of existing data, only the south corridor (6) affects no known historical or archaeological sites.

Surveys will be required within any corridors that remain under consideration to locate currently unknown sites, define relationship of known sites to the corridors, evaluate potential for the existence of archaeological deposits at known historic structures, and evaluate the significance of any affected resources.

Leslie D. Peterson
Trunk Highway Archaeologist, MHS

LDP:lt

Enc.

THE STATE HISTORICAL SOCIETY OF WISCONSIN

H. Nicholas Muller III, Director

816 State Street
Madison, Wisconsin 53706
608/262-3266

HISTORIC PRESERVATION DIVISION

June 21, 1989

Mr. John Roslak
Director, Bureau of Environmental
and Data Analysis
P.O. Box 7916
Madison, Wisconsin 53707

SHSW: 87-0167
RE: Replace Bridge Over St. Croix River; STH 64
1550-00-02 St. Croix Co.

Dear Mr. Roslak:

We have reviewed the archeological report prepared for the above referenced project. We concur that only one archeological site, the Twin Springs Site, was located that is potentially eligible for listing on the National Register of Historic Places. This site is in the Alternative N (1). No significant sites are located in the other alternates. We agree that the site should now be evaluated. Minimally, this should involve test excavations conducted throughout the site area in order to determine the age, nature, extent, and integrity of the site. The work should also include development of a cultural context within which the site can be evaluated.

If you have any questions concerning this project, please contact me at (608) 262-0991.

Sincerely,

Robert A. Birmingham
Staff Archeologist

RAB:lkr

cc: Lynn Rusch

1758N R.W. Borz
District 6

RECEIVED
JUN 26 1989
OFFICE OF
ENV. ANALYSIS

MINNESOTA HISTORICAL SOCIETY
FOUNDED IN 1849
Fort Snelling History Center, St. Paul, MN 55111 • (612) 726-1171

July 13, 1989

Commissioner Leonard W. Levine
Department of Transportation
Transportation Building
John Ireland Boulevard
4th Floor
St. Paul, Minnesota 55155

Dear Commissioner Levine:

RE: Stillwater Bridge, Minnesota Highway 36 over the St. Croix River, Stillwater, Minnesota

I am pleased and honored to congratulate you upon the entry of your property on the National Register of Historic Places. The National Register, as you know, is a listing of districts, sites, buildings, structures, and objects considered to be worthy of preservation. An information sheet describing the program is enclosed.

By recognizing the significance of your property and planning for its preservation you are participating in a national movement which aims to preserve, for the benefit of future generations, our cultural heritage.

If you have any questions, feel free to contact Dennis Gimmestad, Deputy State Historic Preservation Officer, Minnesota Historical Society, Fort Snelling History Center, St. Paul, Minnesota 55111, phone: 612-726-1171.

Again, congratulations on your receiving this important designation.

Sincerely,

Nina M. Archabal
State Historic Preservation Officer

Enclosures: Copy of Nomination
National Register Program

cc: The Honorable Wallace L. Abrahamson
Mayor of Stillwater
Stillwater City Hall
216 No. 4th Street
Stillwater, MN 55082

Mr. Charles Woodward,
President
Washington County
Historical Society
P.O. Box 167
Stillwater, MN 55082

Mr. Maurice Stenerson, Chairperson
Stillwater Heritage Preservation Commission
Stillwater City Hall
216 No. 4th Street
Stillwater, MN 55082

Mr. Jeff Hess
710 Grain Exchange Bldg.
Minneapolis, MN 55415

Appendix 8

Minnesota Pollution Control Agency
520 Lafayette Road, Saint Paul, Minnesota 55155
Telephone (612) 296-6300

Celebrate MINNESOTA 1990

March 29, 1989

Mr. Jeff Erickson
Minnesota Department of Transportation,
District 9
3485 Hadley Avenue North
Oakdale, Minnesota 55109

Dear Mr. Erickson:

RE: Draft Environmental Impact Statement (DEIS) for a new St. Croix River Crossing

This letter serves to respond to your request regarding hazardous waste sites in the vicinity of the DEIS in Stillwater, Minnesota. We understand that you are requesting information regarding verified or potential hazardous waste sites at or near the above-referenced property.

Regarding your request, the Minnesota Pollution Control Agency (MPCA) staff are willing to advise you as to whether there is information in the following MPCA files which indicates that there has been a release or threatened release of a hazardous substance, pollutant, or contaminant at or near the above-referenced property.

The MPCA staff have conducted a limited file evaluation on the referenced property. The file evaluation included the review of the following:

(1) EPA - National Priorities List (NPL);
(2) EPA - Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS);
(3) MPCA - Permanent List of Priorities (PLP);
(4) MPCA - Regulatory Compliance, Hazardous Waste Enforcement Log;
(5) MPCA - List of Permitted Solid Waste Facilities;
(6) MPCA - Hazardous Waste Permit Unit Project Identification List;
(7) MPCA - 1980 Metropolitan Area Waste Disposal Site Inventory; and
(8) MPCA - 1980 Statewide Open Dump Inventory.

Our file evaluation has revealed that the following sites are within the specified area of the corridors:

- Stillwater City Dump, County Road 12 and Eagle Ridge Trail, Stillwater (2,8);
- Stillwater Gas Manufacturing Site, near Nelson Street and South Main Street, Stillwater (2);
- Stillwater Gas Manufacturing Site II, 423 South Main Street, Stillwater (2);
- UFE Industries, Inc., 1850 Greeley Street, Stillwater (2);
- Bellaire Sanitation Service Transfer Station, 8678 North 75th Street, Stillwater (5);
- NSP King Plant Slag Disposal Area No. 1, A.S. King Power Plant, south side of Highway 212, north of 58th Street North, West of Peabody Avenue North, Oak Park Heights (5,7,8);
- Railroad Dump, north of Hazel Court, near Dellwood Road, Stillwater (7);
- City Demolition, northeast of Hazel Street East and 2nd Street North, Stillwater (7);
- Stillwater Dump, north side of County Road 12, West of Birchwood Drive, Stillwater (7,8); and
- Lake McKusick Dump, northwest of Boutwell Road North and County Road 12, Stillwater (7,8).

The file evaluation also included a review of the Underground Storage Tank Information System data base, which contains information about underground storage, leaks, and spills of petroleum products and/or hazardous substances. It is managed and updated continuously by MPCA staff. No underground storage tank installations, leaking underground storage tanks, or spills of hazardous substances and/or petroleum products have been reported under the title or the address given for the property. Enclosed are:

- a list of leaking underground storage tanks reported within the 55082 zip code area; and
- a list of hazardous substance and/or petroleum product spills that have been reported in Stillwater, Grant, Oak Park Heights and Baytown.

We suggest that you also contact the cities of Stillwater, Grant, Oak Park Heights and Baytown or Washington County regarding the location of pipelines, underground storage tanks, and possible spills of petroleum products and/or hazardous substances which may have occurred in the area.

This letter does not constitute an assurance on the part of the MPCA or the state of Minnesota that the property in question is free of any hazardous substances, pollutants, contaminants, or other conditions which may adversely affect the public health, welfare or the environment.

Please be aware that the information provided in this letter is submitted pursuant to the Minnesota Data Practices Act, Minn. Stat. ch. 13 and is not intended to relieve from liability any persons who may otherwise be liable under any provision of state or federal law or regulation. Nor is this letter intended to relieve any persons from responsibility they may have to investigate property prior to becoming involved in a transaction relating to that property. Lastly, you should be aware that the absence of information on a particular parcel of property does not necessarily mean that there are no problems connected with this property.

Minn. Stat. § 115B.17, subd. 14 (1988) requires that a person requesting this assistance pay the MPCA's cost of providing the assistance. The charge for this file evaluation is $70.00, which includes two hours spent by staff at a rate of $35.00 per hour. A bill for this and any other assistance provided this month will be mailed to you at the end of the month.

If you have any questions regarding this letter or if you would like to review our files, please contact Mary E. Buchen of my staff at (612) 297-1796.

Sincerely,

for Ronald R. Swenson
Supervisor, Site Assessment Unit
Program Development Section
Ground Water and Solid Waste Division

RRS:rjg

Enclosures

State of Wisconsin \ **DEPARTMENT OF NATURAL RESOURCES**
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Carroll D. Besadny
Secretary

April 11, 1989 File Ref: 4400

Mr. Jeff Erickson
Intermediate Planner
Minnesota Department of Transportation
District 9
3485 Hadley Avenue North
Oakdale, MN 55109

Dear Mr. Erickson:

This is in response to your letter of March 15, 1989, when you requested information about known or suspected environmental problems in the area being considered for utilization in the proposed St. Croix River bridge project in the Stillwater-Houlton area. The attached plat map delineates the exact area that was the focus of our review. It includes Section 22, 23, W 1/2 of the W 1/2 of Section 24, the W 1/2 of the W 1/2 of Section 25, Section 26, 27, 34, the N 1/2 of Section 35, and the W 1/2 of the NW 1/4 of Section 36, T30N, R20W, Town of St. Joseph, St. Croix County.

Records that we reviewed included our lists of active and abandoned landfills and our hazardous material spills files. To the best of our knowledge, none of these activities have taken place in the study area. Similarly there are no superfund sites in this area, nor to our knowledge are there any hazardous wastes stored in the area. There have been no reported leaking underground storage tanks in the focus area; however, the presence and integrity of petroleum storage tanks in the selected corridor should be examined closely before property acquisition begins.

I hope that this information meets your needs. Feel free to call me at (715) 839-3708 with additional questions.

Sincerely,

David R. Lundberg
Solid Waste Management Supervisor

Attachments

c: Tom Lovejoy

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SECTION 4(F) EVALUATIONS

LOWER ST. CROIX
NATIONAL SCENIC RIVERWAY

Table of Contents

DESCRIPTION OF 4(F) RESOURCE 1

Location and Access 1
The Riverway and its Relationship to Similar Areas 1
Land Ownership, Zoning, and Administration 3
Unusual Characteristics 4
Present and Planned Uses 6

THE ALTERNATIVES AND THEIR IMPACTS 9

NO-BUILD Alternative 9
North and South Corridor Tunnels 10
North Corridor Bridge 12
Central Corridor Bridge 14
South Corridor Bridge 15

DISPOSITION OF THE EXISTING BRIDGE 17

MITIGATION MEASURES 18

Water Quality and Aquatic Life 18
Recreation 19
Bluffs and Shore Areas 19
Design/Aesthetics 19
Noise 20
Air 20

COORDINATION 20

END NOTES 22

LIST OF FIGURES

1. St. Croix National Scenic Riverway 1

2 Lower St. Croix National Scenic Riverway: Boundaries, Jurisdictions, and Mileage . . .5

3. Lower St. Croix National Scenic Riverway Study Zones 8

4. North Corridor Bridge Crossing 13

LIST OF TABLES

1. Watercraft Types on the Lower St. Croix 7

2. Watercraft Types in the Federal Management Zone 7

3. Watercraft Types in the State Management Zone 8

4. Active Watercraft Distribution by Study Zone 8

5. Lower St. Croix Watercraft Density on Peak Days 9

DESCRIPTION OF 4(F) RESOURCE

Location and Access

The St. Croix River rises near Solon Springs in northwestern Wisconsin and flows 164 miles in a southerly direction to join the Mississippi River at Prescott, Wisconsin. Aside from its headwater area, the entire length of the St. Croix is included in the Federal National Wild and Scenic River program. The Upper St. Croix's major tributary--Wisconsin's Namekagon River--is also a component of the National Scenic Riverway (see figure 1). At its closest, the St. Croix is only about twenty-five miles from the heart of the Twin Cities Metropolitan Area.

The St. Croix River is readily accessible to visitors because of well developed road systems in both Minnesota and Wisconsin. The St. Croix and Namekagon Rivers are crossed by more than two dozen highway bridges and a number of rail bridges. There are five highway bridges spanning the lower fifty-two miles of the St. Croix River, including crossings at Taylors Falls, MN/St. Croix Falls, WI; Osceola, WI; Stillwater, MN/Houlton, WI; Hudson, WI; and Prescott, WI. The closest crossings to the Stillwater bridge are the I-94 bridge at Hudson and the MN TH 243 bridge to Osceola, WI. These are located approximately six miles south and sixteen miles north (7.5 and 21.5 river miles), respectively.

There are numerous access points on both the St. Croix and Namegakon. Between Taylors Falls/St. Croix Falls and Prescott there are approximately seventeen marinas and twenty-two launch ramps, fourteen of which are free. From Prescott to Stillwater, the Army Corps of Engineers maintains a nine foot navigation channel, making this stretch accessible to large boats, including many which come upstream from the Mississippi. Above Stillwater, the river becomes more narrow and shallow, with many islands. A three foot navigation channel is authorized from Stillwater to Taylors Falls/St. Croix Falls, but it has not been maintained, except for snag clearing. With care, and depending on the water level, large boats can go above Stillwater. However, six miles north of town lies the Arcola Sandbar, just upstream from the Soo Line High Bridge. Above this point, the St. Croix tends to be quite shallow, and is primarily used by canoes and other shallow-draft watercraft.

The Riverway and its Relationship to Similar Areas

The Upper St. Croix National Scenic Riverway was established in 1968, one of the eight original rivers included under the ***Wild and Scenic Rivers Act*** passed the same year. Protected under the Act were the St. Croix River from the Gordon dam downstream to the dam at Taylors Falls/St. Croix Falls, as well as the Namegakon River from Lake Namekagon to the St. Croix. Under the initial legislation, twenty-seven rivers were listed for future study to determine their suitability for later inclusion in the system. Included among the study rivers was the Lower St. Croix, which runs from Taylors Falls/St. Croix Falls to Prescott. Threatened by overuse, the possibility of future water quality degradation, and growing development pressure along its shoreline, the Lower St. Croix National Scenic Riverway was authorized in 1972.

The ***Wild and Scenic Rivers Act*** was passed in large measure to stem the growing tide of dam construction which, by the 1950s and 1960s, was increasingly impounding America's finest rivers. For environmentalists, one of the most bitter losses occurred upstream from Grand Canyon National Park, where a spectacular stretch of the Colorado River was flooded behind the Glen Canyon Dam. Spurred by such developments, environmental organizations and other concerned citizens sought legislation to preserve the most deserving of the free-flowing rivers which remained, the principal result being the ***Wild and Scenic Rivers Act.***

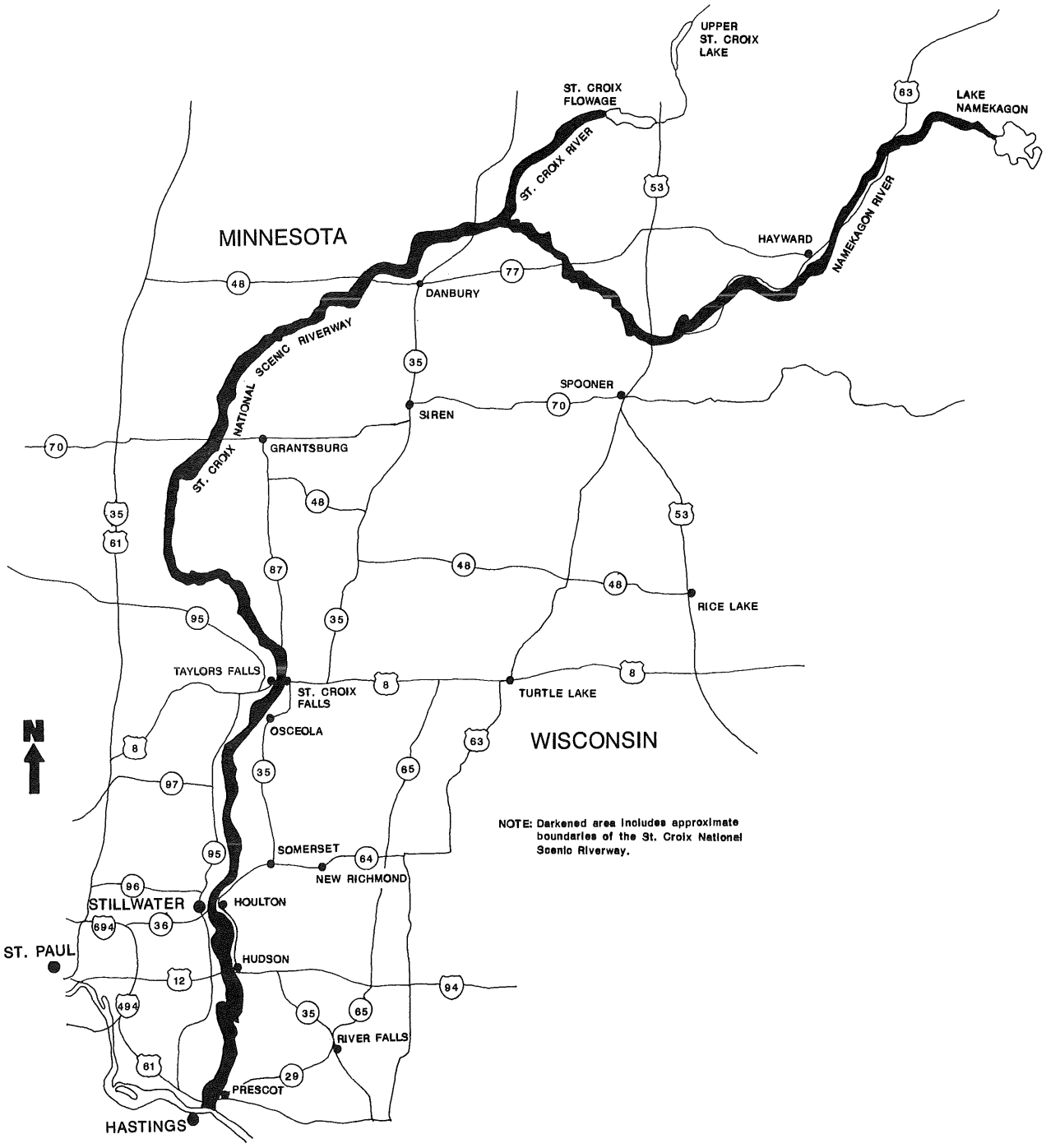

Figure 1

St. Croix National Scenic Riverway

In order to qualify for inclusion in the system, a river must possess at least one "outstandingly remarkable" value, either scenic, recreational, geologic, fish and wildlife, historic, cultural, or other attributes[1] The Act further states that the system's rivers must be "preserved in free-flowing condition...and be protected for the benefit and enjoyment of present and future generations." [2] Each river which makes it into the system must be managed to preserve those values which originally qualified it for protection. As of 1987, eighty-three rivers and river segments totalling nearly 8,000 miles were in the Wild and Scenic Rivers Program.[3]

The ***Wild and Scenic Rivers Act*** seeks to protect three categories of streams: "wild," "scenic," and "recreational." The Act states that a wild river must be largely undeveloped, accessible only by foot, horseback, or boat, and free of impoundments. According to the Act, these rivers are meant to represent "vestiges of primitive America."[4] By this definition, the St. Croix or Namekagon are not considered wild rivers.

To qualify as scenic, a river and its shoreline must be devoid of impoundments and most development, but may be accessible in places by road. A recreational river is generally more developed, may have been impounded or diverted in the past, and can be easily accessible by road or rail. The St. Croix system is divided into scenic and recreational stretches: everything above the Washington-Chisago County line (a total of two hundred and ten river miles) is categorized as scenic, below which the river is considered to be recreational (forty-two river miles). For management purposes, the distinction between scenic and recreational is not as important as the difference between the Federal and State management zones, which will be discussed later.

The closest Wild and Scenic River to the St. Croix Riverway is the Wolf in east-central Wisconsin, a stream which was also one of the original eight included in the 1968 Federal legislation. In Minnesota and Wisconsin, three national forests lie within approximately one hundred miles of the Riverway, including the Superior, the Chippewa, and the Chequamegon; the latter borders on a short portion of the upper Namekagon River. Within the Superior National Forest lies the vast Boundary Waters Canoe Area Wilderness which, along with the St. Croix, is a major destination for canoe campers in the Upper Midwest.

There are several other areas administered by the National Park Service (NPS) in the region, including Voyageurs National Park and Grand Portage and Pipestone National Monuments in Minnesota, Isle Royal National Park in Michigan, and Apostle Islands National Lakeshore and the Ice Age National Scientific Reserve in northern Wisconsin. The Minnesota Valley National Wildlife Refuge preserves a long stretch of the Minnesota River, near the southern edge of the Twin Cities. Downstream from the St. Croix lies the Upper Mississippi National Wildlife Refuge, which extends nearly three hundred miles from Wabasha, Minnesota to Rock Island, Illinois. Also within a day's drive of the St. Croix Valley are dozens of state parks, state forests, and locally-administered public lands, offering a wide variety of recreational opportunities. A number of these are located at least partially within the boundaries of the Riverway.

From a regional perspective, it is evident that the St. Croix National Scenic Riverway is located in an area which is richly endowed with natural resources and outdoor recreation opportunities. Of the many natural environments which people enjoy in the Upper Midwest, however, the St. Croix is among the most widely known and heavily used, with a large and devoted constituency.

Land Ownership, Zoning, and Administration

Land ownership in the St. Croix National Scenic Riverway is a mosaic of Federal, state, local, and private holdings. In addition to fee ownership, the Federal Government and the states of Minnesota and Wisconsin have purchased scenic easements from private landholders along many areas of the river. In return for a payment which has generally been ten to twenty percent of the market value of the land, landowners relinquish certain development and improvement rights to their property. The agreement generally runs with the property, that is, it is passed on from one owner to the next. Incorporated places and other areas outside the Riverway boundaries (but within its viewshed) utilize local zoning controls rather than scenic easements to protect the aesthetic integrity of the river's shoreline and bluffs.

In order to fully understand land ownership on the St. Croix, it is necessary to briefly examine how it is administered. As mentioned previously, the Lower St. Croix section of the Riverway begins at Taylors Falls/St. Croix Falls and extends fifty-two miles downstream to the river's mouth at Prescott (see figure 2). The Federal Government administers everything above Taylors Falls on the Upper St. Croix and Namekagon (except for various state and local public lands), as well as twenty-seven miles of the Lower St. Croix, downstream to the northern city limits of Stillwater. The twenty-five mile stretch from the Federal/State boundary to Prescott is administered jointly by the Minnesota and Wisconsin Departments of Natural Resources. The efforts of these agencies and the National Park Service are coordinated through the auspices of the Lower St. Croix Management Commission (LSCMC).

In the Federal area, ***The Lower St. Croix Final Master Plan*** (1976) called for the acquisition in fee of an approximate four hundred foot strip of land on either side of the river, with scenic easements being purchased behind the fee land. (In reality, this has not always been the case.) Because of limitations imposed by the original legislation, Federal and state fee simple and scenic easement acquisitions are confined to an area of 320 acres per mile, or as far as the eye can see, whichever is smaller. Because the viewshed along the river is often greater than the area which can be legally included within the boundaries of the Riverway, minimum zoning standards and criteria have been established by the two State Departments of Natural Resources to serve as models for local authorities along the Lower St. Croix. The local ordinances are directed toward the control of characteristics such as lot size and use, density, setbacks, building color, vegetative cutting, grading, and structure heights. The local codes are legally required to be at least as restrictive as those promulgated by the states, although they are generally less strict than the requirements included in a scenic easement.

In the study area, only the North Corridor bridge alternative would directly affect the Federally-administered zone. In this corridor, the Federal Government owns parcels scattered on both sides of the river, as well as the scenic easements to a significant amount of other property. In addition, it leases part of Mile Long Island from Wisconsin. The State of Minnesota owns the corridor for TH 95, which follows the river closely in this area. For more details about ownership in the North Bridge Corridor, consult the Section 4(f) report for Mile Long Island.

In the state-administered area from Stillwater to Prescott, the principal land protection tools are local zoning ordinances and scenic easements. Partially because of high land values, the Master Plan placed little emphasis on fee title acquisition in this section. While significant parcels of public land exist in Afton and Kinnickinnic State Parks, Scenic Riverway designation has resulted in very little additional public fee simple land purchases south of Stillwater. In general, local land use controls play a much more important role in protecting the river in the state-administered zone than in the Federal section.

On the Minnesota side of the state-managed portion of the study area, the incorporated areas of Stillwater and Oak Park Heights occupy most of the shoreline. Each controls development according to its own zoning codes, which meet state requirements for the Riverway. On the Wisconsin side, the land is generally undeveloped and private, although Kolliner Park (owned by Stillwater) borders a significant stretch of river on either side of the existing bridge causeway. The shore here consists of steep, forested bluffs, with a scattering of homes on the ridge tops. There are no state scenic easements along this portion of the study area, although land owners must abide by the zoning ordinances adopted by St. Croix County.

Unusual Characteristics

Perhaps the most extraordinary characteristic of the Lower St. Croix is that a river of such size, beauty, cleanliness, and recreational value is so close and accessible to a large metropolitan area. On the Twin Cities side of the St. Croix, more than two million people live within an hour and a half drive of the river; it is also within a day's drive of Chicago, Milwaukee, and Madison, Wisconsin.

The Riverway as a whole offers a number of diverse environments. The upper Namekagon, for example, is a small, cold-water trout stream. The St. Croix

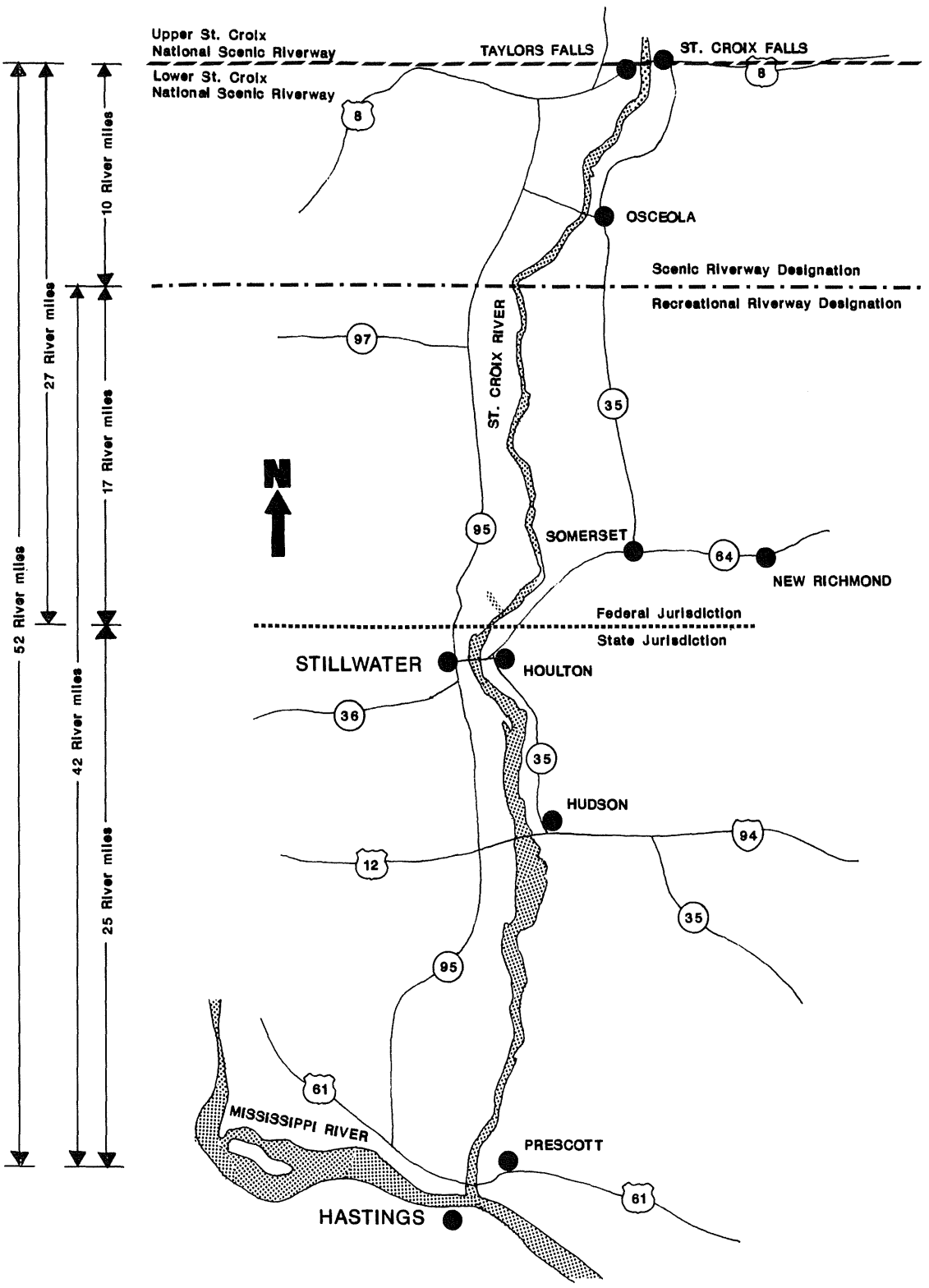

Figure 2

Lower St. Croix National Scenic Riverway:

Boundaries, Jurisdictions, and Mileage

itself begins as a spring, and is shallow and narrow upstream from its confluence with the Namekagon. For most of its length, the Upper St. Croix flows through a wide valley, with low banks and little discernible development. While the St. Croix is not considered to be a dangerous whitewater river, scattered rapids do occur above Taylors Falls/St. Croix Falls. At the lower end of Minnesota's St. Croix State Park, the river's gradient increases to a maximum of 8.3 feet per mile, as it enters a seven mile stretch of moderately difficult rapids. The final ten miles of the Upper Riverway is a slow-water area known as the Indianhead Flowage, which was created by a sixty foot hydroelectric dam at St. Croix Falls.

Below the dam, the river flows through the impressive Dalles area, a narrow metamorphic gorge with pine-covered walls and numerous potholes carved in the rock. The gorge is protected by Interstate State Parks in both Minnesota and Wisconsin, popular places for tourists, rock climbers, canoeists, and campers. Below the Dalles, the St. Croix becomes shallower and enters a heavily wooded, steep-sided valley marked by occasional limestone and sandstone bluffs, with numerous islands, feeder streams, and backwater areas. Development is still not prominent, but becomes more noticeable as the river continues south.

At Stillwater, the river widens and deepens into Lake St. Croix, leaving behind the wilder, island-filled stretches to the north. From here to Prescott, the river has been partially impounded as a result of its confluence with the Mississippi. This effect has been compounded by the construction of Lock and Dam Number Three on the Mississippi at Red Wing, which has raised the natural level of Lake St. Croix by about six feet, with total depths often exceeding thirty feet.

While the lower, broader portion of the river features numerous forested bluffs, including Afton and Kinnickinnic State Parks, it is far more developed than the upper stretches. Immediately downstream from Stillwater and close to the proposed South Corridor, for example, are a marina, a sewage treatment plant, and the Allen S. King power plant, with barge facilities and its prominent 783 foot stack. A large number of permanent and seasonal homes are located on Lake St. Croix, some of which are quite visible. Nonetheless, this portion of the river still retains a significant amount of its original natural beauty, and is heavily used by recreationalists, especially power boaters.

In addition to its natural features, the Lower St. Croix Valley's cultural attractions are an important facet of the river's character, and draw a large number of people to the area. The City of Stillwater is one of the oldest European settlements in Minnesota. With its well-maintained nineteenth century downtown, and numerous shops and restaurants, Stillwater has been able to preserve important parts of its architectural heritage. The existing lift bridge in Stillwater was recently added to the National Register of Historic Places.

Just upstream from Stillwater and very close to the proposed North Corridor bridge route, is the logging-era St. Croix Boomsite, which is a National Historic Landmark. Taylors Falls, Marine on St. Croix, and other towns also have buildings on the National Register of Historic Places. The ***Lower St. Croix Final Master Plan*** emphasizes that these cultural features are an integral part of the Riverway and should be preserved:

> All communities along the Lower St. Croix that still retain some...historical flavor should be encouraged in their efforts to maintain their cultural and historical character[5]

In sum, the Lower St. Croix Valley is unusual because of its well-preserved natural beauty, high water quality, numerous recreation opportunities, historic places, and exceptional accessibility to several million people. A large amount of development has occurred south of Stillwater, some of which has significantly eroded the river's aesthetics. In spite of this, the Riverway remains an inviting and popular destination.

Present and Planned Uses

The major developed public facilities on the Lower Riverway are William O'Brien, Interstate, and Afton State Parks in Minnesota, and Interstate State Park in Wisconsin. Less developed public areas include Kinnickinnic State Park and the St. Croix Islands Wildlife Area in Wisconsin, and some game refuges in Minnesota. Wisconsin's Willow River State Park lies several miles upstream from the Willow's confluence with the St. Croix. Together, these parks offer a wide array of activities, including

camping, hiking, picnicking, bird watching, fishing, cross-country skiing, boat and canoe launching, and interpretive programs. In addition to the previously discussed Federal land, state, local, and privately supported facilities such as boat launches, marinas, and wayside rests also provide recreational opportunities along the Lower St. Croix. In addition to formal recreation places, river islands and other shore areas support an enormous amount of recreational activity, more than would be optimal in some instances.

While there is a diversity of outdoor pursuits available along the Riverway, the principal recreational activities on the Lower St. Croix involve watercraft of various types. According to the Minnesota-Wisconsin Boundary Area Commission (MWBAC), the Lower St. Croix is one of the most heavily used recreational boating areas in the Midwest; even before a National Scenic Riverway was established on the Lower St. Croix, boat traffic was beginning to approach higher than desirable levels on some summer weekends and holidays.[6] Partially in response to this congestion, the Riverway Master Plan proposed few new recreational developments on the river. Many of the improvements made in the river corridor since the Master Plan have been developments in existing state parks, rather than the creation of entirely new facilities. In 1976, the Master Plan summarized the congestion problem as follows:

> Crowding is an important factor influencing watercraft users' enjoyment of the Lower St. Croix...Overuse of the Lower St. Croix by all types of watercraft is a serious threat to the lower river environment and the quality of the river user's experience.[7]

In order to keep track of congestion on the Lower St. Croix, the NPS, the Minnesota-Wisconsin Boundary Area Commission, and the Wisconsin and Minnesota Departments of Natural Resources have performed studies of boating use every other year, as directed by the Lower St. Croix Management Commission. Since 1970, the amount of boating activity on the Lower St. Croix has more than doubled, increasing at an average annual rate of 5.6 percent a year. According to the ***1987 Recreational Boating Study***, 115,953 recreational boating trips involving 384,666 people were made on the Lower St. Croix during the boating season, not including excursion boat traffic. Approximately sixty percent of this traffic occurred on weekends or holidays. On a typical peak-use day in 1987, the Lower Riverway had a traffic volume of about 1,291 watercraft. Historically, slightly less than fifty percent of the watercraft in use at any given time are beached, a figure which emphasizes the great importance of shore-based recreation for St. Croix boaters.[8]

The most common watercraft on the Lower St. Croix include cruisers, runabouts, canoes, and houseboats. Canoes are much more prevalent above Stillwater on the Federal stretch of the Riverway. In the state-managed portion, cruisers and runabouts are the most popular type of watercraft, followed by houseboats (see tables 1, 2, and 3).[9]

For purposes of determining variations in boating activity on various stretches of the lower river, the 1987 boating study divided the Lower St. Croix up into seventeen study zones (see figure 3). The Stillwater Islands Area (zone thirteen) north of the city limits to the Arcola Sandbar received 10.7 percent of all watercraft use on the Lower St. Croix in 1987, the second highest among the study bands. Zone twelve, which covers the Central Corridor, received only 1.8 percent of Riverway boating traffic that year. The Bayport Lake section (zone eleven), which includes the South Corridor,

TABLE 1

Watercraft Types on the Lower St. Croix (by percent)

Craft type	1983	1985	1987
Canoe	13.4	12.1	21.3
Fishing Boat	2.8	3.1	3.9
Runabout	42.1	37.8	25.6
Cruiser	18.2	24.6	26.4
Pontoon Boat	2.5	2.5	6.1
Houseboat	15.3	15.0	11.9
Sailboat	4.3	3.9	4.3
Other	1.4	0.9	0.5

Source: Lower St. Croix Management Commission, 1988

TABLE 2

Watercraft Types in the Federal Management Zone* (by percent)

Craft type	1983	1985	1987
Canoe	48.0	41.1	56.2
Fishing Boat	4.9	6.0	5.3
Runabout	25.8	27.2	14.9
Cruiser	5.3	9.3	7.3
Pontoon Boat	5.8	5.8	9.7
Houseboat	8.0	8.8	5.8
Sailboat	0.03	0.03	0.07
Other	2.1	1.7	0.8

*Data includes Lower St. Croix only

Source: Lower St. Croix Management Commission, 1988

TABLE 3

Watercraft Types in the State Management Zone (by percent)

Craft type	1983	1985	1987
Canoe	0.7	0.4	4.9
Fishing Boat	2.1	1.9	3.1
Runabout	48.0	42.2	30.6
Cruiser	22.9	30.8	35.7
Pontoon Boat	1.4	1.2	4.2
Houseboat	17.9	17.5	14.8
Sailboat	5.9	5.4	6.4
Other	1.1	0.6	0.3

Source: Lower St. Croix Management Commission, 1988

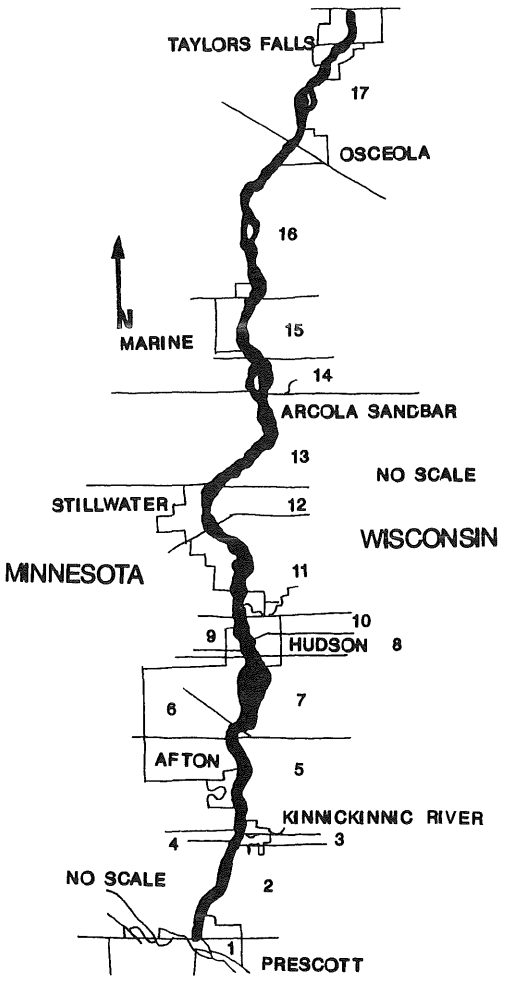

Figure 3

Lower St. Croix National Scenic Riverway Study Zones

received ten percent of the Lower St. Croix's boating traffic (see table 4).[10]

One way of measuring congestion levels is to determine the number of acres of water surface per moving watercraft at a given time. According to the most recent recreational boating study, there was an average of 15.6 acres per moving craft on the busy stretch of river from Prescott to the Arcola Sandbar. As a result of increasing congestion, the Lower St.

TABLE 4

Active Watercraft Distributed by Study Zone (Lower St. Croix Scenic Riverway)

Study Zone	Description	1983 percent	1985 percent	1987 percent
1	Prescott Narrows	3.4	2.1	1.6
2	Kinnickinnic S. Lake	7.1	6.4	6.9
3	Kinnickinnic Bay	1.7	2.6	1.6
4	Kinnickinnic Narrows	6.9	8.1	9.5
5	Afton South Lake	6.6	6.4	6.9
6	Catfish Bar/Afton	5.3	5.7	4.4
7	Open Lake	10.0	10.5	10.0
8	South Hudson Bay	3.1	3.0	1.6
9	Hudson Narrows	14.1	12.1	10.3
10	Hudson Bay	0.9	0.5	0.1
11	Bayport Lake	10.1	9.8	10.0
12	Stillwater	4.9	4.8	2.8
13	Stillwater Islands	8.5	10.2	10.7
14	Page's Slough/Islands	1.1	1.2	1.0
15	Marine On St. Croix	2.0	2.0	1.8
16	O'brien-Osceola	6.3	6.3	7.7
17	Taylors Falls/Osceola	7.8	8.4	12.5

Source: Lower St. Croix Management Commission, 1988

Croix Management Commission has mandated studies of the feasibility of water use regulations in zones where watercraft density is between ten and fifteen acres per moving craft. The Commission has also mandated water surface regulations (e.g., "slow-no-wake" areas) in zones where peak day densities are less than ten acres per craft. In 1987, six of the seventeen zones fell into this latter category; five of these are currently being regulated (see table 5).[11]

According to the watercraft density data, river traffic has become seriously congested in zone thirteen, where there was an average of only eight surface acres per moving craft in 1987. To the south in zone twelve, the reading was 16.8 acres, while zone eleven had a figure of 23.2 acres.[12] "Slow-no-wake" restrictions have been implemented in zone thirteen in the Andersen Bay area of zone eleven.

TABLE 5

Lower St. Croix Watercraft Density on Peak Days (Acres of Water Surface per Moving Craft)

Zone	Acres	1983	1985	1987
1	78	6.8	6.2	3.9
2	1158	18.2	20.8	15.2
3	26	5.9	5.3	5.2
4	92	6.6	4.8	2.4
5	1142	36.9	21.2	18.4
6	92	18.7	9.4	8.4
7	2336	38.3	23.0	23.0
8	234	14.0	14.0	19.8
9	73	3.5	2.4	2.0
10	151	47.6	62.7	24.7
11	2024	25.0	27.4	23.2
12	430	23.6	16.4	16.8
13	379	8.0	10.4	8.0

Note: data not available for zones 14-17
Source: Lower St. Croix Management Commission, 1988

With its restaurants, private marinas, boat launches, parks, city courtesy docks, and upstream islands, the Stillwater area is a popular destination and embarkation point for St. Croix boaters.

In addition to user-operated craft, there are currently three excursion boats operating public and charter cruises from docks on the south end of downtown Stillwater, north of the proposed Central Corridor, as well as in the Dalles area. Because most Stillwater cruises go upstream, the operator has proposed to move his docks north of the existing lift bridge.

Fishing in an important subset of watercraft-based recreation, although bank and ice fishing also occurs. Fishing is good for a wide range of species, including walleye, northern pike, smallmouth bass, and catfish. Popular areas include the mouths of tributaries such as the Apple, Kinnickinnic, the King Plant discharge canal, the Hudson Narrows, and the St. Croix-Mississippi confluence.

As previously mentioned, the Army Corps of Engineers dredges the river below Stillwater to maintain a nine foot deep, three hundred foot wide navigation channel. The Stillwater Barge Terminal, which is leased by the Aiple Towing Company, receives only a few barges a season. The terminal, which is south of the lift bridge, would presumably be removed if a Central Corridor bridge becomes the chosen alternative. Aiple also operates a sporadically used drydock for barge repair. This, too, would likely be removed if a Central Corridor bridge is built. The City of Stillwater is interested in regaining control of both sites when the lease is up in order to convert the area into a parking area, assuming a Central Corridor bridge is not constructed. Historically, there has been no barge traffic north of the proposed Central Corridor.

THE ALTERNATIVES AND THEIR IMPACTS

There are fourteen different crossing options which, for the purposes of this section, will be divided into five major alternatives, or groups of alternatives. Briefly, they are as follows: NO-BUILD; North and South Corridor sub-aqueous tunnels; North Corridor bridge; Central Corridor bridge options; and three major South Corridor bridge routes, with a number of variations. In the following section, the salient effects and comparative impacts of these alternatives will be discussed. All of the alternatives--including NO-BUILD--will have some effect on the Riverway. If there is to be a crossing of any sort in the Stillwater area, there is no feasible way to avoid an impact on the St. Croix River.

NO-BUILD Alternative

There are three main options included under a NO-BUILD decision. They include no action/continued maintenance of the old bridge; constructing a new bridge inplace when the old structure becomes unsafe; and Transportation System Management (TSM)--that is, any low to medium cost means of maximizing existing facilities. If traffic continues to increase as projected, these measures hold the

possibility of partial short-term relief, rather than a long-term solution. For a more detailed analysis of the NO- BUILD options, see the Alternatives section of the draft EIS and a report entitled ***Congestion at the Stillwater Bridge***, prepared by the West Central Wisconsin Regional Planning Commission.[13]

The NO-BUILD option is the only alternative which would not have a direct and immediate effect on the National Scenic Riverway. The long-term effects of a NO-BUILD decision, however, are likely to be substantial and increasingly severe over time, as conflicts grow between boat and auto traffic at the old bridge. For the five year period from 1980 to 1985, the number of bridge openings more than doubled, going from 621 to 1,473 openings per year.[14] It is anticipated that boating traffic on the Riverway will continue to increase at a rate of at least five percent a year.[15] If the frequency or duration of "up" times on the lift bridge are increased in order to accommodate increases in watercraft passages, the traffic capacity of the bridge's roadway will diminish. According to Mn/DOT estimates, auto traffic on the existing bridge will more than double in the next few decades under a NO-BUILD scenario, going from an average of 12,400 vehicles per day in 1986 to 28,200 in 2014. By comparison, traffic over the lift bridge would be reduced to about 10,575 in 2014 if a new South Corridor bridge were constructed. This is assuming the existing bridge, which was built in 1931, can be kept in operation that long.

In addition to growing conflicts with boat traffic, the impacts of an increasing number of vehicles using the old bridge include noise, air pollution, economic losses, and aesthetics. The effects of increasing noise pollution would be felt most directly in Stillwater, where long lines of idling cars and trucks back up through the heart of town when the lift is up. Under a NO-BUILD scenario, the carbon monoxide (CO) levels generated in downtown Stillwater would be the highest of any location along any of the study corridors. (However, no CO standards would be exceeded for this or any of the other alternatives until at least 2004, and no mitigation would be necessary.) The direct economic costs of traffic delays in and around Stillwater amount to many thousands of lost person-hours per year, as well as the effects of late shipments and additional fuel consumption.

The aesthetic impacts are more complex, in part because they are closely related to the others. While the traffic tie-ups can be easily discerned from adjacent areas of the river, the effects are, once again, felt most acutely in the downtown area of Stillwater. The increasing volume of traffic going through the center of Stillwater is at odds with the City's comprehensive plan, which emphasizes the importance of maintaining a historic district which is appealing to pedestrians. As detailed in the economic impacts section of the draft EIS, it is questionable whether downtown Stillwater can continue to function as intended without a new crossing to divert traffic. As noted earlier, the degradation of Stillwater's historical ambiance conflicts with one of the recommendations in the Riverway Master Plan, which stresses the importance of preserving the character of historical communities on the river.

In spite of the potentially serious long-term effects of a NO-BUILD alternative, it would obviate the impacts associated with each of the new crossing options, which will be discussed in the next sections. It is probable that a new crossing would encourage new development in St. Croix County, increasing the amount of traffic crossing the river. From this perspective, a new crossing would, in a sense, "create" some of the demand it was designed to serve. Nonetheless, it is likely that St. Croix County will continue to grow rapidly even if a new crossing is not constructed. A new bridge or tunnel should be regarded as one factor encouraging growth in west-central Wisconsin, but in no sense would it be the sole cause.

North and South Corridor Tunnels

Two of the crossing alternatives include sub-aqueous tunnels in the North and South Corridors. The principal advantage of a sub-aqueous tunnel is that it would substantially reduce the visual impact of a river crossing. The main disadvantage of tunnels is their cost: The range for a North or South Corridor tunnel is $123,000,000 to $179,000,000, not including the extra equipment which would be necessary. In addition to cost, a tunnel would have a number of adverse environmental effects on the Riverway, including potential impacts to bluffs, the possibility of serious aquatic disturbances due to

construction-related sedimentation, noise from steep approach grades which are exposed, and air quality impacts. Additionally, a North Corridor tunnel could have a major adverse effect on Brown's Creek, a state-designated trout stream.

A major aim of the ***Lower St. Croix Master Plan*** is to protect the scenic integrity of the river valley from new development. Of the BUILD proposals, a tunnel would come closest to upholding this goal. Aesthetic perceptions of a river crossing will vary, however, and in many cases will be influenced by whether one is on the river, or crossing it. For those crossing the river, a bridge would be aesthetically preferable to a tunnel, as it would allow people to see the Riverway. For some, the view from a bridge would be their only exposure to the St. Croix, an experience which would be largely missing in a tunnel. Of course, the Riverway was established to preserve the existing river environment, and a bridge would necessitate a change in the ambiance along the chosen segment, especially in the North Corridor. If a BUILD decision is made, the primary means for deciding between a bridge and a tunnel would be to determine whether the large cost of the latter outweighs the visual impact of the former on river users.

One of the most important considerations in evaluating the scenic impacts of the crossing proposals is the effect they will have on the bluffs which border portions of the study area. Both the North and South Corridor tunnels would have west portals which are relatively close to the river, while the eastern tunnel sections would go under the steep bluffs on the Wisconsin side, continuing underground for a considerable distance before emerging on top, well back from the river. While it is possible that sections of the western approach would be visible from certain points on the river, this would not be true on the Wisconsin side. However, preliminary information indicates that rock and soil conditions in the bluffs are not well suited for boring. If this proves true, cut and cover tunneling techniques requiring extensive bluff cutting may be necessary. Additional impacts to bluffs and other shore areas are possible due to the construction of ventilation and other auxiliary structures, as well as from dredge spoil deposition.

A major adverse environmental impact of a subaqueous tunnel would be caused by the disturbance of bottom sediment during construction. While the effects of this are likely to be temporary, they are also apt to be more severe than those caused by bridge construction. At this point, it is difficult to accurately predict the extent of the impacts because the method of tunnel construction and dredging has not yet been selected. For a discussion of the various options, see Mn/DOT's special tunnel report.

As a result of dredging, turbidity in downstream areas is expected to increase, reducing light penetration and altering biological productivity. Suspended sediment will gradually settle out downstream. Depending on the amount of sediment, the potential exists for substantial short-term and possible long-term impacts on bottom-dwelling (benthic) organisms for an undetermined area downstream. Fish should be able to move out of the disturbed area, although impacts on benthic organisms could have a secondary effect and downstream spawning areas could be disturbed by silt.

Perhaps the most serious aquatic environmental concern involves the Higgins' Eye Pearly Mussel (***Lampsilis higginsi***), a Federally endangered species which probably lives--in relatively small numbers--in and/or around the study area. The South Corridor tunnel, in particular, would likely have a considerable impact on mussel beds, especially on the Wisconsin shoreline. In addition to ***Lampsilis higginsi,*** a number of other rare mussels live in the vicinity of the study areas. (See threatened & endangered section of the draft EIS.)

Some noise increases along portions of the Riverway are likely with a tunnel. Although traffic crossing under the river will not be audible, the steep grades (generally between four and five percent) will mean that vehicles will generate more noise than if they were operating on a flat surface. The effects of this will be more pronounced on the Minnesota side for both tunnel proposals, as much of the sloping grade will be above ground. As detailed in the noise impacts section of the draft EIS, however, noise levels from tunnels and all the other BUILD alternatives will meet state and Federal standards and criteria which are applicable to the Riverway, and will not require specific mitigation. In addition to noise, it is possible that headlight glare from eastbound traffic will be visible from the river with the tunnel proposals.

The steep grades will also increase the amount of air pollution generated. In addition, auto exhaust in a tunnel--which normally would be spread out along the entire length of the roadway--will be collected

and released from ventilators, increasing concentrations in certain places. It is possible that ventilation structures could be located so there would be little, if any, impact on people using the river.

One of the most serious environmental effects of a tunnel in the North Corridor would result from a longitudinal encroachment of approximately 1,500 feet along Brown's Creek. This would dramatically alter the rugged, forested character of this small valley, as well as change the course of the lower creek channel (the portal would be several blocks west of the creek's present mouth). Relocation of the creek channel, combined with the possibility of increased siltation due to construction, could harm the stream's trout fishery. Trout are highly sensitive to siltation and other contamination, and require sufficient cover and an abundance of aquatic food sources in order to thrive. Should these habitat requirements be damaged during construction, mitigation efforts might be employed. Habitat improvement work has proven successful on many Minnesota trout streams, although this would be an unusual case. While Brown's Creek is not one of the better trout streams in the state, its diminution or loss as a fishery would be notable, as there are few trout streams within an hour's drive of the Twin Cities.

North Corridor Bridge

From a visual perspective, a bridge in the North Corridor would have the most dramatic impact on the National Scenic Riverway of any of the crossing proposals. The crossing would be accomplished by a high bridge spanning the wooded bluffs on either side of the river, just above the point where the channel widens and deepens to form Lake St. Croix. The Riverway at this point is not wilderness (TH 95 hugs the west side of the river here), yet it has a very scenic and unspoiled appearance, more so than the Central or South Corridors. For canoeists and other recreationalists coming downstream from the north, the bridge would mark the end of the wilder and more intimate St. Croix above Stillwater. The high bridge would have the effect of making development more discernible further up the river than previously, although numerous islands in the channel upstream would help mask its presence. The bridge would also disrupt views up and down the river from various shore locations.

Some of the most serious adverse impacts of the North Corridor bridge would occur where the span goes over Mile Long Island, a very popular camping and picnic area (see figure 4). If it is necessary to construct a bridge pier on the island, it is likely that at least a few campsites on the island would be permanently lost. Campers at nearby sites would be confronted by the large physical presence of the bridge, its shadow at certain times of the day, traffic noise, the possibility of exhaust fumes and precipitation runoff, and increased light at night (MPCA day and night noise standards for camping areas would not be exceeded). The overall result of these changes would be a markedly different ambiance on the island than at present. Because good island camping areas are in high demand, pressure on other areas might increase slightly as a result of a bridge here.

In addition to Mile Long Island, a North Corridor bridge would require the use of some Federal scenic easement land on either side of the river, and possibly a small portion of Federal fee simple land in Wisconsin, depending on the exact alignment and placement of piers. On both sides of the river, the affected property would be primarily heavily wooded bluff land. To a certain extent, the amount of disturbance would be limited because little bluff cutting would be required; in simple terms, the bridge would be similar to a ruler placed flat across the rim of a bowl. Nonetheless, the presence of a bridge at this site would substantially alter the character of the area.

A North Corridor bridge would be located only about 1,000 feet downstream from the historic Boomsite Wayside. This area includes attractive river frontage on the Minnesota shore, picnic tables, a historical marker, parking areas, and rest rooms. A North Corridor bridge would be a dominating visual presence, and would diminish the wild appearance of the river valley at this popular recreation site.

In addition to the impacts which would be directly evident from the river valley, a bridge in the North Corridor would have some potentially important adverse effects further inland. First, there are a large number of wetlands in the vicinity of the proposed route and some of these would likely be taken for highway construction. In addition, the new ap-

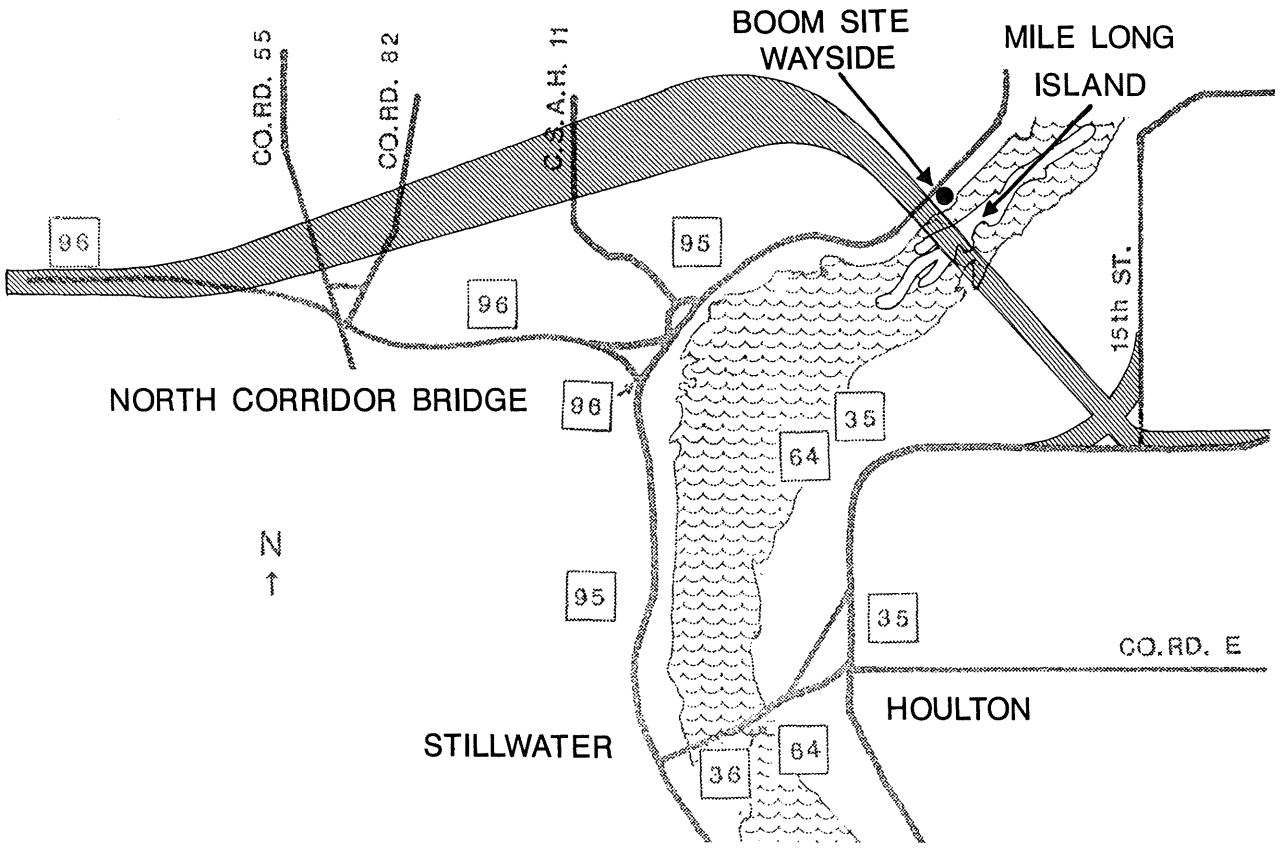

Figure 4

North Corridor Bridge Crossing

proach road would probably have the effect of stimulating new development in portions of Grant and Stillwater Townships, which are now rural. This would conflict with the growth control policies of the Twin Cities Metropolitan Council, which would like to see large-scale development confined to areas where sewers and other costly services are already in place, such as along TH 36 on the north edge of Oak Park Heights. How new development along North Corridor approach roadways would affect the Riverway is unclear at this point, but would partially depend on how effectively local zoning regulations are enforced.

Construction in the North Corridor could affect a plant species which is uncommon in Minnesota, the Virginia Water Horehound (***Lycopus virginicus***). It is possible that the corridor could be routed to avoid these plants or, if this is not feasible, they might be transplanted to another suitable location. There is a Bald Eagle (***Haliaeetus leucocephalus***) nest several miles upstream from the North Corridor site, but construction of a bridge here is expected to have no important impact on this or any other areas used by eagles. The corridor also lies within the potential breeding range of the Peregrine Falcon (***Falco peregrinus***), a Federally endangered species. A crossing in the North Corridor, or at any of the other sites, should have no substantial impact on any falcons in the area.

In addition to the environmental concerns mentioned above, bridge construction in any of the corridors would result in some sediment disruption and possible disturbances to adjacent mussel populations, including rare or uncommon species . (See mitigation section for more on mussels.) Sediment layers are deep in the study areas, up to seventy feet in some places. No accurate estimate of sediment disruption can be made until the number and placement of piers has been decided. It is possible, however, that there will be less opportunity for bottom impacts in the North Corridor because the bridge would have a shorter crossing length than the other corridors--approximately 2,500 feet, compared to a minimum of 2,650 feet in the Central Corridor and 3,200 feet in the South Corridor. This shorter length could reduce the need for piers in the river. A pier on Mile long Island rather than in the river would further reduce the potential for temporary construction-related bottom disruption. In any of the corridor sites, it is probable that bridge construction activity will have a short-term impact on fishing in the immediate area, and that other water sports will be temporarily less attractive because of cloudy water and noise.

All things considered, a bridge in the North Corridor would have the most serious environmental impact on the Riverway of all the BUILD alternatives. It would span the most scenic corridor and bisect a popular recreational island. The connecting highway on the Minnesota side would cut through an area rich in wetlands. From the perspective of people crossing the river, however, the North Corridor would be the most aesthetically intriguing route. On either side would be steep, wooded bluffs. Upstream would stretch the island-filled channel and forested banks of the Federal section of the St. Croix. To the south would be a number of other islands and, as the river widens out, the town of Stillwater. People crossing the river at this point would get a much better sense of why the St. Croix is a National Scenic Riverway than they would at a Central or South Corridor crossing, or at the Hudson I-94 bridge. Nonetheless, preserving a river in order to provide scenic views for motorists is not central to the intent and purpose of the National Wild and Scenic Rivers Act.

Central Corridor Bridge

Of all the BUILD alternatives, the various Central Corridor bridge options would maximize use of the existing routes to the greatest extent. In Wisconsin, a Central crossing would come ashore in or adjacent to Kolliner Park, near the old bridge causeway and go up the hill below Houlton, on or close to the existing STH 64 corridor. In Minnesota a new Central Corridor bridge would confine construction to areas which have already been developed. The new highway would curve north into Stillwater following the current Highway 36 route, before veering out across the river about a half-mile south of the present bridge.

There are several variations on a Central Corridor bridge, all of which would have a number of similar effects (for more details about the various options, refer to the Alternatives sections of the draft EIS). First, the new highway on the Minnesota shore would run close to the river on one side and hug the

bluffs on the other. This alignment would affect the Riverway in a number of respects. Because at least some of the approach would be elevated in all the central options, views of the sedimentary bluffs in Stillwater would be partially obscured. One of the alternatives, however, is an integrated roadway which would reduce the visual impacts on the bluffs. Another disadvantage of the Central Corridor is that traffic would be funneled very close to the water on the Minnesota approach, increasing noise, air quality, and visual impacts on the Riverway. These effects would be compounded by the bridge's relatively low clearance over the river. In all the Central Corridor alternatives, it would be necessary to relocate the existing rail lines closer to the river, further increasing impacts along the shoreline and on the Riverway. Additionally, the presence of the highway and the relocation of the rail lines could alter prospects for redeveloping this portion of the waterfront.

Compared to the other BUILD options, a Central Corridor decision would be the least congruent with Stillwater's aim to preserve its downtown, even though through traffic would be kept out of the central city. A new bridge in the Central Corridor would alter the view of the St. Croix from areas along the Stillwater waterfront. Because the bridge curves diagonally across the river, it would occupy a fairly large portion of the field of vision of a person looking out from the south end of Lowell Park, for example, or adjacent commercial sites.

On the Wisconsin side of the river, the main differences between the variations are related to the degree of congruence with the existing corridor, bridge height and grade, and whether or not an on-land tunnel is employed. In general, the less the existing corridor is used, the more disturbances there will be to the bluffs west of Houlton.

All of the Central Corridor alternatives would have at least an indirect effect on Kolliner Park (see Section 4(f) on Kolliner Park for more details). Although Kolliner Park is currently little used, boaters do come ashore at the Legion Beach area, and there is the possibility that the park could be further developed in the future. A Central Corridor bridge would diminish the attractiveness of Kolliner Park as a recreational space, although it would still retain much of its wild appearance.

An on-land tunnel would reduce the long-term impacts to Kolliner Park, but it would require that the bridge slope down closer to the river as it approaches the Wisconsin shore. The road would enter the base of the bluff and emerge on the plateau northeast of Houlton, well back from the river. If this option is chosen, a considerable amount of bluff-cutting could be avoided, providing it is possible to bore through the hillside. Although soil and rock conditions are not well known at this point, preliminary indications are that at least part of the tunnel would have to be excavated from the surface and then covered over. This would have a temporary adverse effect on the bluffs, with long-term impacts dependent on the extent to which restoration is possible after construction.

To summarize, a Central Corridor crossing would have the advantage of confining new construction to the area around the existing corridor, where there is already considerable development on the Minnesota side, and an existing road cut in Wisconsin. The main disadvantages would be the auditory and visual disruption around the Stillwater bluffs and shoreline, and some disruption of the natural environment in Kolliner Park and the bluff top above it. If the existing bridge is left in place, a new Central Corridor crossing would create a crowded visual appearance on the river in front of Stillwater. The effects of the existing bridge will be discussed in more detail in a later section.

South Corridor Bridge

In the South Corridor, there are three principal bridge alternatives, two of which have several variations. In spite of the differences between the South Corridor options, they all have a few important similarities. One of the most important characteristics about the South Corridor is that, on the Minnesota side, the shore is already heavily developed. In the immediate vicinity of the western approach is a sewage treatment plant, a marina, a power plant, and a set of railroad tracks. Slightly to the south is a prison, the Andersen Window Company, and the community of Bayport. Like the western approach in the Central Corridor, a new South Corridor bridge would not affect an area of the Minnesota shore which has a particularly natural appearance from the river.

The Wisconsin side of the St. Croix is very different, composed of heavily wooded, steep bluffs. All of the South Corridor bridges would have an effect on these bluff areas, but there is some variation depending on the crossing option. The most northerly alternative would utilize an existing ravine, which would make the approach less visible from points up- and downstream along the river. A nine hundred foot optional tunnel going through the top of the bluff would reduce the need for cutting off the crest of the hill.

Unlike the "Buckhorn site" option discussed above, the middle South Corridor alternatives would pass just south of the sewage treatment facility on the Minnesota side. On the Wisconsin side, the three options for this route would have different effects on the bluff. One of the options would have an elevation of 70 feet on the Minnesota shore and 157 feet over the Wisconsin shore. With the second option, the Minnesota and Wisconsin shore elevations would be 45 and 113 feet, respectively. (Both would have 3 percent grades.) The third option would employ the same elevations and grade as the second alternative, but would utilize a 920 foot on-land tunnel to reduce bluff impacts on the Wisconsin shore.

There are three variations to the southern-most of the South Corridor bridge alignments. On the Minnesota side, a long stretch of approach would be elevated above the shore area, beginning just west of TH 95, which would pass underneath. As with the middle alternatives discussed above, it may be necessary to relocate the railroad tracks closer to the river if a full diamond interchange is used. The degree of bluff cutting required on the Wisconsin shore will depend on the height of the bridge and the steepness of its grade as it touches shore. One of the options in this corridor is relatively high (between 126 and 143 feet) above the river and flat (only a .5 percent grade). This will reduce the need for bluff cutting, as well as diminish noise. On the negative side, this would be the longest bridge in the South Corridor, at 6,200 feet. The other two southern-most options in this corridor would slope upward toward the Wisconsin bluff top at grades of roughly 2.6 to 3.0 percent. The effect on the Riverway of these two options would be quite similar.

The potential damage to mussel populations appears to be greatest in the South Corridor, especially along the Wisconsin shore. As previously noted, there is a high probability that low numbers of the Federally endangered mollusk ***L. higginsi*** reside in the area, mixed in with larger populations of other species. In addition, the south alignment of the South Corridor crosses a site containing a species of plant which is endangered in Wisconsin, the Dotted Blazing Star ***(Liatris punctata)***. Should this colony be affected, it might be possible to move the plants to another suitable site.

To summarize, the major environmental effects of a South Corridor bridge would involve the bluffs on the Wisconsin shore, the dense mussel beds along the east shoreline, and the aesthetic impact of a large structure going across the river. On the more developed Minnesota side, there would be little damage to the natural environment. Like the Central Corridor alternative, however, a bridge here would displace a large number of residences in Oak Park Heights.

DISPOSITION OF THE EXISTING BRIDGE

The disposition of the existing bridge has become a complex issue, with a number of arguments supporting both removal and retention if a new crossing is built. Reasons supporting retention of the bridge include its importance in meeting local transportation, economic, and social needs; its historical significance; and its importance in Stillwater's comprehensive plan. Major arguments supporting removal include the aesthetic impact of two nearby crossings on a National Scenic Riverway; the elimination of boating delays; and the cost of maintaining both crossings.

Construction of any of the BUILD alternatives would replace the old bridge's primary transportation function. However, the structure would continue to meet important local transportation needs by providing a direct link between downtown Stillwater and Houlton. None of the BUILD alternatives would provide such a convenient connection between these areas, which have long-standing social and economic ties. Replacing the existing bridge with another crossing in the same place was dismissed as a study option because it does not address the congestion problem in downtown Stillwater.

Another important factor affecting the future of the bridge is its local and national historic significance. The bridge is a key component of the Lower St. Croix River's cultural landscape and an important example of a particular engineering style which is rare in the Upper Midwest. The structure was recently added to the National Register of Historic Places; eventually there may be National Historic District in adjacent downtown Stillwater. As stipulated in the 1987 Transportation Act, state transportation agencies have an obligation to preserve historic bridges where ever possible. In addition, Section 4(f) requirements prohibit the use of Federal-aid funds for the removal of historic structures unless there are no feasible and prudent alternatives.

Elimination of the lift bridge would profoundly affect the appearance of the historical Stillwater waterfront and conflict with the new plan the City has produced for its downtown area. The plan stresses the role of the existing bridge in providing access between the downtown area and Kolliner Park, a large tract of a land on the Wisconsin shore which is owned by Stillwater. Removal of the existing crossing would jeopardize possible future efforts by Stillwater to develop facilities in the park.

Conversely, constructing a new river crossing while maintaining the old one would increase the presence of the built environment on the river. If the lift bridge were to remain in place, both new and old bridges would be visible from many points along the St. Croix near Stillwater-Houlton; the stretch of river near the crossings would appear more developed than it already is.

The future of the existing bridge is an especially important consideration for the Central Corridor BUILD options, due to the proximity of the crossings. If the old bridge is left in place next to a new Central Corridor crossing, there would be a much greater sense of crowding on the river in front of Stillwater. The additional obstructions in the water could make recreational boating in front of Stillwater less desirable and/or more hazardous. The presence of two bridges coming together in Kolliner Park would reduce its present appeal and future potential as a recreational area.

Another argument for removing the existing bridge (or keeping its lift permanently up if it remains) is that it would eliminate boating delays, increasing the accessibility of the river above Stillwater for large watercraft. In conjunction with a North or South Corridor BUILD decision, removal of the old bridge would make Kolliner Park a more desirable place for certain types of recreation (e.g., boat camping and nature observation), as the noise and visual distraction of bridge traffic would be eliminated.

Finally, the additional cost to Mn/DOT and Wisc/DOT of supporting two river crossings is an important factor. At some point in the future the Minnesota and Wisconsin transportation agencies

(who own the structure) will initiate the environmental processes required to evaluate the disposition of the bridge. Unless local government or private owners can be located, the transportation agencies will propose that the bridge either be relocated to another site or demolished.

MITIGATION MEASURES

There are six broad areas in which a new river crossing will affect the National Scenic Riverway. These impacts, which to varying degrees would be present in each of the corridor study areas, are as follows: water quality and aquatic life; recreation; bluffs and other shore areas; bridge design/aesthetics; noise; and air quality. These categories are not mutually exclusive; one impact (e.g., water quality) could easily affect another area (e.g., recreation).

Water Quality and Aquatic Life

As mentioned previously, water quality impacts are likely to be short-term effects resulting from construction. The extent to which bottom material is disturbed by construction operations will be partially determined by what BUILD alternative is selected, if any, and the method of dredging employed. A tunnel in either the North or South Corridors would have the most disruptive impacts on bottom sediments. These impacts could be minimized if immersed tube or earth pressure balance shield methods are used, rather than cut and cover tunneling (see the special Mn/DOT tunnel report for more details about these methods). In order to minimize impacts from dredging, as much of the dislodged material as possible must be captured, removed from the water, and disposed of at an environmentally sound on-shore location.

A number of mitigation measures are possible to reduce harm to mussel beds and the Higgins' Eye Pearly Mussel in particular. According to Mn/DOT research, if ***L. higginsi*** is present in the study area, as seems likely, it probably only represents 0.3 to 0.5 percent of the mussel population. If a South Corridor tunnel became the chosen alternative, the only way to avoid a substantial impact on ***L. higginsi*** would be to have divers remove all mussels from a large area surrounding the construction zone and move them to other suitable habitat. More will be learned about the long-term effects of such an operation from data collected at a mussel relocation project conducted on the St. Croix River at Prescott, Wisconsin.

According to a Mn/DOT aquatic biologist, the longitudinal area to be searched would vary according to the means of construction employed, but if a trench-type placement were used for tunnel sections, the affected area should include everything three hundred feet upstream from the trench center and a thousand feet downstream. Assuming, for example, that the affected area goes from the Wisconsin shoreline out one hundred feet into the river, the search area would be 130,000 square feet, or three acres.[16] The cost of divers searching this area on a yard by yard basis and relocating all mussels would fall between $50,000 and $200,000. This procedure would be less expensive than seeking out and moving only specific, rare mussel species.[17]

A South Corridor bridge would have less effect on mussels than a tunnel. Mitigation should be sufficient if bridge piers are kept at least three to five hundred feet from the shoreline. If design considerations preclude this, mussels should be removed from the affected area.

In the North Corridor, a tunnel would require that mussel collections be conducted from the main channel to the Wisconsin shoreline. Mussels would be released in suitable habitat upstream from the construction site. If a bridge is selected for the North or Central Corridors, areas under the piers plus a twenty foot buffer zone should be cleared of mussels. None of the alternatives in any of the corridors should affect the continued existence of ***L. higginsi*** in the Lower St. Croix.[18]

In addition to underwater construction activities, poor on-shore erosion control practices can degrade water quality. It is especially important that good sediment-control techniques be employed during

construction on steep bluffs, where exposed soil could quickly develop gullies. Additionally, bridge and highway design must attempt to reduce the erosion potential of runoff from the road surfaces.

Recreation

All of the BUILD alternatives, as well as the NO-BUILD option, have implications for watercraft on the Riverway. A NO-BUILD decision means the likelihood of increasing conflicts between boaters trying to go under the lift bridge, and motorists going over it. Improved management of traffic, boats, and bridge would be the only potential NO-BUILD means of reducing problems.

A new bridge in any corridor could have some effect on navigation as a result of its piers. Impacts could be diminished by reducing the number of piers required and attempting to place them outside the main navigation channel(s). One means of mitigating the impacts of a new crossing on recreational boating would be to expand the "up" time on the lift bridge, which would be less heavily used by motorists. Of course, removal of the old bridge would eliminate the bottleneck, but create an inconvenience for some motorists.

The effect of a new bridge on Riverway recreation would be most notable in the North Corridor. The area around the North Corridor bridge site has a higher density of active watercraft than the other study areas, with a large amount of shore use, especially on Mile Long Island. It would be difficult to mitigate the effects of a pier on Mile Long Island, aside from trying to locate it away from prime camping places, or creating new beaching/camping spots elsewhere. Conversely, constructing a pier on Mile Long Island could make it unnecessary to place one in the river.

Pursuant to Section 147 of the 1976 Federal-Aid Highway Act, Mn/DOT and Wisc/DOT will explore the possibility of constructing a new boat launch ramp on or adjacent to the right-of-way of a new river crossing. The DOTs will coordinate their efforts with the NPS, the state DNRs, and the other agencies and organizations with an interest in Riverway Management.

Bluffs and Shore Areas

All of the BUILD alternatives will have varying effects on the bluffs, wetlands, vegetation, and other terrestrial features adjacent to the St. Croix. These impacts can be reduced by good location choices, as well as mitigation measures such as transplanting rare or uncommon species, or creating new natural features in other areas. Avoiding wetlands in the North Corridor, for example, would be the best means for reducing damage, but if this was not feasible, new wetlands of similar value might be created elsewhere. The need for bluff cutting can be reduced by utilizing a natural ravine or existing road cut, as several of the Central and South Corridor choices do. Site will be a critical determinant of terrestrial impacts, because the various locations offer significant variations in land use and topography.

Design/Aesthetics

If there is a BUILD decision, a number of factors will have an important influence on natural resource impacts and Riverway aesthetics. In the Central Corridor, for example, a bridge of traditional design and materials would likely blend into the historic Stillwater area more effectively than an overtly modern structure. Similarly, a high bridge with little grade will generally have less physical impact on bluffs and surrounding vegetation than one which comes ashore only part way up a hillside. Wise site, type, and design choices can reduce, if not eliminate, the adverse environmental and aesthetic impacts of a new river crossing.

In the event of a BUILD decision, Mn/DOT and Wisc/DOT are committed to involving the public, cooperating agencies, and other interested parties in the type and design decision process. Towards that

end, the DOTs have agreed that limiting the number of piers in the river will be an important factor affecting any type and design decision.

Noise

Sound impacts from a new bridge or tunnel can be minimized by keeping grades as flat as possible. Well-placed earth barriers and vegetation can also help minimize noise. Similarly, if an approach road follows a natural ravine, the slopes on either side can help block the sound. Conversely, an approach which hugs the river, as on the Minnesota side of the Central Corridor, is going to produce noise along a longer stretch of shore area. The heights of the various bridge proposals vary considerably and will affect noise impacts, although even the lowest structures being considered will produce noise levels on the river which are under state and Federal standards ($L_{10}70$ dBA) for park and recreation areas. The bridge deck will help buffer the river surface from traffic noise, while other design features such as safety barriers will have an effect on the outward movement of the sound envelope. Finally, measures must be taken to minimize the impact of construction noise.

Air

Air quality impacts are likely to be of greatest concern in tunnels, in a NO-BUILD decision, or with a Central Corridor bridge. As noted earlier, the exhaust which collects in a tunnel must be discharged at discreet points, leading to greater concentrations of contaminants than would otherwise be the case.

Should a tunnel become the preferred alternative, care will be taken to ensure that exhaust facilities are located where they cause minimum irritation to area residents and Riverway users. A NO-BUILD decision would mean that increasing amounts of traffic would continue to pass through downtown Stillwater, stopping and idling when the bridge is up, or traffic lights are red. It may be possible that certain traffic management strategies could be used to reduce pollution concentrations (e.g., creation of one-way streets). A Central Corridor bridge decision would likely have the effect of putting vehicles and their exhaust in close proximity to the river for a longer period of time, as well as funneling a large amount of traffic through a southeastern strip of Stillwater. Whether mitigation would be required to offset the resulting effects is not certain at this time.

COORDINATION

There are many interests participating in the process of reaching a decision concerning a new St. Croix River crossing. The National Park Service, the Wisconsin and Minnesota Departments of Natural Resources, the Lower St. Croix Management Commission, the Minnesota and Wisconsin Boundary Area Commission, the Voyageurs Region National Park Association, and the Sierra Club have been especially interested in the potential effects on the National Scenic Riverway. The environmental review process has included numerous meetings, tours, draft reviews, and considerable correspondence between the DOTs and the participating agencies and special concern groups.

In particular, valuable information for this document has been supplied by various memoranda and reports supplied by Steve Johnson and Dan McGuiness, former and present directors, respectively, of the Minnesota-Wisconsin Boundary Area Commission. The 1987 recreational boating study supplied by the Boundary Commission has proven especially useful as a source of background data for evaluating recreational boating impacts. A significant amount of correspondence with all of the above mentioned groups, as well as others, has proven helpful in providing the criteria needed to evaluate Riverway impacts.

To facilitate access to correspondence and coordina-

tion information, Mn/DOT has assembled a special volume containing supporting documents for the Stillwater-Houlton River Crossing Studies. This volume includes inter-agency discussion on a number of key issues, including visual impacts, the future of the existing bridge, and the intent of the Wild and Scenic Rivers Act.

END NOTES

1) U. S. Congress, ***Wild and Scenic Rivers Act,*** Pub. L. 90-542, October 2, 1968.

2) Ibid.

3) ***National Wild & Scenic River System***, Sierra Club, April, 1988, p. 12.

4) Wild and Scenic Rivers Act.

5) U. S. Department of Interior/National Park Service. ***Final Master Plan: Lower St. Croix National Scenic Riverway***, February 1976, p. 6.

6) Steve Johnson, Minnesota-Wisconsin Boundary Area Commission, memorandum to Mike Louis, Mn/DOT, regarding St. Croix River traffic, April 15, 1987.

7) U. S. Department of Interior, ***Final Master Plan: Lower St. Croix National Scenic Riverway,*** p. 23.

8) Dan McGuiness, ***1987 Recreational Boating Study: Lower St. Croix National Scenic Riverway***, Lower St. Croix Management Commission, 1988.

9) Ibid.

10) Ibid.

11) Ibid.

12) Ibid.

13) West Central Wisconsin Regional Planning Commission, ***Congestion at the Stillwater Bridge***, July 1985.

14) Ibid., p. 36.

15) Steve Johnson, memorandum, April 15, 1987.

16) Minnesota Department of Transportation, ***Endangered Mussel Survey***, 1987, p. viii.

17) Greg Busacker, Mn/DOT Aquatic Biologist, memorandum to Mike Louis, Mn/DOT, on aquatic endangered species determination at Stillwater, July 1, 1988, p. 1.

18) Minnesota Department of Transportation, ***Endangered Mussel Survey***, p. viii.

MILE LONG ISLAND

Table of Contents

DESCRIPTION OF 4(F) PROPERTY 1

Location, Size, and Access 1
Property Characteristics and Usage 2
Ownership 2
Relationship to Similar Land in the Area 3

ALTERNATIVES 3

MITIGATION MEASURES 4

COORDINATION 4

ENDNOTES 4

LIST OF FIGURES

1. Jurisdictional Boundaries on Mile Long Island 2

2. Federal Property Rights on the Wisconsin Shore 4

3. Federal Property Rights on the Minnesota Shore 5

DESCRIPTION OF 4(F) PROPERTY

Size, Location, and Ownership

Mile Long Island is a large, publicly-owned island in the St. Croix River, lying immediately upstream from the City of Stillwater's northern limits. The island is close to a mile long and is approximately thirty-three acres in size. A bridge in the North Corridor would cross over the south-central portion of the island, and possibly require that a pier be constructed on it.

Several jurisdictional boundaries cut across Mile Long Island. The island hugs the east shore, and the bulk of it--some thirty-one acres--is owned by Wisconsin. On the western side, a small, 2.4 acre peninsula protrudes across the Minnesota boundary (see figure 1).

The southern tip of the island is bisected by the demarcation between the Federal and state administration zones of the Scenic Riverway. The area south of this line (about 4.4 acres) is administered by the Wisconsin Department of Natural Resources. North of the Federal-state border, Wisconsin leases its portion of the island to the National Park Service (NPS), nearly twenty-six acres in all. The lease is renewable every three years. By reciprocal agreement, the island is patrolled by NPS rangers, as well as conservation officers from the two states.

Access, Usage, and Property Characteristics

Mile Long Island is separated from the Wisconsin shore by a narrow channel and has no direct land access. The island is heavily used by water-based recreationalists, and provides significant beaching areas. Some people make day trips to the island to swim, picnic, fish, or observe nature, while others spend the night. The NPS estimates that an average of 150 people per day use the island during summer weekends. According to an aerial survey taken by the Minnesota-Wisconsin Boundary Area Commission (MWBAC) on three summer weekends in 1987, between eighteen and forty-one boats were beached on the island at a given time during the day. On peak weekends during the summer, Mile Long Island's beaching areas are ninety to ninety-five percent filled. The only facility present is a floating comfort station periodically provided by the NPS. No additional facilities are proposed.

The wealth of good beaching opportunities on the island make it somewhat unusual in the area. On the Lower St. Croix, good public beaching places are at a premium, and on many private islands beaching fees are charged. While there are many public islands further upstream, they are generally not as accessible to motor boats. There are a number of marinas and boat launches in the Stillwater area, and the island is generally accessible to larger watercraft. Part of Mile Long Island's uniqueness lies in its ready accessibility to Stillwater residents and visitors from the Twin Cities Metropolitan Area.

According to information supplied by the NPS Acting Regional Director (Omaha) in 1987, Mile Long Island is classified primarily as an "active" recreational area. The NPS also notes that sightseeing opportunities are present in the area. This is particularly evident in the fall, when the island's sugar maples and other hardwoods provide spectacular color, and in the early spring, when the island is covered with incipient greenery. Because of its various attributes, the NPS considers Mile Long

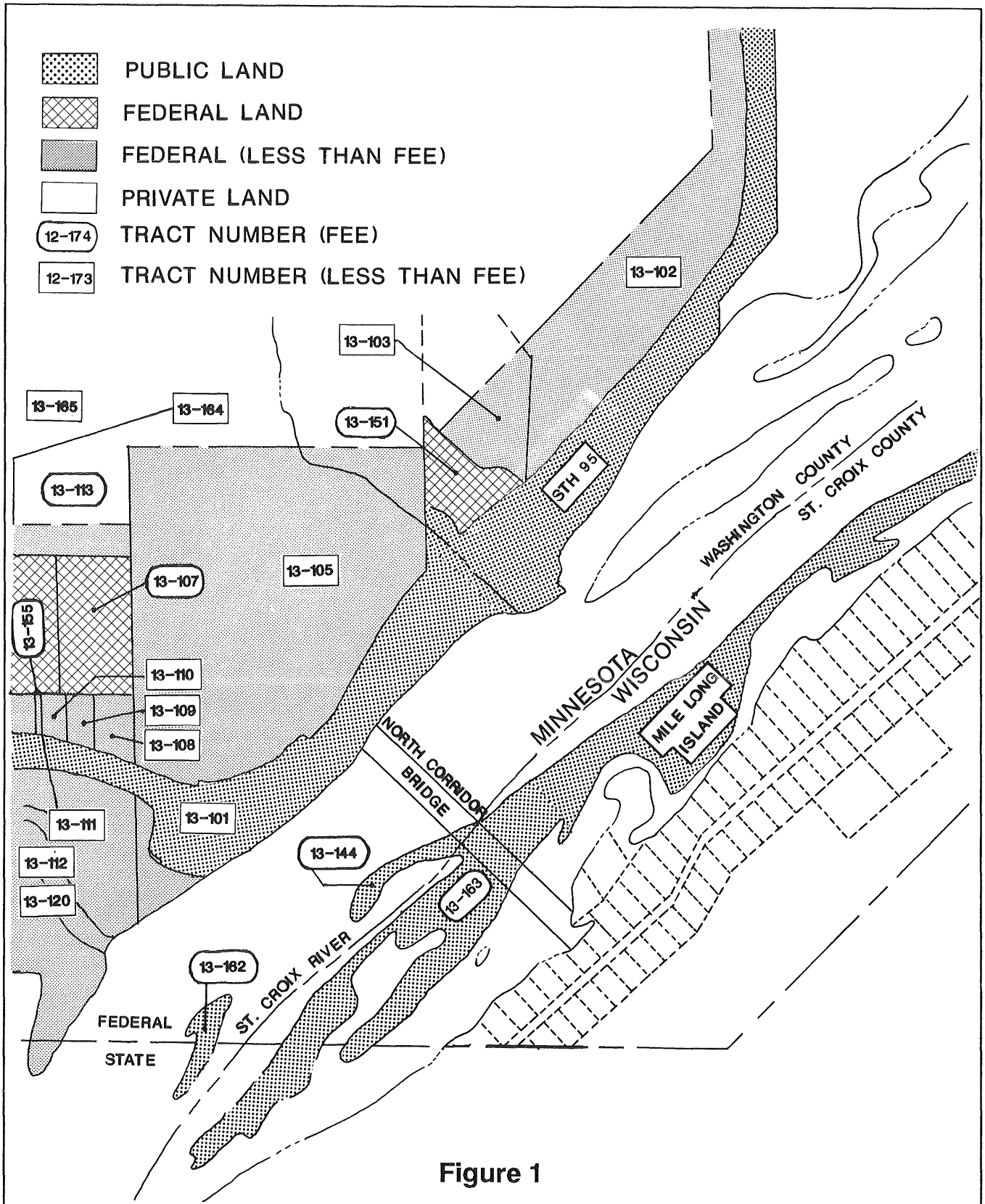

Figure 1

Jurisdictional Boundaries on Mile Long Island

Island to be "highly important to the needs of river users." [1]

Relationship to Similar Land in the Area

Mile Long Island is at the southern end of a long string of islands, which end where the river widens and deepens into Lake St. Croix below Stillwater. Consequently, Mile Long Island has more in common with the narrower, less developed river channel above it than what follows downstream. The shore opposite the island on both sides of the river is rugged and quite heavily forested, although the Minnesota side includes TH 95.

The Federal Government holds both fee simple and scenic access rights on either side of Mile Long Island. [2] On the Wisconsin side of the river, much of the land adjacent to the island is in the area known as the Twin Springs Addition. In this area, the NPS owns in fee a number of parcels with river frontage, which are wedged in between scenic easement areas (see figure 2). Back from the river, as well as further upstream, the NPS owns the scenic easements to a long stretch of contiguous parcels.

Across the river on the Minnesota side, the Federal Government holds both fee and scenic easement rights to a large number of irregularly shaped parcels (see figure 3). The largest contiguous area held in fee is in the vicinity of Fairy Falls, on Silver Creek. Close to where the proposed bridge would intersect the Minnesota shore, there is a state boat launch and a wayside rest; the latter includes a logging era boom site that is a National Historic Landmark. A North Corridor bridge would be clearly visible from this area. The Wisconsin side also includes an historic boom site.

Between the Federal-state management boundary and Prescott, Wisconsin and Minnesota have purchased scenic easement rights along significant stretches of the river. Fee ownership along this reach is mainly concentrated in the state parks. In incorporated areas such as Stillwater, zoning restrictions are used to help maintain the scenic integrity of the Riverway.

ALTERNATIVES TO A NORTH CORRIDOR BRIDGE

In addition to a North Corridor bridge, there are a range of possibilities in the Central and South Corridors, as well as a North Corridor Tunnel. (Refer to the draft EIS for more specific details about these alternatives, as well as the NO-BUILD option.) The North Corridor bridge proposal is the only alternative which would directly affect Mile Long Island, or the Federal interests on the Minnesota and Wisconsin shoreline. A North Corridor tunnel or any of the Central or South Corridor alternatives would be impossible to see from the island, although a slight noise increase is possible depending on steepness of the approach grade and various acoustical factors such as distance and atmospheric conditions. None of the BUILD alternatives would exceed any applicable day or nighttime noise standards for Mile Long Island or the river around it.

1 Edward D. Carlin, Acting Regional Director, National Park Service, memorandum to Robert Hopkins, Mn/DOT, regarding the St.Croix National Scenic Riverway, October, 1987.

2 A scenic easement grants the purchasing governmental unit the right to limit or prohibit development or improvements which conflict with Riverway aesthetics. Examples of restrictions include tree clearing, and building height and color.

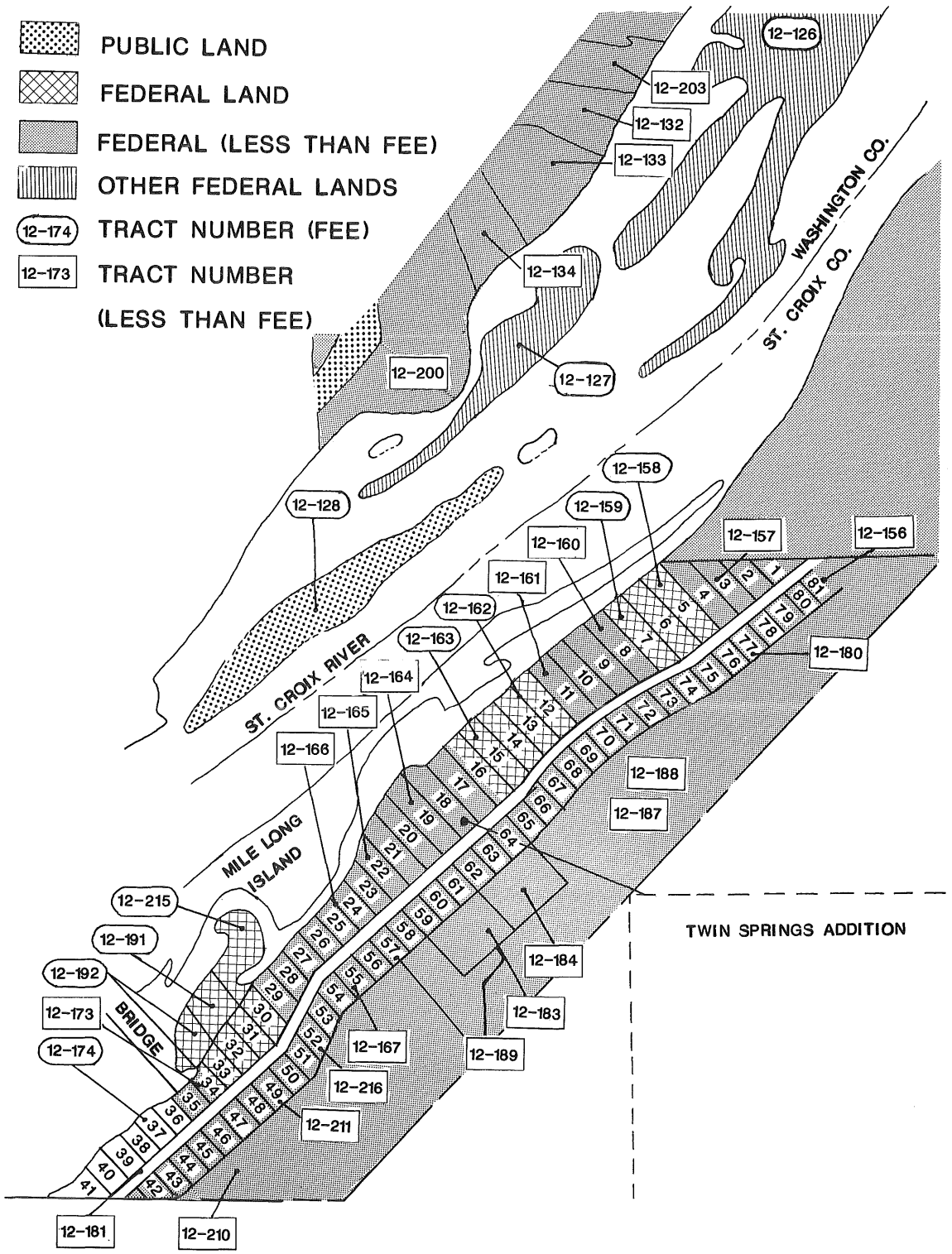

Figure 2

Federal Property Rights on Wisconsin Shore

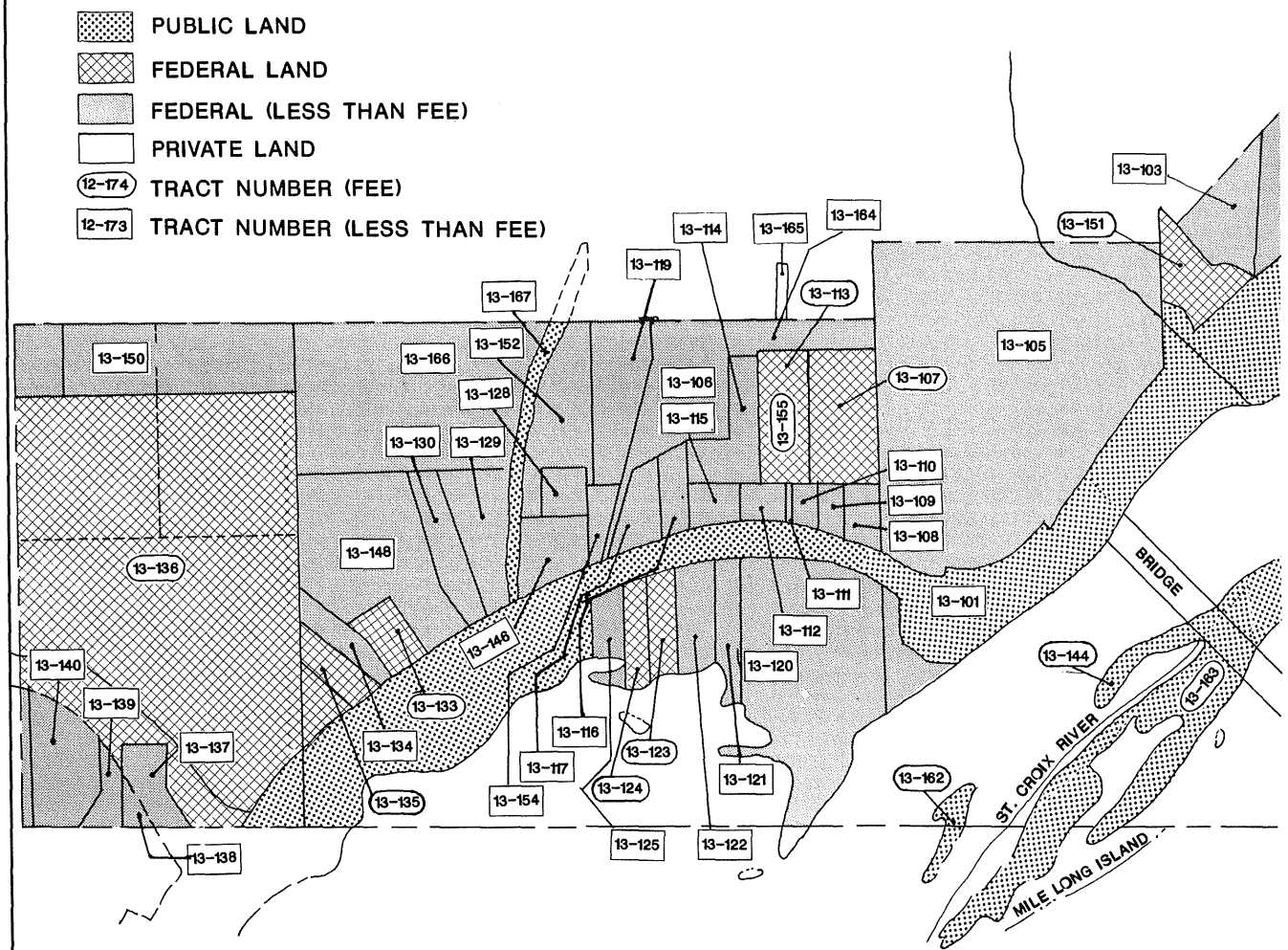

Figure 3

Federal Property Rights on Minnesota Shore

If the Central Corridor became the preferred alternative, Section 4(f) land owned by the City of Stillwater (Kolliner Park) on the Wisconsin side of the river would be directly affected. Another Section 4(f) involvement would occur if the old Stillwater Bridge were to be removed at some point in the future, as it was recently listed on the National Register of Historic Places. Removal of the old bridge would also have a temporary effect on Lowell Park on the Minnesota side. A crossing in the South Corridor would invoke Section 4(f) by virtue of the fact that it would--like the other alternatives--bisect a National Scenic Riverway.

4(F) IMPACTS OF A NORTH CORRIDOR BRIDGE

A bridge in the North Corridor would cross directly over the Federally administered section of Mile Long Island, possibly requiring a pier on it. The bridge would likely have a substantial impact on the quality of recreational experience available on the island. The visual effect would be the most noteworthy, an impact which would be intensified by the bridge's height--it would essentially go from one bluff to another.

Noise would increase approximately 10-15 dBA over existing levels, but would remain below state and Federal standards and criteria for camping areas. Recreationalists would also possibly be affected by shadows, runoff, and lights at night from vehicles and the bridge itself. While it is unlikely that much of the island would be physically changed by a North Corridor bridge, it is reasonable to assume that several campsites would be lost or rendered undesirable, and that the ambiance river users currently enjoy on and around Mile Long Island would be altered.

Where the North Corridor bridge comes ashore on the Wisconsin side, it would affect Federal scenic easements and possibly a few small tracts of NPS fee simple land. (See tracts 12-173, 12-191, 12-192, 12-210, and 12-211 in the lower left corner of figure 2.) Until the design process is further advanced, it will not be certain where piers would be necessary, what tracts would be directly affected, or how much NPS property--if any--would be required for the approach roadway. On the Minnesota side of the river, a new bridge would cross over TH 95 and touch down on NPS scenic easement land (see tract 13-105, figure 3). Again, the specific location of piers and approach is not clear at this point. Further inland, the road swings across private land, up and around other NPS scenic easement parcels. Heading southwest, the road would go north of Park Service fee holdings in the vicinity of Silver Creek (tract 13-136, figure 3), before coming to an interchange near Brown's Creek.

MITIGATION MEASURES

If a bridge were built across Mile Long Island, its presence would be difficult to escape; approximately 185 feet high, it could not be hidden. Nonetheless, a visually pleasing design would help mitigate the bridge's impact. Mn/DOT is committed to involving the public in the type and design process if there is a BUILD decision. Advanced computer graphics technology might be employed to help interested individuals visualize what various alternatives would look like from different angles. If it became necessary to construct a pier on the island, care must be taken so that its location has a minimal effect on recreational activities. The design process should ensure that a pier blends as harmoniously as possible with the surrounding environment (e.g., natural materials such as local stone could be used).

Bluff cutting for the approaches should be kept to a minimum. Good erosion control practices must be employed during construction, especially on the

steep slopes on either side of the river. Bridge and highway design will attempt to reduce the erosion potential of bridge and highway runoff.

Every effort should be made to ensure that motorists are able to appreciate the spectacular vistas while crossing a North Corridor bridge. If possible, a viewing area on one or both sides of the bridge would be appropriate. Ideally, pedestrians and bicyclists should have access to the bridge.

Department of Interior Land and Water Conservation (LAWCON) funds have not been used to acquire or improve any portion of Mile Long Island. However, LAWCON money has been used to purchase NPS scenic easements. Any LAWCON land used for bridge and highway construction must be replaced by other land of at least equal market value and similar recreational usefulness.

COORDINATION

Information on the 4(f) status of land in the North Corridor was obtained from a number of sources. Much of the descriptive material included here on Mile Long Island was derived from a 1987 letter from Edward D. Carlin, who was then Acting Regional Director at the NPS's Omaha office. At Mn/DOT's request, Albert L. Seidenkranz (then Acting Superintendent of the St. Croix National Scenic Riverway) forwarded legal descriptions of property in the North Corridor. Additional assistance was provided by Steve Johnson of the Minnesota DNR, and Dan McGuiness of the Minnesota-Wisconsin Boundary Area Commission.

KOLLINER PARK

Table of Contents

DESCRIPTION OF 4(F) PROPERTY 1

Size, Location, and Ownership 1
Access, Usage, and Property Characteristics 1
Relationship to Similar Land in the Area 3

ALTERNATIVES TO A NORTH CORRIDOR BRIDGE 3

4(F) IMPACTS OF A NORTH CORRIDOR BRIDGE 6

MITIGATION MEASURES 6

COORDINATION 7

LIST OF FIGURES

1. Location of Kolliner and Lowell Parks 1

DESCRIPTION OF 4(F) PROPERTY

Location, Size, and Access

A Central Corridor crossing would directly affect Kolliner Park, located in Wisconsin at the east end of the existing lift bridge (see figure 1). Kolliner Park is an irregularly shaped, fifty acre strip of land which includes more than a mile of St. Croix shoreline. The park is bisected by STH 64, which comes down from the bluff top and passes over a 760 foot causeway west of the park before it reaches the old bridge. A new Central Corridor bridge would come ashore just to the south of where the causeway leaves the shoreline. The new approach highway (or land tunnel) would be on or slightly to the north of the existing corridor.

Currently, the river provides the primary access to the park, with most activity occurring around an area known as Legion Beach. Direct vehicle access to the park has not been allowed for some time; parking along the highway is difficult because of the heavy traffic. Nonetheless, some people still reach the park by walking in from the road.

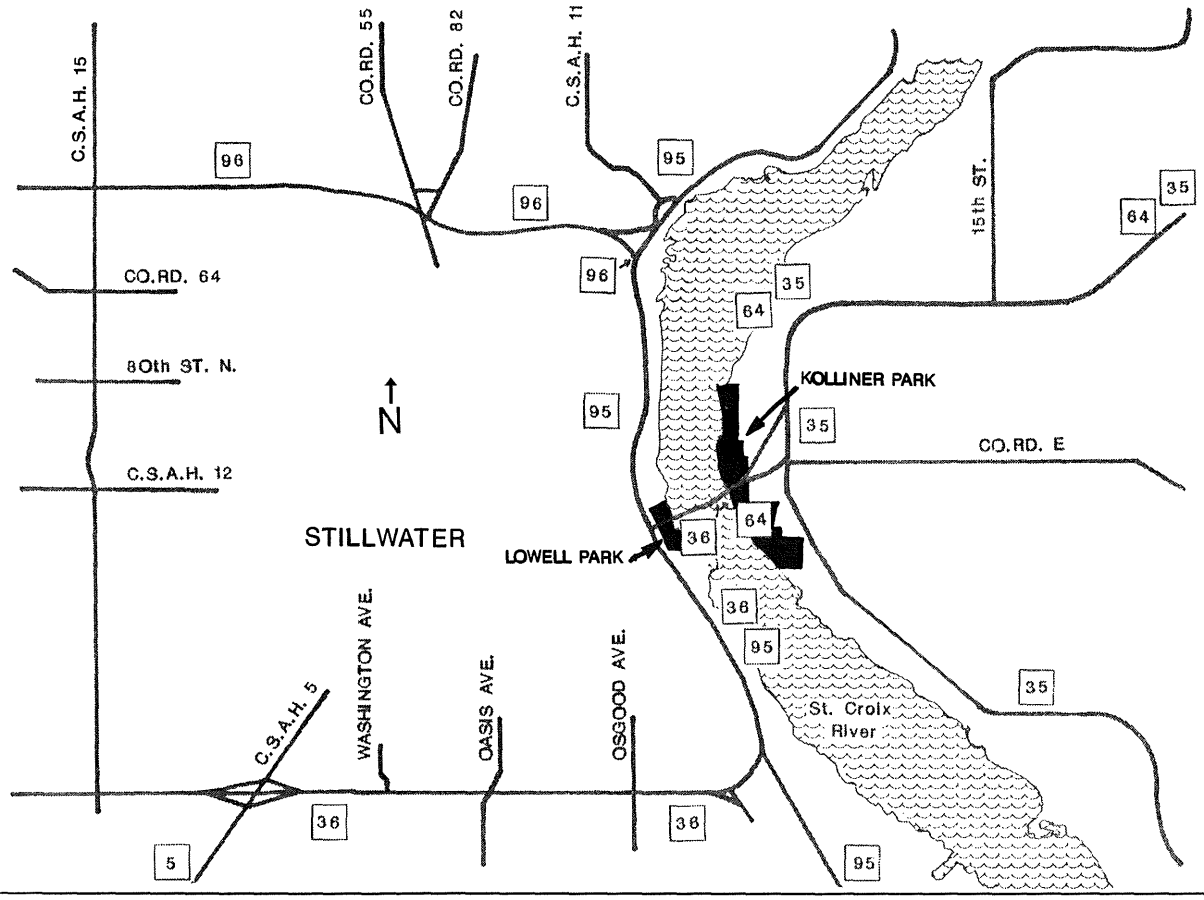

Figure 1

Location of Kolliner & Lowell Parks

Property Characteristics and Usage

Much of Kolliner Park is composed of rugged, heavily vegetated bluffs below the town of Houlton. Currently, there are no usable developed facilities in the park, although it has historically been used for picnicking, boating, swimming, and camping. There are no official figures available for current park usage, but it can probably be considered light by most standards.

Beginning in the 1920s and 30s, Kolliner Park was equipped with some facilities, and it was hoped it would become a tourist attraction. Legion Beach, in particular, was a popular swimming area. However, the park's popularity began to wane and Legion Beach was closed about sixteen years ago. In 1976, the Stillwater Jaycees attempted to resurrect the park by making it one of their community projects. Picnic tables and garbage cans were installed, and a parking area was paved. Unfortunately, these improvements were soon damaged or destroyed. A gate was installed across the entrance in an attempt to reduce the illicit partying and attendant littering which was occurring on the grounds. Today, the remains of the former picnic grounds and a large old fireplace persist around Legion Beach.

In spite of the park's present lack of development, it retains a high amenity value, with significant potential for future recreational use. The City of Stillwater, which owns the property, considers the park to be a "passive" recreational area which is "extremely important to the recreational needs of the City and surrounding communities...a very important part of our history and environment."[1] According to the 1988 ***Stillwater Downtown Plan,*** the City would like to "maintain the natural appearance of the site" as viewed from across the river, creating a stronger tie between the park and the downtown area.[2] Future use of the park largely depends on whether a new river crossing is built, and if so, where it is located.

If the existing bridge is retained and a new river crossing is constructed in the North or South Corridors, Kolliner Park would maintain its close links to Stillwater and become more valuable for certain types of uses. Because traffic over the lift bridge would be substantially less than a NO-BUILD decision, the crossing would be more attractive to pedestrians and bicyclists wishing to visit the park from downtown Stllwater.[3] Assuming, on the other hand, that the existing bridge is removed and a new North or South Corridor crossing is built, Kolliner Park would become less useful as part of Stillwater's park system, but could become more attractive for other types of recreation, especially those based on the water. Activities such as canoeing, beach camping, and bird watching would likely be more appealing without a river crossing of any sort bisecting the park. Of the various BUILD alternatives, a Central Corridor crossing would have the least beneficial impact on Kolliner Park and its prospective future uses.

Ownership

The City of Stillwater has owned the property since 1917, when the East Side Lumber Company donated the property to the town. Accompanying the deed was a letter from company president David Bronson, which included the following statement:

> In giving this to the City it is the feeling and desire that the bluffs will be preserved from devastation or commercial usage and the beauty of them kept for all our people and to this end we hope you will see fit to put the property under the jurisdiction of your Park Board. We hope that in the years to come the shore rights will also prove of additional value to the City.[4]

According to advice provided to Stillwater from its City Attorney in 1980, it is unclear from the deed what specific legal responsibilities the City has towards this land. In the 1920s, the City attempted to mine gravel in the park, but stopped after receiving a letter from the donor. In regard to the mining, the letter reminded the City that "it was to obviate just such (a) use...that the property was given to you."[5] It is not certain whether the City would be able to transfer the property to another owner, if it desired to do so

Relationship to Similar Land in the Area

Kolliner Park is part of a long strip of forested bluff land in Wisconsin which extends upstream from Houlton for several miles and downstream to the vicinity of Hudson.

On the Minnesota side, directly across the old bridge from Kolliner Park, is Stillwater's Lowell Park. Lowell Park is small (only 2 1/2 acres), but much more heavily used and developed than Kolliner Park. The City Coordinator estimates that between 20,000 and 30,000 people visit the park annually, filling it to capacity (3,000-4,000 people) during the Fourth of July and Lumberjack Days. The City considers Lowell Park to be an "active" recreational area of historical significance, a space which is an integral component of the historical downtown business district.[6] Facilities include a pavilion, restrooms, benches, picnic tables, boat moorings, drinking fountains, and riverside walkways.

Construction of a new Central Corridor bridge would have no direct, physical effect on Lowell Park. Should a decision be made to remove the old lift bridge at some point, it would be necessary to obtain a temporary construction easement in the park.

ALTERNATIVES

Aside from the previously discussed disposition of the existing bridge, a crossing in the North or South Corridors would have no effect on Kolliner Park. A NO-BUILD decision would have no direct impact unless the approach roadway were widened. However, the park would continue to be affected by vehicles waiting to get over the lift bridge. A NO-BUILD decision would also necessitate that the old bridge be maintained or removed at some point in the future, which might have an effect on the park.

There are four Central Corridor Build alternatives (see the draft EIS for a detailed discussion). The impacts of the various alternatives would be fairly similar, as the old highway corridor would be followed closely and the bridge alignments would be similar.

The major differences between the alternatives would be determined by variations in bridge height and grade, and whether an on-land tunnel is employed on the Wisconsin side of the St. Croix. Bridge height and grade would determine where the structure would touch down on the eastern side of the river, and influence the amount of bluff cutting which would be necessary.

The principal aim of an on-land tunnel would be to reduce bluff impacts. If such a tunnel were constructed, one portal would be close to the river near the existing bridge, with the other emerging well outside the park boundaries, on the blufftop behind Houlton.

The aesthetic benefits of an on-land tunnel would, to a certain extent, be determined by the degree to which boring into the bluff is feasible. Preliminary indications are that soil and rock conditions are not ideal, in which case a significant amount of cut and cover construction would be necessary. In the short-term, at least, this would have a pronounced impact in and around the construction area.

Irrespective of the specific alternative selected, a new bridge in the Central Corridor would have a major visual impact on recreationalists using the southern portion of the park. A new bridge would also have a significant effect on people looking across the river from Lowell Park. Views of the older, historic bridge (if it remains) would be impaired for individuals downstream from the new crossing. Additionally, there would likely be increased traffic noise in Kolliner Park.

Removal of the existing bridge with a new Central Corridor crossing would eliminate pedestrian access between Stillwater and Kolliner Park, reducing its utility to the City. Conversely, taking out the lift bridge would also reduce physical impacts to the park, and diminish the congested feeling associated with two river crossings located adjacent to each other and converging on the same point.

MITIGATION MEASURES

A number of measures can be taken to mitigate harm to Kolliner Park, if the Central Corridor is chosen as the preferred alternative. First, any new bridge and approach should be designed so they blend into the surrounding terrain as much as possible; tasteful landscaping and plantings would help integrate the new structures with the environment. If the selected alternative requires that piers be used in the park, they should be designed and placed in a way which minimizes erosion. It is particularly important that clearing and construction activities include temporary erosion control measures (e.g. straw), especially on the steeper slopes and along the river. Bridge and highway design should attempt to minimize the impact of roadway runoff on the park. Finally, the contractor must be required to adhere to applicable state noise and air quality standards, to the extent possible.

Department of Interior Land and Water Conservation (LAWCON) funds have not been used to improve or acquire any portion of Kolliner Park. Consequently, the Section 6(f) compensation and replacement measures are not applicable.

COORDINATION

Much of the descriptive information about Kolliner Park was obtained from a letter written by Mr. Niles L. Kriesel, Stillwater City Coordinator. The letter is dated March 17, 1987, and was a response to specific questions regarding the Section 4(f) and 6(f) characteristics of Kolliner and Lowell Parks. Mr. Kriesel also included additional information with his correspondence, including a legal opinion addressing specific questions about Stillwater's responsibilities towards Kolliner Park, LAWCON information, and a map detailing the boundaries of public land adjacent to the lift bridge and causeway.

ENDNOTES

1) Niles L. Kriesel, Stillwater City Coordinator, memorandum to Mike Louis, Mn/DOT, regarding Kolliner Park, March 17, 1987.

2) ***City of Stillwater Downtown Plan***. Draft Final Report, September, 1988.

3) Ibid.

4) David T. Magnuson, Attorney for City of Stillwater, letter to Niles L. Kriesel, Stillwater City Coordinator, regarding title of Kolliner Park, May 13, 1980.

5) Ibid.

6) Kriesel.

ENVIRONMENTAL DOCUMENTS AVAILABLE FROM MN/DOT: STILLWATER-HOULTON RIVER CROSSING STUDIES

For those who desire more detailed information on environmental impacts associated with a new river crossing, the full set of environmental documents will be available for review at the following locations until the time of the public hearings:

MINNESOTA

Stillwater Public Library
223 North Fourth St.
Stillwater, MN 55082
(612) 439-1657

City of Stillwater Government Offices
City Hall
216 North Fourth St.
Stillwater, MN 55082
(612) 439-6121

Bayport Public Library
260 North Third St.
Bayport, MN 55003
(612) 439-7454

City of Bayport Government Offices
City Hall
Bayport, MN 55003
(612) 439-2530

City of Oak Park Heights Government Offices
City Hall
14168--57th St. North
Oak Park Heights, MN 55082
(612) 439-4439

Washington County Government Center
14900 61st St. North
P.O. Box 6
Stillwater, MN 55082
(612) 439-3220

Minnesota Department of Transportation
Oakdale Office/Metro District
3485 Hadley Ave. North
Oakdale, MN 55128
(612) 779-1208

Minnesota Department of Transportation
Transportation Building
John Ireland Boulevard
St. Paul, Mn 55155
(612) 296-3000

WISCONSIN

Hudson Public Library
304 Locust St.
Hudson, WI 54016
(715) 386-3101

St. Croix County Government Center
County Courthouse
911 4th St.
Hudson, WI 54016
(715) 386-4600

Minnesota-Wisconsin Boundary Area Commission
619 Second St.
Hudson, WI 54016
(715) 386-9444
(612) 436-7131

Somerset Public Library
122 Spring St.
Box 129
Somerset, WI 54025
(715) 247-5228

Wisconsin Department of Transportation
District 6 Office
718 West Clairemont Ave.
Eau Claire, WI 54701
(715) 836-2857

The complete set of environmental studies is listed below. If you wish to order one or more of the studies, mail your request(s) to Mn/DOT's Oakdale Office (listed on previous page). A charge to cover printing costs will be charged for most of the documents, as indicated. If a fee is required, send a check made out to the Minnesota Commissioner of Transportation with your request.

__ **Draft EIS Summary Document (no charge)**

__ **Stillwater-Houlton Draft Environmental Impact Statement (EIS)/Section 4(f) Evaluations ($3.50)**

__ **Economic Issues and Impacts Special Study ($2.50)**

__ **Threatened and Endangered Species Special Study ($2.50)**

__ **Natural Resource Impacts Special Study ($2.50)**

__ **Recreational Use of the St. Croix River Special Study ($2.50)**

__ **Wild and Scenic River Impacts Summary Report ($5.00)**

__ **Visual Impacts Special Study ($2.50)**

__ **Social Impacts Special Study ($2.50)**

__ **Energy, Noise, and Air Quality Impacts Special Studies ($2.50)**

__ **Agricultural Issues and Impacts Special Study ($2.50)**

__ **Historical and Archaeological Impacts Special Study ($2.50)**

__ **North and South Corridor Tunnel Impact Special Study ($2.50)**