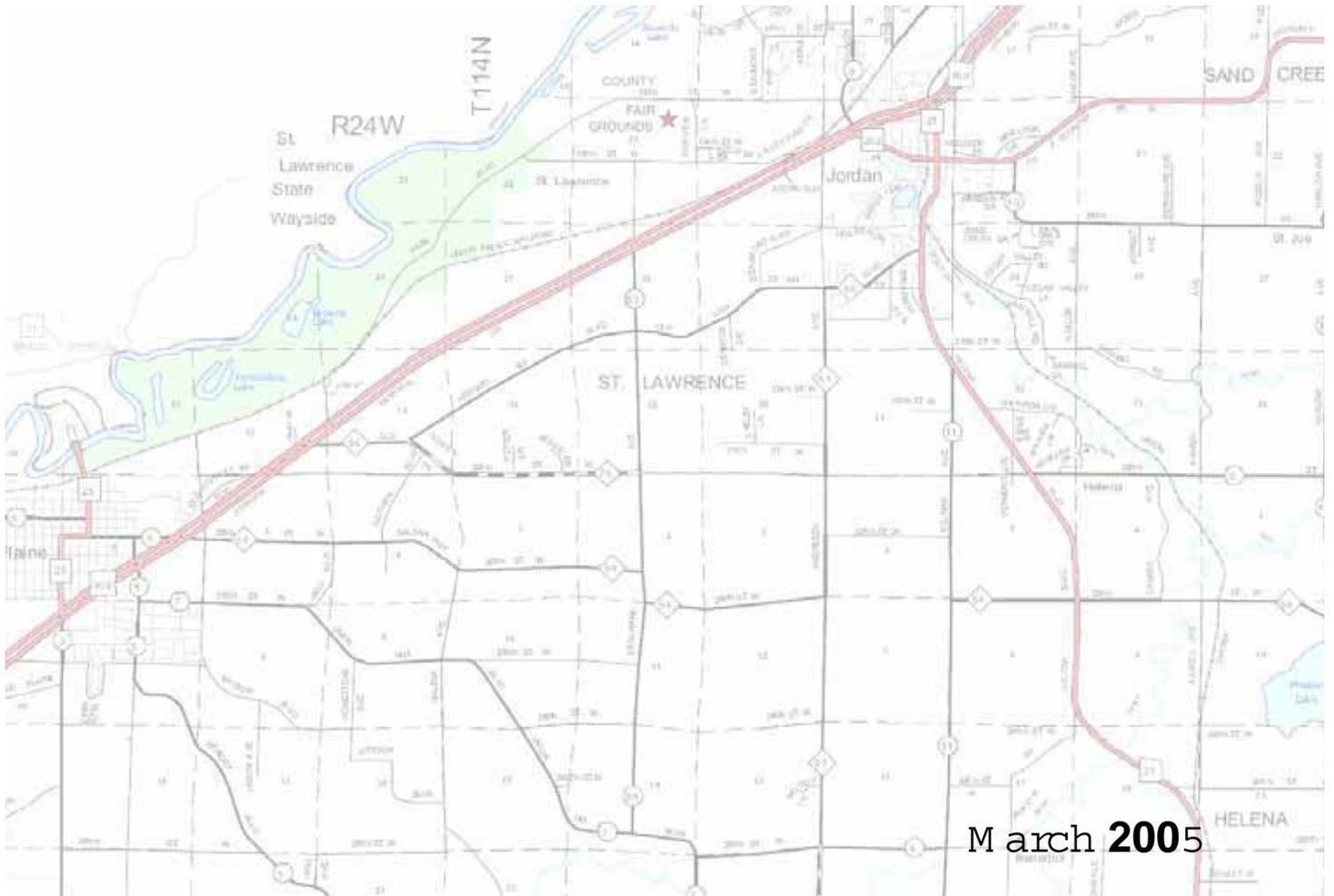




CSAH 8 Corridor Preservation Study

Scott County, Minnesota



Prepared by:



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1.0 Executive Summary

Scott County, as one of the fastest growing counties in Minnesota, continually has to plan for development and growth. Included in this planning is estimating locations of high growth rates and planning for expansion of the Scott County's highway system to provide adequate levels of mobility. One location of expected growth is in the townships of St. Lawrence, Belle Plaine, and parts of Sand Creek and Helena, between the cities of Jordan and Belle Plaine. Growth in this area is expected to continue, especially along the Trunk Highway (TH) 169 corridor, but the area lacks continuous east-west minor arterials.

Scott County State Aid Highway (CSAH) 8, located in central Scott County, is an important arterial because of its connectivity to I-35 in Dakota County (where CSAH 8 becomes Dakota County Road 70). Currently, the CSAH 8 corridor extends from Dakota County to Trunk Highway (TH) 21. The extension of CSAH 8 from its terminus at TH 21 would provide a complete east-west connection between TH 169 and I-35.

The CSAH 8 Corridor Preservation Study purpose is to recommend a corridor alignment for further planning and preservation based on an objective evaluation of alternatives.

Seven alignment alternatives were developed and shared with the public at an open house in October, 2004. The following evaluation criteria were used for comparison of alignment alternatives: transportation issues; environmental and cultural resources; natural heritage, threatened and endangered species, history/architecture inventory; right-of-way impacts; safety; cost estimates; and a review of the infrastructure system. Additional refinements to the alternatives continued after the October open house through January 2005. These refinements were completed to minimize environmental impacts, reduce the number of parcels impacted and provide appropriate consideration to local representatives' comments and requests.

Figure A provides the location of the recommended alignments. The currently funded interchange at CR 64 becomes the logical near-term location for the connection of CSAH 8 to TH 169. The alignment that most nearly follows the current township/section line was considered the most favorable for CSAH 8 after the comparison of alternatives and input from the public and township officials. In the near term, the connection to CR 64 at TH 169 will be planned as a frontage road, parallel to TH 169, at the west end of the study area. The importance in planning for CR 64 as an east-west arterial within the study area is also critical in planning for a roadway system that will adequately support long-term development. The recommendation therefore also includes an alignment that follows CR 64, including a realignment in the area of CSAH 59, and a new alignment between CR 61 and CSAH 11 to preserve the continuity of this arterial.

If, or when, development in the area requires an additional interchange to TH 169, besides the currently funded interchange at CR 64, it is recommended to continue the alignment of CSAH 8 along the township/section line west, past CR 66, to a future interchange location with TH 169. This alignment could eventually be connected to a frontage road system on the west side of TH 169, or the existing Park Boulevard that continues north into Jordan.

Introduction

Scott County was the fastest growing county in Minnesota during the 1990s and the growth is projected to continue for the next 20 years according to Metropolitan Council's population estimates. The Scott County Comprehensive Plan is estimating the area of urban growth to include all of St. Lawrence Township and some of Belle Plaine Township due to the expansion of the cities of Jordan and Belle Plaine. Future Comprehensive Plan updates will review the possibility of increasing these urban expansion areas. This unprecedented rate of growth and development requires continual planning and expansion of Scott County's highway system to provide adequate levels of mobility in these high growth areas. All land development generates traffic – the amount is a function of type and intensity of the use. As agricultural land is converted to urban type uses, a more dense system of roads is required to provide adequate levels of mobility for significantly greater volumes of traffic.

The Scott County Transportation Plan (May 2001) expressed the importance, and lack of, continuous east-west minor arterials throughout the County. Scott County State Aid Highway (CSAH) 8, located in central Scott County, is an important arterial because of its connectivity to I-35 in Dakota County (where CSAH 8 becomes Dakota County Road 70). Currently, the CSAH 8 corridor extends from Dakota County to Trunk Highway (TH) 21 in Scott County. The extension of CSAH 8 from its terminus at TH 21 would provide a complete east-west connection between TH 169 and I-35.

By proactively addressing the issue of highway connectivity, Scott County is seeking to avoid the problem of "planning too late". The actual timeline for the construction of a complete minor arterial from TH 169 and the existing terminus of CSAH 8 has not been set, but given current funding levels is likely to be 10 to 20 years out. However, a plan for a continuous east-west corridor is needed today before Scott County's rapid growth constrains the possible alignment locations.

The CSAH 8 Corridor Preservation Study purpose is to recommend corridor alignment for further planning and preservation based on an objective evaluation of alternatives including consideration of:

- Appropriate transportation planning principles and function of existing roads
- Safe and efficient access and mobility for the traveling public
- Minimization of environmental, cultural and historical area impacts
- Minimization of expected future right of way acquisition and roadway construction costs
- Coordination with expected future land uses

The study area and location of existing CSAH 8 are shown in *Figure 1*.

2.0 Development of Alignment Alternatives

The development of alignment alternatives included participation from local township officials, county staff, and the public primarily through attendance at Study Committee meetings and Public Open Houses, as discussed below. The design of alignment alternatives was based on roadway design standards and goals in addition to consideration of the natural and built environment of the study area, which is also discussed in this section.

Study Committee

A committee of public officials was organized to assist in the development and implementation of the corridor preservation study. The committee consisted of representatives from all townships within the study area including Belle Plaine Township, Helena Township, St. Lawrence Township, and Sand Creek Township with representatives from Scott County facilitating meetings. Representatives from the cities of Belle Plaine and Jordan also participated in the committee along with representatives from MnDOT.

Public Open Houses

Two public open houses were conducted to provide a forum for the public to participate with Scott County and the committee on the development of the corridor. The first open house was conducted in July 2004 at the Ridges at Sand Creek Golf Course in Jordan. The objective of the first open house was to inform the public of the study's purpose and to receive input from the public concerning:

- The need for transportation improvements
- Current or planned land uses - farm operations, proposed or possible development sites
- Special land use features - environmentally sensitive areas, cultural and historical resources (including historic buildings, cemeteries, etc.)
- Possible CSAH 8 corridor routings and connections

A second open house was held at the same location on October 14, 2004. The purpose of the open house was to inform the public of the alternatives developed and to receive feedback accordingly.

Comments, including Scott County responses, from the July and October Open Houses in located in the appendix.

Design Goals

The design goals used to develop alternatives for the potential CSAH 8 corridor included the following:

- **Sixty (60) miles per hour design speed** - the design speed is selected to determine the various geometric design features (curves, intersection location, etc.) of the roadway. It is not the same as the posted speed limit, which would be lower than the design speed. The determination of the most appropriate design speed is based on functional classification of

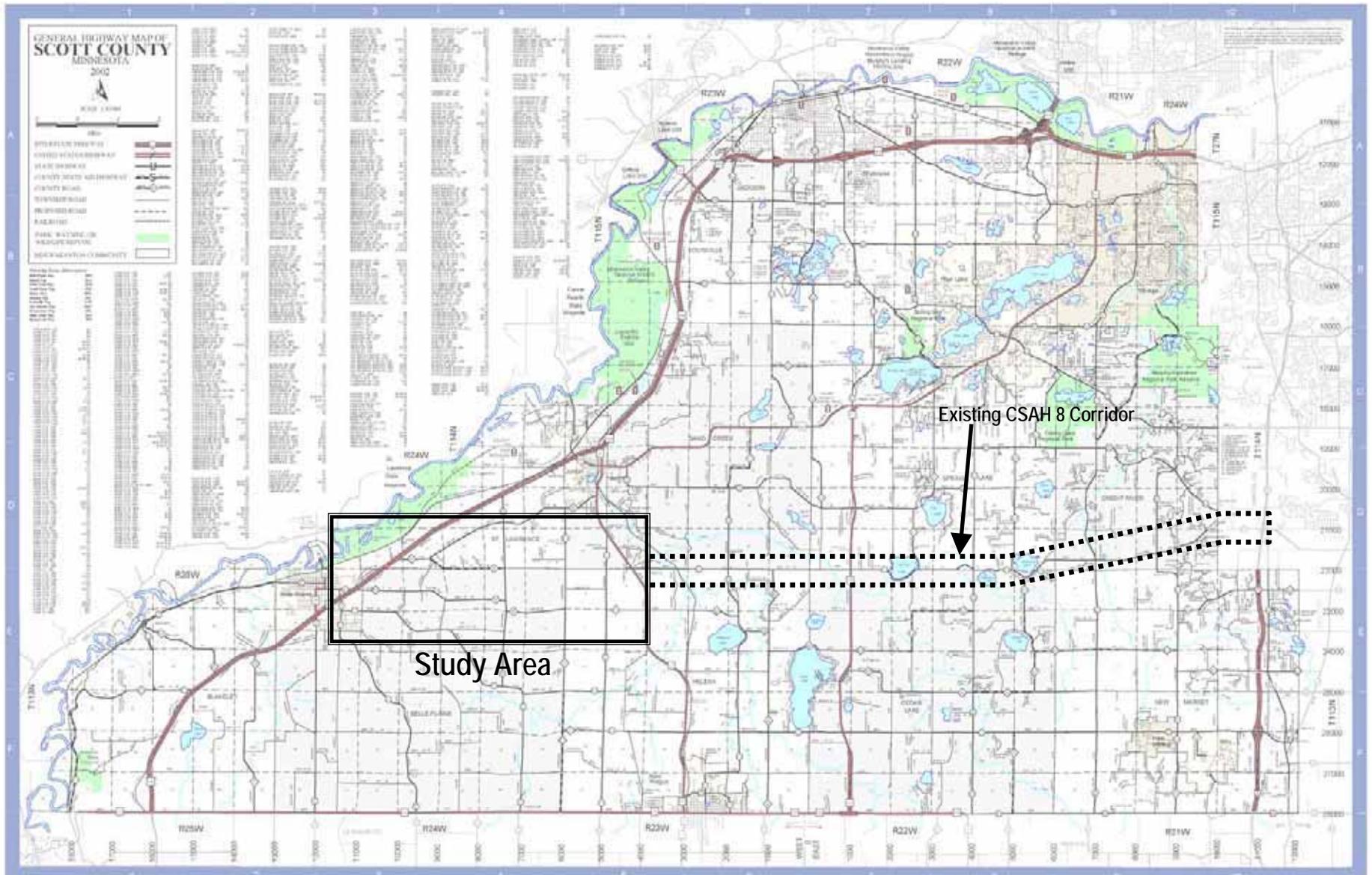


Figure 1
Study Area Location

the roadway, average daily traffic (ADT), anticipated and desirable operation speed, and adjacent land use and terrain of the highway. The primary function of a rural minor arterial is mobility and to provide connections to the regions principal arterials which suggests a 60-mph design speed.

- **Ninety (90) degree intersections with county roads** - According to the MnDOT Road Design Manual the alignment of intersecting highways should be as close to 90 degrees as possible because "significant deviation can increase the hazard and decrease the efficiency of the intersection." Recent studies show adverse effects of skewed (non-90 degree intersections) increased potential for crashes (an 18% increase in crash rate for a 30 degree skew angle¹) and impaired driver views from a stopped approach.
- **Right-of-Way of 150 feet** - In order to develop a two-lane county highway that also provides the potential for recreational trails, a 150-foot (75' on each side of the highway centerline) right-of-way corridor is needed. A 150-foot corridor would also accommodate a 4-lane urban design, should it be determined in the future that a facility with more than two lanes is necessary for any given segment, depending upon the density of development and resulting traffic needs. This right-of-way assumption was therefore used to determine impacts associated with each alternative.

Design Constraints

Constraints within the study area included existing road corridors, parcel boundaries, environmental resources and functional constraints. The CSAH 8 corridor alternatives were tied to the east by its existing alignment and to the west by two possible locations - the intersection of TH 169 and CR 64 or CR 66. The TH 169 Corridor Management Plan (CMP)² recommended the intersection TH 169 and CR 64 as an interchange and CR 66 as an overpass. But the CMP stipulated that if Scott County decides to pursue an east-west arterial alignment at CR 66, then this should be considered a candidate location for a potential interchange also. Further coordination with MnDOT determined that the interchange at CR 64 is currently funded, (including financial participation by Scott County and Belle Plaine) and is moving through the project development process. In addition, it was determined that the prospect of securing new funding for the additional interchange in the area of CR 66 is currently remote. As a result, it was recommended that the CR 64 interchange should be the west terminus of the CSAH 8 corridor, at least for the near term. *Figure 2* illustrates MnDOT's design of the interchange.

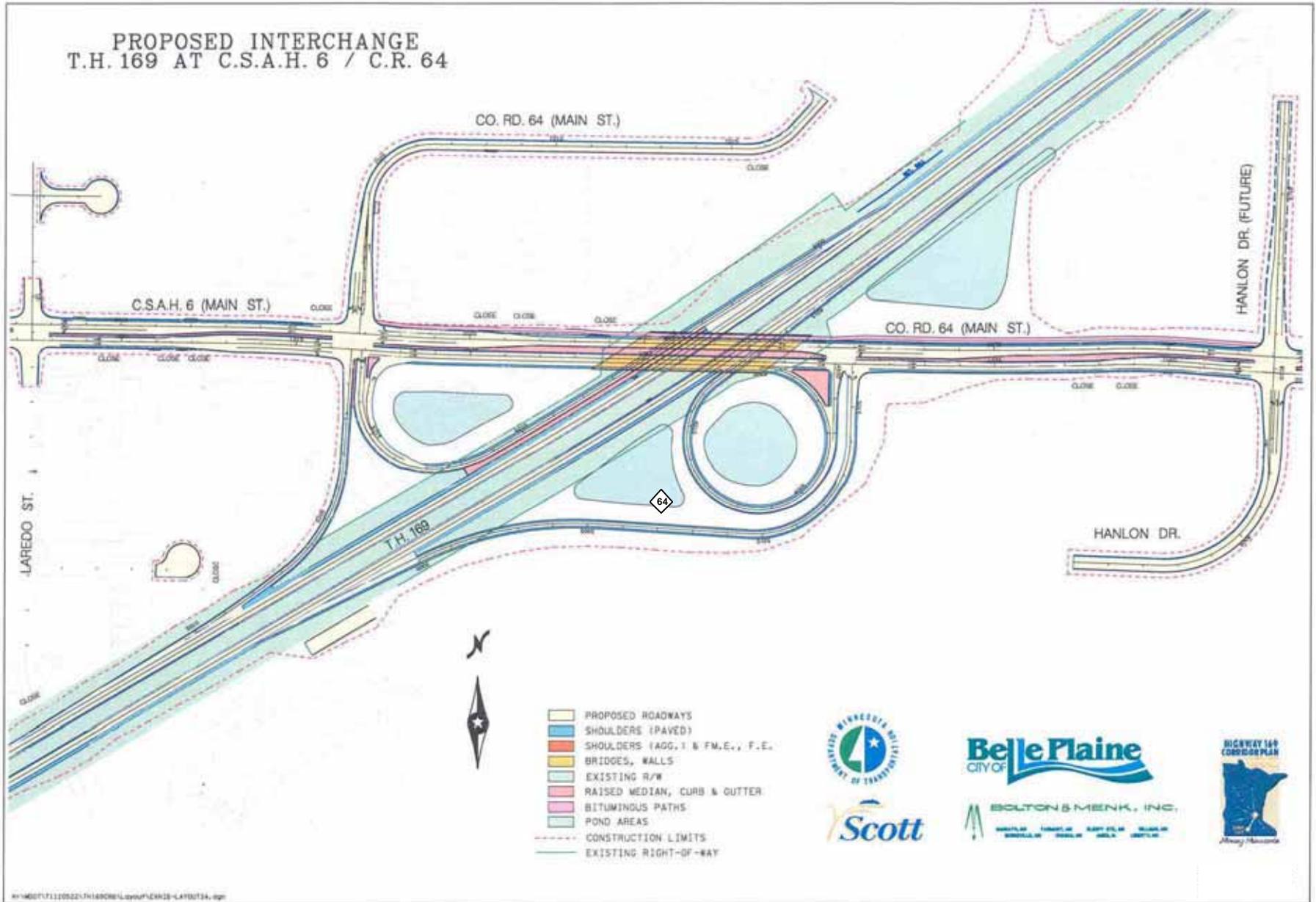
Environmental constraints in the study area included a bluff that is located at the western edge of the study area, running parallel to TH 169. A large ravine is located on the section/township line between CSAH 59 and CR 61. The steep slopes associated with these resources require special consideration from a future project cost and potential environmental impact standpoint. Because the existing roadways of CR 64 and CR 76 provide reasonable options to avoid new cuts in the bluff line, the project team decided to restrict alternatives to use of either corridor through the bluffs. The depth of the ravine at the section/township line is extreme enough to warrant consideration of a bridge in order to cross the area. It was decided to investigate alternative alignment options in order to minimize impacts to the ravine by moving alignments

¹ NCHRP 500, Strategy 17.1 B 16 - Realign Intersection Approaches

² The TH 169 Corridor Management Plan is available on the MnDOT website at <http://www.dot.state.mn.us/movingminnesota/169corridorplan.html>.

to a location that has less severe slopes. (See *Section 4* for more information on the location of steep slopes within the study area.)

During development of the proposed alignment alternatives, care was given to minimize impacts to existing homes along the corridor, especially on existing roadways (CR 64 and CR 76). When homes were encountered along these existing roads, the current right-of-way line was often held on one side of the highway (with all widening to the other side) in order to take the least number of homes and impact the least amount of parcels.



Source: Minnesota Department of Transportation

Figure 2
Proposed Interchange at TH 169 and CR 64

3.0 Corridor Alignment Alternatives

Using the design goals established in Section 2 and considering comments received from the public at the July 2004 open house and from committee members, seven alignment alternatives were developed. The following is a summary of the alignment alternatives shown to the public at the October 2004 open house. These alignments are shown graphically in *Figure 3* and described from east to west below.

Alternative 1

Alternative 1 follows the section/township line straight west of the existing CSAH 8/TH 21 intersection. The alignment is approximately 600 feet south of the section/township line near the ravine area to minimize impacts to the environment around the ravine. The alignment then follows the existing gravel CR 76 until its intersection with CR 66, where Alternative 1 continues northwest to a new intersection/interchange location with TH 169. The alternative then connects to Park Boulevard west of the railroad tracks. NOTE: The existing curve on CR 76 does not meet current design standards and may require some reconstruction to provide 60 mph design speeds.

Alternative 2

Alternative 2 follows the same alignment as Alternative 1 until the CR 66 intersection. At this location Alternative 2 deviates from Alternative 1 by following CR 66 for approximately a third of a mile before heading south parallel to TH 169 before connecting to existing CR 64. This southwest alignment would function as a frontage/backage road to TH 169 (and is consistent with the TH 169 CMP).

Alternative 3

Alternative 3 diverges from the existing CSAH 8 approximately 800 feet east of TH 21 and heads to the southwest providing a 90-degree intersection with TH 21. Alternative 3 continues southwest until it curves to the west and aligns with existing 225th Street. The alignment runs concurrent with the existing road and continues west approximately a third of a mile before heading south toward existing CR 64. Once the alternative connects with CR 64 it follows the existing alignment to the proposed TH 169/CR 64 interchange. NOTE: The existing curves on CR 64 do not meet current design standards and may require some reconstruction to provide 60 mph design speeds.

Alternative 4

Alternative 4 also diverges from the existing CSAH 8 east of TH 21 and also provides a 90 degrees intersection with TH 21. This alignment is similar to Alternative 3 except at two locations:

- East of CSAH 11 (Alternative 4 is further south than Alternative 3 and runs east-west farther in advance of the CSAH 11 intersection removing a possible sight-distance issue), and
- East of CSAH 59 (Alternative 4 again is further south than Alternative 3 and runs east-west before the CSAH 59 intersection).

After Alternative 4 connects with CR 64 it continues along the existing roadway until the intersection with TH 169.

Alternative 5

This alternative is the southern most alignment alternative using a majority of the existing CR 64 roadway segments. The alignment diverges from existing CSAH 8 just west of the railroad crossing. The alternative continues its southwest alignment until just east of CR 61 where it turns to an east-west alignment before connecting to the existing CR 64. At CSAH 59 the alignment heads northwest to join the western segment of CR 64, following the existing alignment to the proposed TH 169/CR 64 interchange. NOTE: The existing curves on CR 64 do not meet current design standards and may require some reconstruction to provide 60 mph design speeds.

Alternative 6 and 6a

The final two alternatives shown at the October Open House were combinations of the first five alternatives. Alternative 6 uses the eastern segments of Alternative 3 and runs parallel to the section/township line for approximately 1 1/2 miles before connecting back up to the alignments of Alternatives 1 and 2. This provided a 90-degree intersection with TH 21 and limited impacts to the ravine area between CR 61 and CSAH 59.

Alternative 6A also uses the eastern segment of Alternative 3 to cross TH 21 but runs along Alternative 6 alignment parallel to the section/township line for only half a mile before connecting to the common segment of Alignments 3 and 4. For analysis it was assumed that Alternative 6A would then continue along the same alignment at Alternative 4.

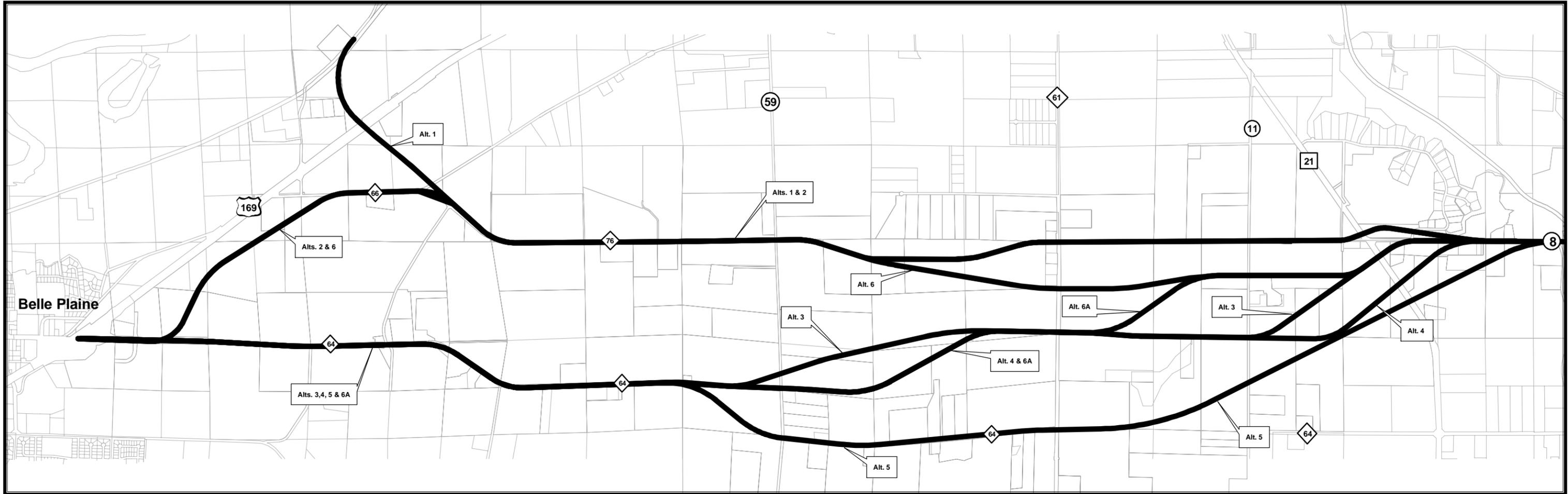
The seven alignments discussed above were displayed at the October public open house. After review of the comments some modifications were made to the alignments to provide some mitigation for impacts. Most comments received at the open house were from land owners to the east of TH 21 who were concerned by the realignment of CSAH 8 to the east of TH 21. It should be noted that the realignments of CSAH 8 east of TH 21 were all an effort to minimize or eliminate the skewed intersection crossing, which was identified as a concern at the first public open house. These comments, along with discussions with the representatives from the townships and cities, provided some preference for an alignment that is close to the existing intersection of TH 21 and CSAH 8.

Alignment Revisions

Additional modifications were made to the alternatives during the process of screening alternative along the section/township line and another alternative connecting to CR 64 to the south.

The two most significant findings associated with this part of the evaluation include:

- Only the current location along TH 21 was retained for the intersection with CSAH 8, all others were dropped because of right-of-way related impacts.
- The ravine along the section line between CR 61 and CR 59 was determined to be a very important environmental feature and in order to minimize impacts, only alternatives off the section line should be considered.



Belle Plaine

Legend

- Alignment Alternatives
- Parcel Boundaries



1 inch equals 0.5 mile

TABLE 2
Alternative Impact Analysis Matrix

Evaluation Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 6A
Length of Roadway (miles)	6.9	8.3	8.0 (4.2)	7.8 (4.1)	8.4 (4.5)	8.5	8.0 (4.2)
Transportation Issues							
Consistent with local government Comprehensive Plans?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Consistent with AASHTO, MnDOT, Scott County design guidelines?	Yes	No (frontage road concept at west end of corridor may not meet access guidelines)	Yes	Yes	Yes	Yes	Yes
Natural Resources							
Wetland Impacts - estimated # of wetlands	6	6	7	9	7	7	7
Wetland Impacts - Estimated Acreage of wetlands (new alignment impact)	3.7	3.7	2.1 (1.6)	4.3 (3.8)	2.4 (1.9)	5.4	3.7 (3.2)
Natural Heritage - Threatened and Endangered Species ¹	Possible impacts near river (west end of Alt. 1)	None documented	None documented	None documented	None documented	None documented	None documented
Historic or Archaeological Sites	None documented	None documented	None documented	None documented	None documented	None documented	None documented
Bluff or Ravine Impacts	2 ravine crossings on new alignment; 1 bluff area already traversed by CR 76; alternatives would require expanded CR 76 right-of-way	2 ravine crossings on new alignment; 1 bluff area already traversed by CR 76; alternatives would require expanded CR 76 right-of-way	1 bluff area already traversed by CR 64; alternatives would require expanded CR 64 right-of-way	1 bluff area already traversed by CR 64; alternatives would require expanded CR 64 right-of-way	1 bluff area already traversed by CR 64; alternatives would require expanded CR 64 right-of-way	2 ravine crossings on new alignment; 1 bluff area already traversed by CR 76; alternatives would require expanded CR 76 right-of-way	1 bluff area already traversed by CR 64; alternatives would require expanded CR 64 right-of-way
Peat Impact (acres)	4.6	4.5	0.7	< 0.5	<0.5	4.0	1.3
Streams - # of stream crossings	0	0	3	3	3	0	3
Right-of-Way							
# of property owners (New Alignment Impact)	35	41	35 (13)	39 (17)	48 (14)	42	33 (11)
# of parcels (New Alignment Impact)	45	54	45 (17)	54 (19)	65 (17)	54	41 (13)
# of potential relocations	0	0	2	1	1	1	1
# of Setback Impacts caused by new roadway construction ²	3	3	1	1	4	0	1
Prime Farmland - acres	14.6	23.3	10.2	10.3	15.0	19.0	9.7
# of split agricultural parcels	4	7	7	5	11	12	7
Total Right-of-Way Need (acres)	105.4	116.1	85.5	87.1	107.1	113.3	87.8
Estimated Project Cost (New Alignment Impact)	\$8.5 M	\$9.6 M	\$7.7 M (\$4.0 M)	\$7.3 M (\$3.7 M)	\$8.0 M (\$3.7 M)	\$9.9 M	\$7.8 M (\$4.2 M)

¹ Threatened and Endangered Species based on review of Minnesota County Biological Survey Map (1998) by the Minnesota Department of Natural Resources. The State Historic Preservation Office (SHPO) was contacted and a review of their archeological and historical property inventory provided no sites within this study area.

² Properties that currently do not meet setback requirements were not included in this count. Only locations that would become non-compliant due to the reconstruction of the roadway were counted as impacted.

These refined alternatives were renamed **Alternative A** and **Alternative B** and are shown in *Figure 4* and described below.

Alternative A - This alternative is similar to **Alternative 2** except at the location of the crossing of CR 61, where **Alternative A** was shifted north to provide an alignment that is closer to the section/township line, and minimize the impacts of splitting parcels.

Alternative B - This alternative was a modification to **Alternative 6A**, but instead of crossing TH 21 to the south of the existing intersection, this alternative follows the crossing that was proposed for **Alternatives 1 and 2**, minimizing impacts to residents east of TH 21.

After changes were made to the alignments, impacts were recalculated and compared as discussed in the following section. A summary of the timeline of alternative development and revisions is included in *Section 5*.

4.0 Comparison of Alignment Alternatives

Comparison of alignment alternatives included documenting transportation and safety issues, estimating natural resource impacts, right-of-way impacts and project costs. The following evaluation criteria were used for comparison of alignment alternatives:

- Transportation Issues
- Environmental and Cultural Resources
- Natural Heritage - Threatened and Endangered Species
- History/Architecture Inventory
- Right-of-Way Impacts
- Safety
- Cost Estimates
- System Analysis

Table 2 provides a summary of the impacts for the original Alternatives 1 through 6A (these were shown at the October 2004 Public Open House). *Table 3* provides the summary for the modified Alternatives A and B. Additional information on the evaluation criteria used in the alternative analysis is included in the following sections.

Transportation Issues

Two criteria were used to analyze the alternative's consistency with transportation issues including:

- Consistency with local government Comprehensive Plans, and
- Consistency with AASHTO, MnDOT, Scott County design guidelines.

All alternatives were consistent with the Scott County Comprehensive Plan, which designates CSAH 8 as an east-west minor arterial and presents the need for an extension from TH 21 on an undetermined alignment.

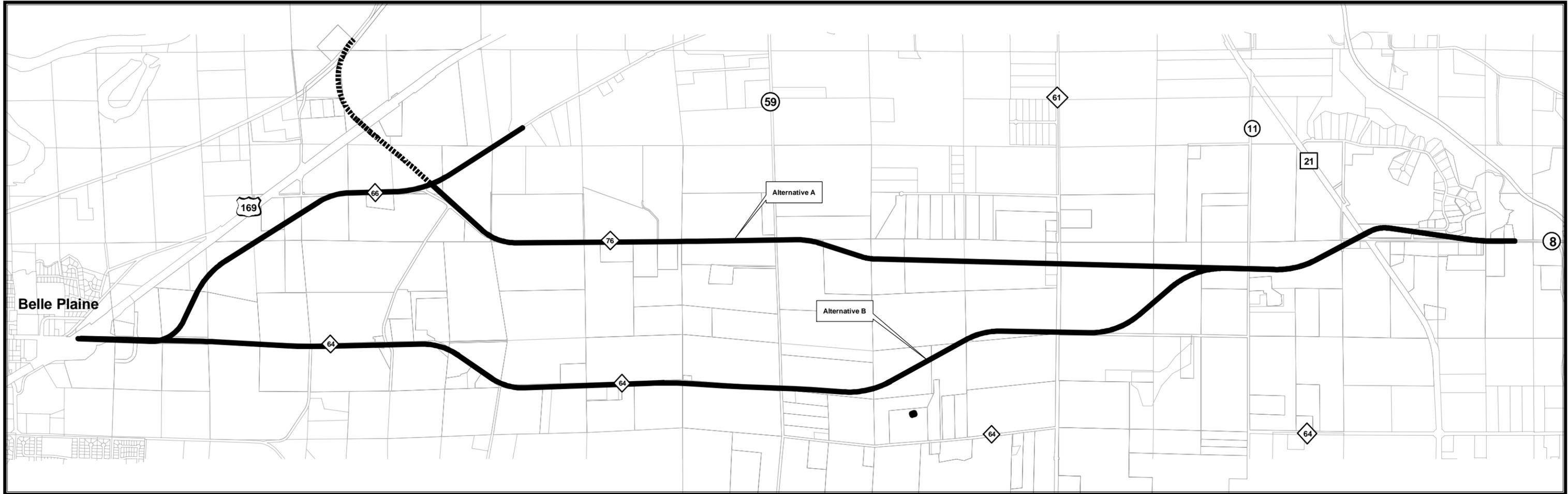
Environmental and Cultural Resources

The environmental and cultural resources analysis included assessment of wetland impacts, locations of peat soils, bluff and ravine/steep slopes, the potential for threatened and endangered species, and determining locations of possible historical or archaeological sites within the study area.

Wetland, Soil, Bluff/Ravine Impacts

The environmental information used to determine wetland impacts was provided by Scott County Natural Resources Department. The documented locations of wetlands were also field reviewed by a wetland biologist to verify the location and extent of existing wetlands.

The location of peat soils was determined using Scott County soil data. The location of peat soils was important for two reasons: (1) the cost associated with removing or building a roadway over peat soil can be expensive, and (2) locations with peat soils may have characteristics that would provide opportunities for wetland impact mitigation.



Legend

-  Modified Alignment Alternatives
-  Parcel Boundaries



1 inch equals 0.5 mile

TABLE 3
Evaluation of Alternatives A and B

Evaluation Criteria	Alternative A	Alternative B
Length of Roadway (miles)	8.5	8.3
Transportation Issues		
Consistent with local government Comprehensive Plans?	Yes	Yes
Consistent with AASHTO, MnDOT, Scott County design guidelines?	No (frontage road concept at west end of corridor may not meet access guidelines)	Yes
Natural Resources		
Wetland Impacts - estimated # of wetlands	6	5
Wetland Impacts - Estimated Acreage of wetlands	5.7	6.0
Natural Heritage - Threatened and Endangered Species ¹	Possible impacts near river (extension over TH 169)	None documented
Historic or Archaeological Sites	None documented	None documented
Bluff or Ravine Impacts	2 ravine crossings on new alignment; 1 bluff area already traversed by CR 76; alternatives would require expanded CR 76 right-of-way	2 ravine crossings on new alignment; 1 bluff area already traversed by CR 76; alternatives would require expanded CR 76 right-of-way
Right-of-Way		
# of property owners	31	28
# of parcels	48	43
# of potential relocations	1	1
# of Setback Impacts caused by new roadway construction ²	0	1
# of split parcels	12	7
Total Right-of-Way Need (acres)	110	88
Cost	\$9.5 M	\$7.9 M

¹ Threatened and Endangered Species based on review of Minnesota County Biological Survey Map (1998) by the Minnesota Department of Natural Resources. The State Historic Preservation Office (SHPO) was contacted and a review of their archeological and historical property inventory provided no sites within this study area.

² Properties that currently do not meet setback requirements were not included in this count. Only locations that would become non-compliant due to the reconstruction of the roadway were counted as impacted.

As discussed earlier, the bluff and ravine within the study area were considered environmentally unique to the area and the decision was made to minimize impacts to both. All alternatives used existing roadways that currently run through the bluff area (CR 64 and CR 76). Alternatives that went through the ravine (Alternatives 1, 2, and 6) were shifted to the south to minimize impacts to the steepest parts of the ravine.

Figure 5 is a map showing the locations of the wetlands, peat soils, and bluff/ravine areas (steep slope areas) within the study area and how they are impacted by the seven alignment alternatives presented at the October 2004 public open house.

Natural Heritage - Threatened and Endangered Species

Several State Threatened and State Endangered plant and animal species have been documented to occur in Scott County. The Minnesota County Biological Survey published the *Natural Communities and Rare Species of Carver, Hennepin, and Scott Counties, Minnesota* in 1998. As a result of this effort, several rare species and quality remnants of plant communities were identified near the northernmost extension of Alternative 1, specifically an area north of TH 169 along the Union Pacific railroad tracks. *Figure 6* is an excerpt from the Minnesota County Biological Survey Map showing this location in the study area. Natural plant community remnants identified there are Mixed Emergent Marsh and Mesic Prairie. State-listed animal species potentially occurring in these habitat types include Blanding's turtle (state threatened), eastern spotted skunk (state threatened), loggerhead shrike (state threatened), and Henslow's sparrow (state endangered). State-listed plant species potentially occurring in these habitat types include kittentails (state threatened) and valerian (state threatened).

Additionally, Mixed Emergent Marsh and Mesic Prairie may provide habitat for several plant and animal species with a status of State Special Concern. State Special Concern species are not afforded the protection of State Threatened and State Endangered species. *Appendix A* includes a table that summarizes rare species (State Endangered, State Threatened, and State Special Concern) known to occur in Scott County by habitat types known to occur in the Study Area.

History/Architecture Inventory

The State Historic Preservation Office (SHPO) was contacted in August 2004 and asked to do a literature search of the study area. The SHPO review included a search of the Minnesota Archaeological Inventory and Historic Structures Inventory to determine if there are any documented historic or cultural sites in the study area. The SHPO database provided no documentation of historic or archaeological sites within the study area. Most documented historic buildings were located within the city limits of Belle Plaine and were not impacted by the alignments developed for this study. The output from the SHPO database is included in *Appendix B*.

It is important to note, based on correspondence with staff at SHPO, that many archaeological sites and historic architectural properties within the state have not been recorded. There is still a potential that undocumented cultural resources may exist within the study area. Additional research, including field survey, may be necessary to adequately assess the area's potential to contain historic properties.

Right-of-Way Impacts

County parcel information was used to determine the number of property owners and number of parcels (this number varied due to residents owning multiple parcels) impacted by each alternative.

The first impact quantified was the total acres of right-of-way needed. This was based on the location of the corridor alternative and use of a 150-foot wide corridor (Scott County's current recommended right-of-way width for minor arterial). In doing this calculation, the number of property owners and parcels impacted by each of the alternatives was also calculated.

Each alternative was then analyzed to determine within the right-of-way needs how many residences or homes would be impacted. A residence could be impacted in one of two ways:

1. **Relocation** - The residence on the property was within the alternative right-of-way. This would require relocation of the home and appropriate compensation.
2. **Setback Issue** - The residence on the property that currently meets setback requirements and would not meet county setback requirements of 100-feet from the right-of-way line (or 150-feet from roadway centerline) after construction of the alternative.

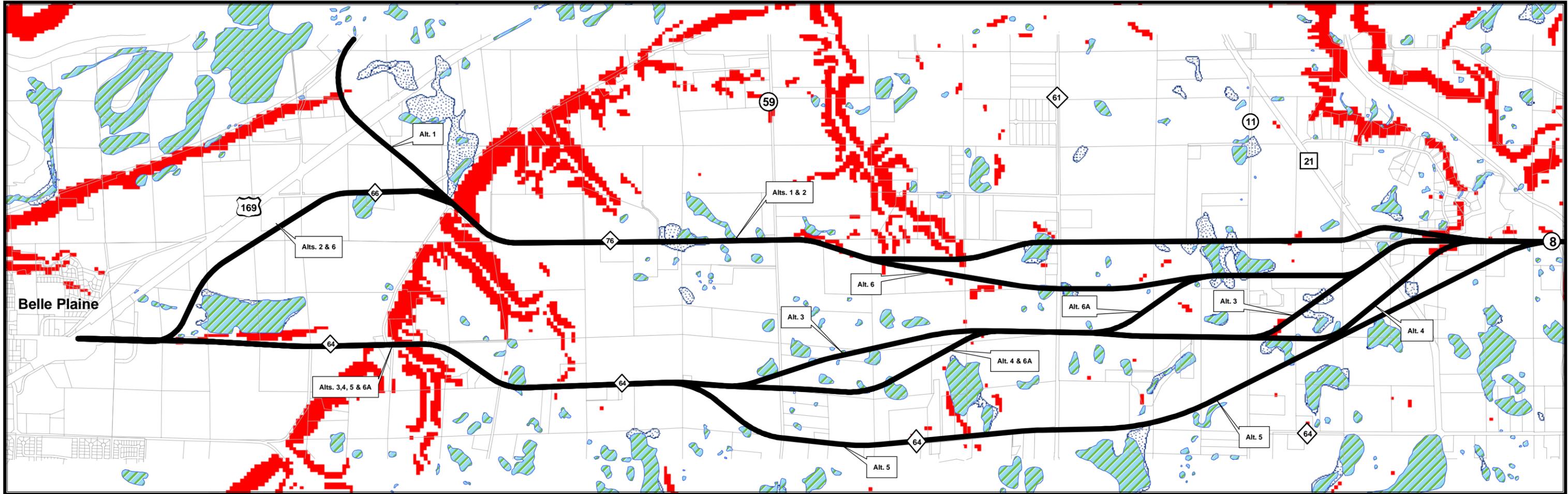
Properties that currently do not meet setback requirements were not included in the number of properties with setback issues. Only locations that would become non-compliant due to the reconstruction of the roadway were counted as impacted. *Figure 7* shows the locations of the setback issues and relocation impacts quantified in *Tables 2 and 3*, for each alternative setbacks in the future urban areas will be determined by the zoning regulations in place at the time when urban development occurs.

Safety - IHSDM Review

The Interactive Highway Safety Design Model (IHSDM) is a new safety tool developed by the Federal Highway Administration used to evaluate and compare the design of Alternatives A and B. The IHSDM helps to detect potential safety problems in design, identify cost-effective safety design parameters, compare safety performance measures for the alternatives, and to optimize the safety of the recommended corridor.

The suite of IHSDM tools includes the following evaluation modules:

- Policy Review Module (PRM) - The Policy Review Module checks a design relative to the range of values for critical dimensions recommended in American Association of State Highway and Transportation Officials (AASHTO) design policy.
- Crash Prediction Module (CPM) - The Crash Prediction Module provides estimates of expected crash frequency and severity.
- Design Consistency Module (DCM) - The Design Consistency Module estimates expected operating speeds and measures of operating-speed consistency.
- Intersection Review Module (IRM) - The Intersection Review Module reviews intersection design elements relative to their likely safety and operational performance.
- Traffic Analysis Module (TAM) - The Traffic Analysis Module estimates measures of traffic operations used in highway capacity and quality of service evaluations.



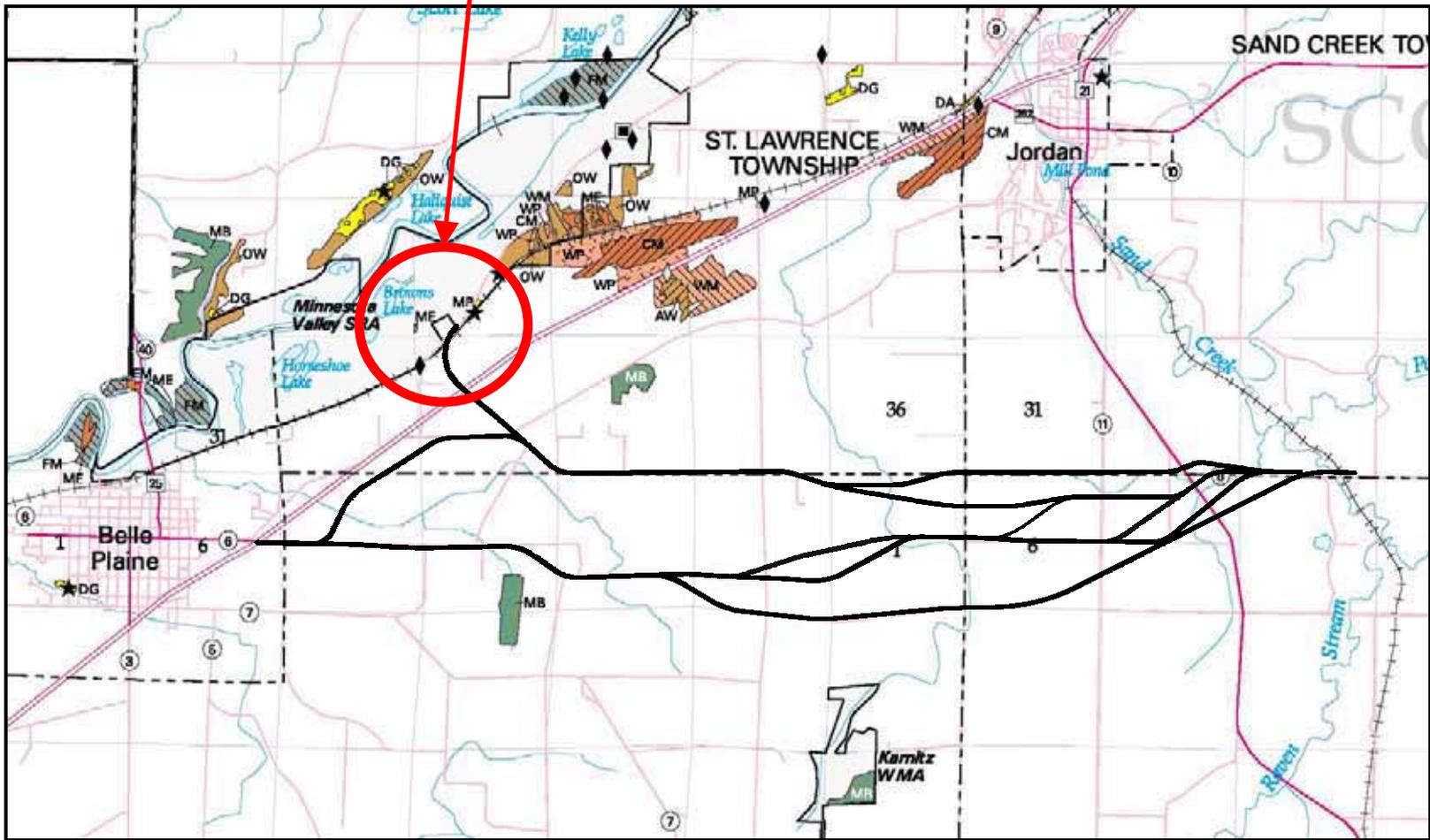
Legend

-  Wetlands
-  Peat Soils
-  Steep Slopes
-  Alignment Alternatives
-  Parcel Boundaries

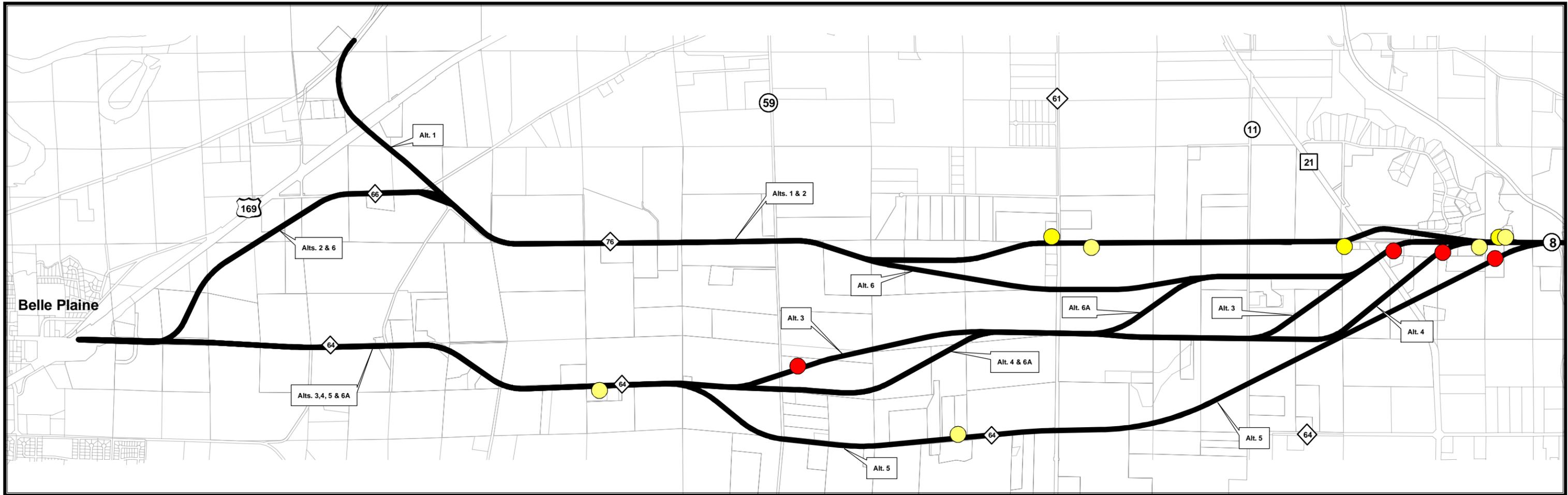

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1 inch equals 0.5 mile

Potential Impact Area



Excerpt from Minnesota County Biological Survey Map Series No. 18 (1998) - Carver, Hennepin and Scott Counties, Minnesota



Legend

-  Alignment Alternatives
-  Parcel Boundaries
-  Potential Relocations
-  Setback Impacts


 N
 1 inch equals 0.5 mile

The measures of expected safety and operational performance estimated by IHSDM are intended as inputs to the decision making process. The value added by IHSDM is in providing quantitative estimates of effects that previously could be considered only in more general, qualitative terms.

Concerns were primarily curvilinear alignments, curves with design speeds less than the expected posted speed limit, skewed intersections, and change in speed within the corridor. Other design/safety considerations included sight-distance at intersections, grades and super elevation transitions. The main differential between the two alternatives was attributed to the number of horizontal curves causing a potential decrease in speed (some below the design speed). Alternative A had fewer locations where this decrease in speed was noted and therefore provided slightly fewer locations of potential safety issues.

Cost Estimates

Conceptual level cost estimates were completed for each alternative and are summarized in *Tables 2* and *3*. The cost included construction of the highway, structure costs associated with crossing the ravine area for alternatives 1, 2 and 6, relocation costs connected with acquiring houses, costs of building roadway through peat soils, and the costs of purchasing wetland credits for acres of wetland impacts. It is important to note that the costs do not include right-of-way costs (except the relocation costs) of needed land purchases for the alternatives because of the difficulty to accurately determine future land prices due to issues such as annexation, extension of municipal services, the timing of future land development, etc.

Assumptions used in the cost estimate for the alternatives are included in *Table 4*.

TABLE 4
Cost Estimate Assumptions

Category	Cost
Roadway Construction Costs ¹	\$800,000 per mile
Bridge Costs ²	\$95 per square foot
Relocation Cost ³	\$250,000 per home
Unusual Grading/Subgrade Correction	\$10 per cubic yard
Wetland Impact Credits ⁴	\$8,999 per acre

1 Based on Scott County estimate

2 Based on square foot cost used by Mn/DOT Office of Bridge and Structures

3 Based on Housing Market Demand Analysis for Scott County Minnesota by Maxfield Research Inc, July 2002 (upper limit of median resale price in Scott County)

4 Based on Minnesota Board of Water and Soil Resources, sale price of wetland credits to public transportation authorities for 2004

The estimated costs for the alternatives ranged from \$7.3 million to \$9.9 million. The details of the cost estimates for the seven alignment alternatives presented at the October 2004 public open house can be found in **Appendix B**.

System Analysis

The regional road network is a system of roadways that all serve a specific purpose. All roadways fall into one of four categories:

Principal Arterial – The main function is mobility and provides the greatest speed for the longest uninterrupted distance, with access control (example would be TH 169).

Minor Arterial - Provides a combination of mobility and access with reasonable speed for some extended distance, with some access control (TH 21, CSAH 59, CSAH 7 and CSAH 8).

Collectors - usually lower speed for shorter distances; collects traffic from local roads and connects them with arterials (CR 64, CR 66 and CR 61).

Local Streets - Consists of all roads not defined as arterials or collectors; primarily provides access to land with little or no through movement.

The current spacing of arterials in the study area is based on a rural land use pattern, with arterials spaced from two to over four miles apart. As the trend of rapid development continues in Scott County, including in the study area, it is likely that additional or enhanced arterials will be necessary to accommodate the higher demand on the existing roadway system, along with improved local and collector roadway connections. As density of development increases the density of the roadway network also has to increase to accommodate the additional demand on the system. *Table 5* provides spacing guidelines developed by the Metropolitan Council and Federal Highway Administration that aid in the planning of future transportation systems within developing areas.

TABLE 5
Spacing Guidelines for Functionally Classified Roads

Land Use Characteristics	Principal Arterials	Minor Arterials	Collectors	Local Streets
Developed Areas	2 to 3 Miles	1/4 to 1/2 Mile	1/8 to 1/2 Mile	As Needed to Access Land Uses
Developing Areas	3 to 6 Miles	1 to 2 Miles	1/2 to 1 Mile	As Needed to Access Land Uses
Rural Areas	6 to 12 Miles	4+ Miles	As Needed to Access Land Uses	As Needed to Access Land Uses

Source: Metropolitan Council, Metropolitan Development Guide, Appendix F and Federal Highway Administration, Highway Functional Classification

Review of the City of Jordan and the City of Belle Plaine's future land use plans along with the Scott County Comprehensive Plan, provided an estimate of the future growth and development

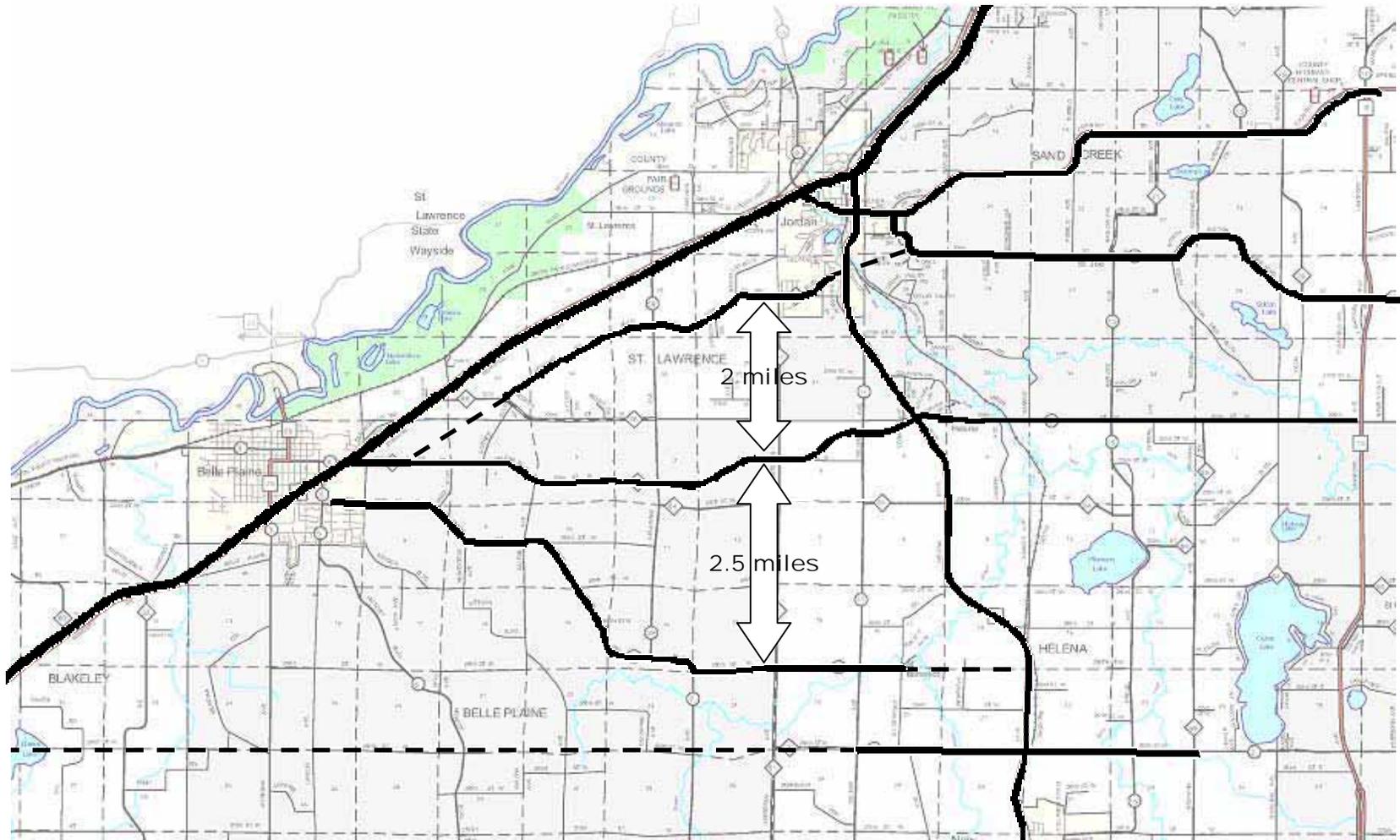
within the study area. The study area growth would indicate land use is shifting toward "Developed Areas." As shown in *Table 5*, guidance recommends minor arterial spacing of less than two miles for such areas.

The two modified alternatives (Alternatives A and B) were analyzed to see if they could accommodate this type of spacing and how they would function in the future roadway network. *Figure 8* shows the possible network if Alternative B were constructed. If CSAH 8 were connected directly to CR 64, the spacing of arterials would be over 2 miles, not consistent with guidance suggesting less than 2 mile spacing for developing or urban areas. *Figure 9* shows that a more dense arterial network can be developed if Alternative A were constructed (with an indirect connection to CR 64 via a frontage road along TH 169), providing less than 2 miles spacing between the new alignment of CSAH 8 and CR 66, and also allowing for an additional east-west arterial to be developed using CR 64.

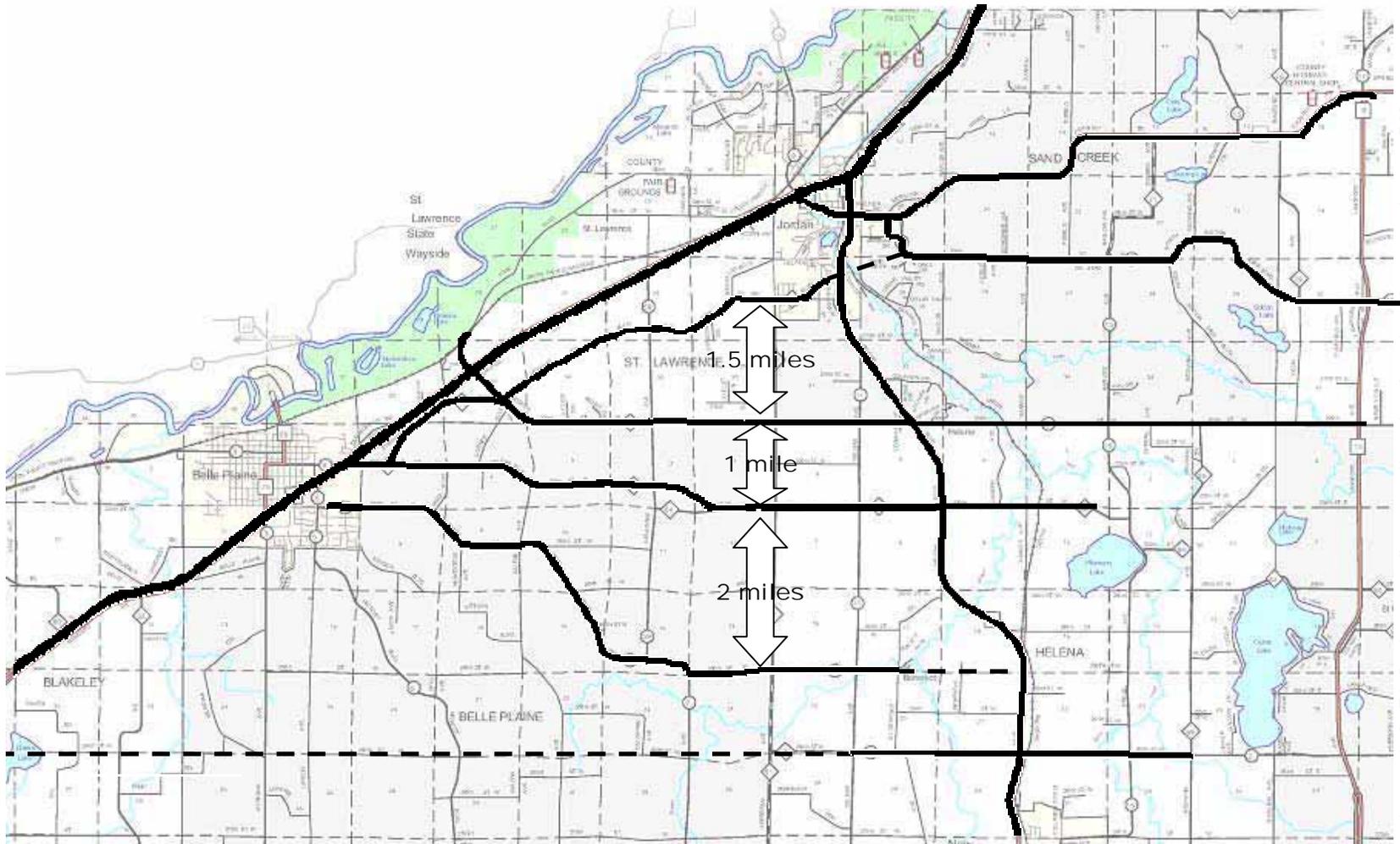
Development south of CR 64 is currently planned for less dense residential and agriculture land uses, requiring less of an arterial network in that area. The next east-west connection that crosses the county is CSAH 2, which is approximately three miles south of CR 64. This spacing would be consistent with the planned land use south of the study area. If the land use plan for this area increases in density, the arterial network should be reviewed and adjusted accordingly.

5.0 Revisions and Township Comments

Additional revisions to Alternative A were completed late in 2004. These revisions were completed based on recommendations and requests by the local government representatives and included shifting the alignment nearer to the section line between TH 21 and CR 11 before diverging to the south to minimize impacts to the ravine. The revised Alternative A provides an alignment that most nearly follows the section line while also minimizing environmental impacts including the ravine area between CR 61 and CR 59. *Figure 10* provides a summary of the development of alternatives for the study including the alternatives shown at the October Open House, screening and revisions to the Alternatives A and B, and then the final revision to keep the alternative as near the section line as possible while still meeting design and environmental goals.



1 Mile



1 Mile

Figure 9
System Configuration - Alternative A

Timeline

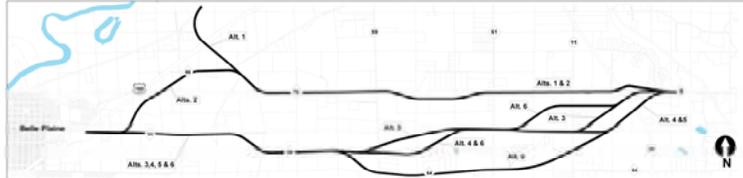
Study Begins
June 2004

Corridor Constraints
and Opportunities
No Alternatives

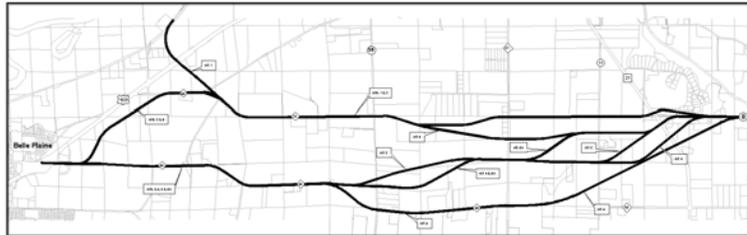


Public Open House
July 2004

Corridor Alignments based
on Public Comment
Alternatives 1 - 6

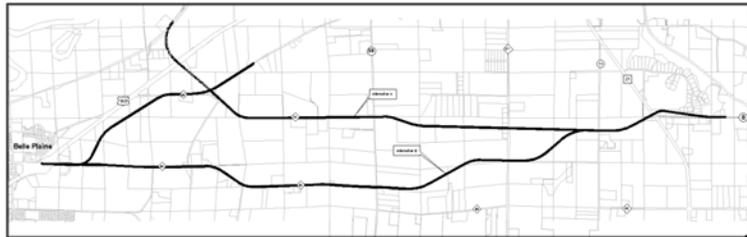


Corridor Alignment
Refinements based on
Committee Comment
Alternatives 1 - 6A



Public Open House
October 2004

Corridor Alignment
Refinements based on
Public and Committee
Comment
Alternatives A and B



Committee Meeting Comments
January 2005

Corridor Recommendation
Revised Alternative A



Alternative Development

Figure 10

CSAH 8 Alternative Development Process

6.0 Conclusions and Corridor Recommendation

The final corridor recommendation is based on the technical analysis of the alignment alternatives, analyzing future system-wide needs in the area, comments received from the public at the two open houses, and interaction with the townships and cities through the study committee meetings. A timeline of the development of alternatives is shown in *Figure 10*.

Review of comments from the public open house and discussion with the committee members helped in the modification of the alternatives, providing two alternative options, Alternative A (Section-line alignment) and Alternative B (direct connection to CR 64). The technical analysis provided valuable information for understanding the impacts associated with each alternative, but did not provide a definitive answer to which alternative was "best". However, use of a transportation systems perspective allowed for differentiation of the alignment alternatives.

The transportation systems perspective looked at the currently planned urbanized areas for both the City of Jordan and the City of Belle Plaine, along with reference to the Scott County Comprehensive Plan update. From these sources it was concluded that the anticipated area of urbanized growth included much of the study area. As described in *Section 4*, urbanized growth requires a denser roadway network than provided in the current rural land use in order to reasonably meet typical demands for mobility. Guidance developed by the Federal Highway Administration and the Metropolitan Council suggests that minor arterials be spaced every one to two miles in developing areas, such as this part of Scott County. The type of spacing associated with Alternative A (see *Figure 9*) would be the most consistent with the guidance, *as long as CR 64 is planned to be an arterial as well*.

Once Alternative A was determined to be the preferred option to allow appropriate development of an arterial system in the study area, it became apparent that the alternative could be phased to provide a near term connection to TH 169. The following is therefore recommended:

Plan for an Extension of CSAH 8 as shown in Figure A - The currently funded interchange at CR 64 becomes the logical near-term location for the connection of CSAH 8 to TH 169. The north-south segment of Alternative 2, parallel to TH 169, would also function as a frontage road to accommodate future development along the TH 169 corridor (consistent with the TH 169 Corridor Management Plan).

Connect CR 64 as shown in Figure A - In addition to the CSAH 8 alignment, the system analysis determined there would be future need for another east-west arterial south of CSAH 8 along CR 64. This study therefore recommends a plan for a continuous CR 64 from TH 169 through TH 21, including a realignment at CR 64 and a new alignment between CR 61 and CSAH 11.

Plan for Additional Interchange north of currently funded CR 64 interchange - If, or when, development in the area requires an additional interchange to TH 169, besides the currently funded interchange at CR 64, it is recommended to implement the segment of Alternative A that crosses TH 169. This segment continues west past CR 66 to a future interchange location with TH 169 and could be eventually connected to a frontage road system on the west side of TH 169, or the existing Park Boulevard that continues north into Jordan.

**BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA**

Date:	April 5, 2005
Resolution No.:	2005-028
Motion by Commissioner:	Ulrich
Seconded by Commissioner:	Hennen

**RESOLUTION NO. 2005-028; ACCEPTING THE CSAH 8 STUDY AND
ESTABLISHING CORRIDORS FOR RIGHT OF WAY PRESERVATION**

WHEREAS, residential and commercial development is occurring in the southern portion of Scott County; and

WHEREAS, it is the responsibility of the County Board to plan for and develop a transportation system that supports the anticipated development; and

WHEREAS, it is the responsibility of the County Board to evaluate the existing needs of the transportation system as well as plan for future transportation needs; and

WHEREAS, the County Board has adopted five strategic initiatives and one of them is to "Manage the Challenges and Opportunities Derived from Growth and Development;" and

WHEREAS, the adopted County Transportation Plan identified a "Future Study Area-Potential New Alignment" from west of the CSAH 8 / TH 21 intersection to west of CR 59, and proposed development within the study area has raised concern regarding the preservation of the proposed CSAH 8 and CR 64 corridors between TH 21 and TH 169; and

WHEREAS, prior to proposed private development in 2004, the County had previously evaluated alignments in the area as a short term vision of connecting the CSAH 8 / TH 21 intersection with the CR 64 / TH 169 intersection; and

WHEREAS, the County previously had determined that it was more prudent to wait until development triggered the need for a corridor preservation study; and

WHEREAS, a private development was proposed in 2004 that had the potential to prohibit the extension of CSAH 8 and a private development has been proposed adjacent to CR 64 that has the potential to prohibit the continuity of CR 64; and

WHEREAS, development proposals triggered the need to review the east-west transportation needs of Sand Creek Township, Helena Township, Belle Plaine Township, St. Lawrence Township, the City of Jordan and the City of Belle Plaine as well as the rest of the County; and

WHEREAS, the County Board recognized that affected jurisdictions and many interested parties should participate in any corridor preservation study; and

WHEREAS, a Study Advisory Committee, including representatives from MnDOT, the cities of Jordan and Belle Plaine, the townships of Belle Plaine, Helena, St. Lawrence, and Sand Creek, Scott County Soil & Water Conservation District, and the Scott County Highway, Planning, and Natural Resources departments was formed to guide and lead the study; and

**BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA**

Date:	April 5, 2005
Resolution No.:	2005-028
Motion by Commissioner:	Ulrich
Seconded by Commissioner:	Hennen

WHEREAS, the intent of the study was to:

- Follow appropriate transportation planning principles and function of existing roads
- Determine a system that safely and efficiently provides access and mobility for the traveling public
- Minimize environmental, cultural and historical area impacts
- Minimize expected future right of way acquisition and roadway construction costs
- Coordinate with expected future land uses

WHEREAS, the study committee hosted two open houses and eight (8) study advisory committee meetings to develop and review alternate corridor alignments, tour the study area, evaluate technical data, and discuss public input; and

WHEREAS, the County Board of Commissioners toured the study area and have been briefed on the many details and specifics of the study alternatives and recommendations; and

WHEREAS, the study committee, using the public input and technical data, refined the corridor alignments to best meet the intent of the study; and

WHEREAS, the study committee determined a system approach is critical to the transportation needs of the area; and

WHEREAS, the study recommendation is for the preservation of both CSAH 8 and CR 64 based on transportation system planning principles; and

WHEREAS, the County Board held a Workshop on March 8 with affected Townships, Cities and residents within the corridor study area for the purpose of discussing the recommendations and listening to citizen input; and

WHEREAS, no road construction within the study corridors is included in the 8 year draft Transportation Improvement Program (2005 – 2012) and that no money is currently targeted or identified for construction within the study corridors during that time period.

NOW THEREFORE BE IT RESOLVED by the Board of Commissioners in and for the County of Scott, Minnesota, that it accepts the CSAH 8 Corridor Preservation Study and its recommendations, as attached, with the following provisions:

1. It is the intent of the County Board that the CSAH 8 and CR 64 corridor alignments be preserved as identified in the study recommendations.

**BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA**

Date:	April 5, 2005
Resolution No.:	2005-028
Motion by Commissioner:	Ulrich
Seconded by Commissioner:	Hennen

2. It is acknowledged that the corridor alignment may be appropriately adjusted at the time development occurs providing that adjustments are properly coordinated with adjacent properties in order to meet the intent of ultimately creating continuous connections of both CSAH 8 and CR 64, and providing that the following objectives are met, consistent with the intent of the study:
- Follow appropriate transportation planning principles and consider the function of the roadways
 - Determine a system that safely and efficiently provides access and mobility for the traveling public
 - Minimize environmental, cultural and historical area impacts
 - Minimize expected future right of way acquisition and roadway construction costs
 - Coordinate with expected future land uses
 - Meet County highway design standards.

BE IT FURTHER RESOLVED that prior to approval of any Plat where right of way is dedicated for CSAH 8 or CR 64 within the corridors or impacts CSAH 8 or CR 64 from a transportation standpoint, a public hearing, with notification to surrounding property owners of record within one-half mile, is required by state law and will be held by the County Planning Advisory Commission prior to approval of said Plat by the County Board.

BE IT FINALLY RESOLVED that Scott County will continue to seek township and municipal input prior to including the financing and construction of CSAH 8 or CR 64 into the County's Transportation Improvement Program.

COMMISSIONERS	VOTE			
Wagner	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Absent	<input type="checkbox"/> Abstain
Vogel	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Absent	<input type="checkbox"/> Abstain
Hennen	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Absent	<input type="checkbox"/> Abstain
Marschall	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Absent	<input type="checkbox"/> Abstain
Ulrich	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Absent	<input type="checkbox"/> Abstain

**State of Minnesota)
County of Scott)**

I, David J. Unmacht, duly appointed qualified and County Administrator for the County of Scott, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Scott County, Minnesota, at their session held on the 5th day of April, 2005 now on file in my office, and have found the same to be a true and correct copy thereof.

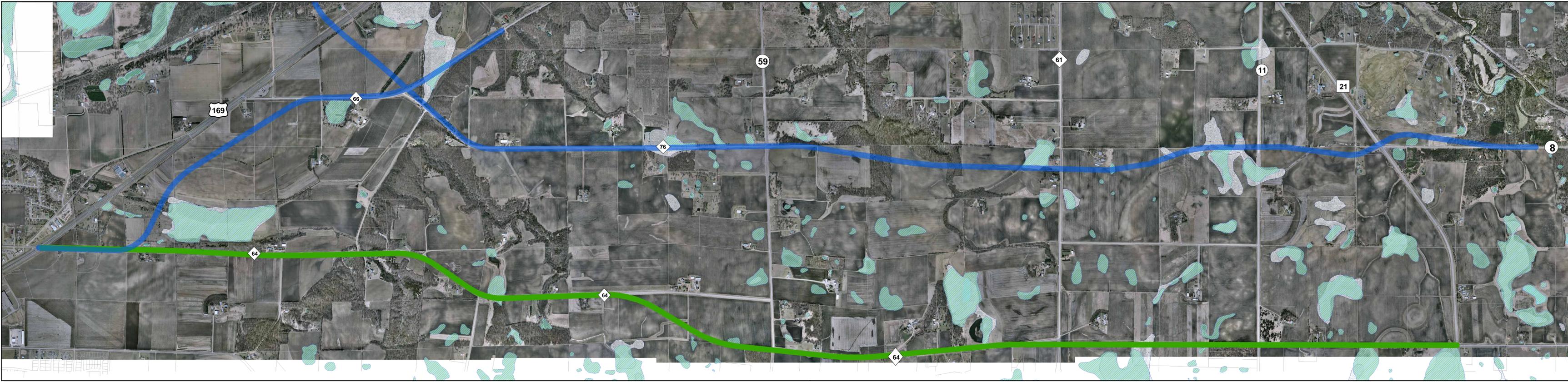
Witness my hand and official seal at Shakopee, Minnesota, this 5th day of April, 2005.



 Administrator's Designee

County Administrator

Administrator's Designee



Legend

- Wetlands
- Peat Soils
- Parcel Boundaries

1 inch equals 600 feet

Figure A
CSAH 8 Recommended Corridor Alignments