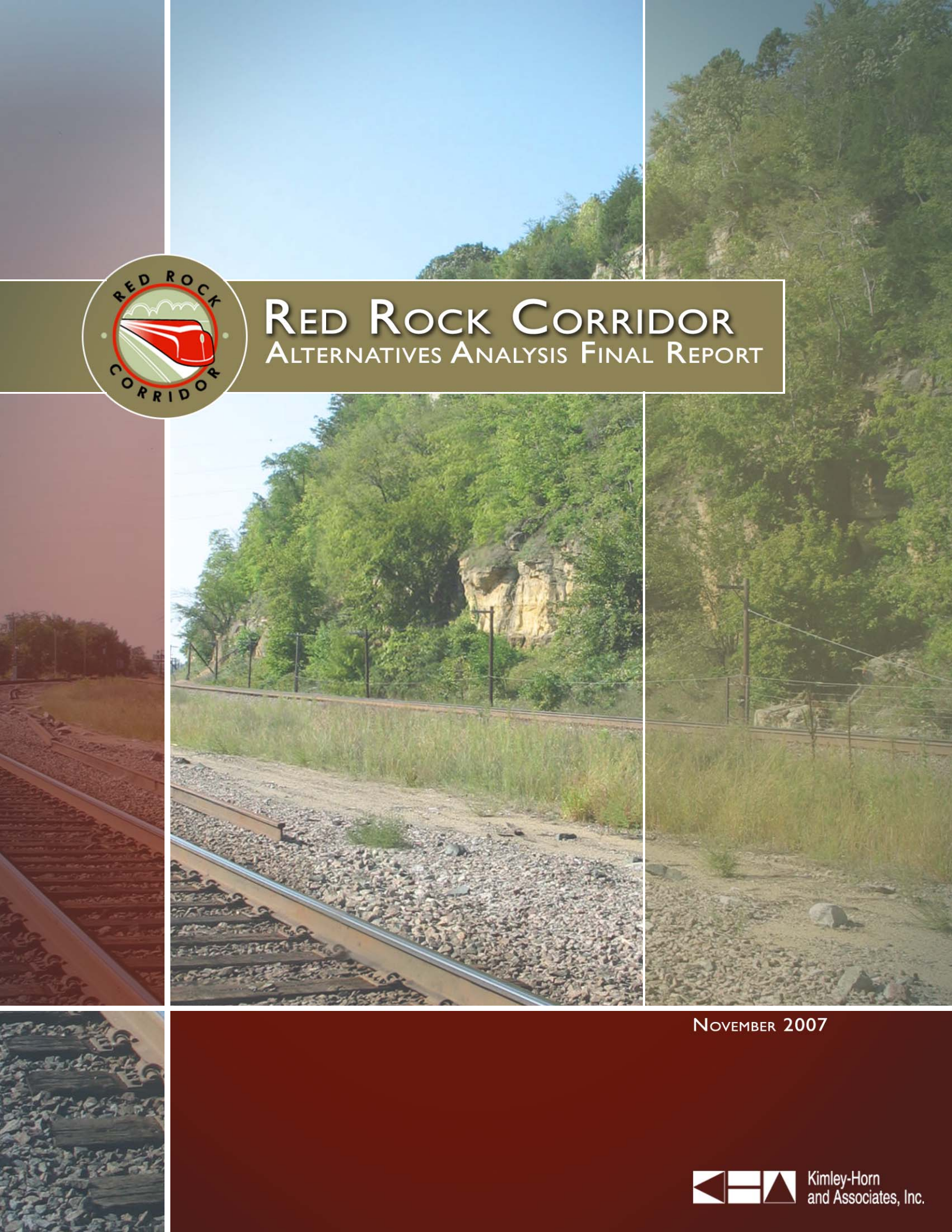


Red Rock Corridor
Alternatives Analysis Final Report

November 2007

Kimley-Horn and Associates, Inc.

Alternatives Analysis for the *Red Rock Corridor*

Final Report

Prepared for:
Red Rock Corridor Commission

Prepared by:
Kimley-Horn and Associates, Inc.

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1.0 INTRODUCTION

1.1 Purpose of Report

The purpose of the Alternatives Analysis Study is to evaluate transit alternatives that cost-effectively address the transportation problems in the Red Rock Corridor.

The Red Rock Corridor Alternatives Analysis (AA) and Scoping Study was initiated in June 2004. At the initiation of the AA-Scoping process, the study reflected the requirements set forth by the Federal Transit Administration (FTA) for projects that are anticipated to receive federal funds. However, as the project progressed, the conclusion was reached that the specified FTA process was not at this time the most prudent course to strictly follow. Hence, the AA-Scoping Study evaluation and process was modified to reflect a non-federalized alternatives evaluation and decision-making process. As presented in Section 11.0, the AA concludes with a recommended phased implementation plan that focuses on building the transit base in the Corridor, with the ultimate vision of implementing commuter rail.

Overall, the intent of the AA process is to refine the project purpose and need statement (initially developed during the feasibility study phase) and identify feasible solutions. Once the transportation needs of the project are identified, the next step is to establish goals and objectives for the project. These generally match the needs outlined in the purpose and need statement, and are presented in terms of efficiency, impacts, cost effectiveness, financial feasibility, and equity. Alternatives are then developed to meet the goals and objectives of the study and that satisfy the needs. The outcome of the AA process is a range of alternatives defined in sufficient detail to provide a general idea of service-level standards, and options that can be measured in terms of cost, ridership potential, financial feasibility, stakeholder/public acceptance, environmental impacts, and the benefits provided versus the cost.

1.2 Project History

Previous Studies and Conclusions

At the request of the state legislature, the Minnesota Department of Transportation (Mn/DOT) initiated the *Twin Cities Metropolitan Commuter Rail Study* in September 1997. Mn/DOT evaluated 19 commuter rail corridors. In January 1999, Mn/DOT presented the findings from their study to the state legislature. Subsequently, the legislature passed Minnesota Statue (M.S.) 174.80 to 174.90 that gave the Mn/DOT Commissioner of Transportation the authority to plan, design, construct, and operate commuter rail in Minnesota. The Mn/DOT Commuter Rail System Plan identifies the Red Rock Corridor as a high commuter rail priority, and the second commuter rail corridor implemented following the Northstar Corridor. The Mn/DOT Commuter Rail System Plan established the framework for *The Red Rock Corridor Commuter Rail Feasibility Study* that was initiated in January 2000, and completed in July 2001.

The July 2001 *Red Rock Corridor Commuter Rail Feasibility Study* presents the findings of the evaluation regarding the constraints and opportunities associated with operating commuter rail transportation service in the Red Rock Corridor on shared right-of-way with the BNSF Railway Company (BNSF) and the Canadian Pacific Railway (CP) mainlines between the City of Hastings and downtown St. Paul to downtown Minneapolis.

The *Red Rock Corridor Commuter Rail Feasibility Study* concluded that the Red Rock Corridor Commuter Rail project is a viable transportation option, and that it should be advanced to the next phase in the project development process; specifically the AA and Scoping stage. As noted in the feasibility study, this conclusion to advance the study to the next phase was consistent with Mn/DOT's Commuter Rail System Plan and the Metropolitan Council's 2030 Transportation Policy Plan.

Alternatives Analysis — Scoping Study

As noted above, the AA-Scoping Study was initiated in June 2004. Roughly seven months into the study, work on the project was put on hold while work on the Twin Cities Regional Model was completed and received approval from the FTA. As work on the Red Rock Corridor project was dependent on an approved model by the FTA, continuing work on the project prior to FTA approval of the model was not considered prudent.

In September 2006, the AA-Scoping Study resumed, following the approval by the FTA of the Regional Model. Based on changes to the FTA New Starts evaluation process, funding constraints, initial ridership forecasts, and regional system advancement and issues, it was concluded that the Red Rock AA-Scoping Study would not specifically follow the FTA AA process, particularly related to review and approval of the defined baseline alternatives and the use of a tightly controlled ridership model. Additionally, based on the recommended definition of the "project action", it was determined that it would not be prudent to enter into the federal National Environmental Policy Act (NEPA) Scoping Process at this stage in the project development process.

As outlined in the Section 11.0 of the Report (Recommendations), the AA Study evaluates transit options that cost-effectively address the transportation problems in the Corridor, including building commuter rail, expanding bus service, and increasing the frequency of bus service. The recommendation presented reflects a phased approach to building the transit services in the Red Rock Corridor. The Red Rock Corridor Commission (RRCC) approved the recommendations at their November 2007 meeting.

1.3 Project Management

The RRCC was established in 1998 as a joint powers board to address transportation needs in the corridor. For this project RRCC provides overall direction and management to guide studies and decisions. RRCC representation includes Washington, Ramsey, Dakota, and Hennepin County Regional Rail Authorities; Cities of Newport, St. Paul Park, Cottage Grove, Hastings, St. Paul, and Minneapolis; and Denmark Township. Ex-Officio members include Goodhue County, the City of Red Wing, the Prairie Island Indian Community, and the Canadian Pacific Railway. The Metropolitan Council, Metro Transit, and Mn/DOT also participate in RRCC meetings, but are not official members.

The Technical Advisory Committee (TAC) provides technical input and direction to the project. TAC representation includes Mn/DOT; Metro Transit; Metropolitan Council; Washington, Ramsey, Hennepin and Dakota Counties; the Cities of Minneapolis, St. Paul, Newport, Cottage Grove, and Hastings; Canadian Pacific Railway and the University of Minnesota.

2.0 STUDY AREA BACKGROUND

Graphics for Chapter 2.0 are included together at the end of this chapter.

2.1 Overall Study Area Setting

The study area runs from the Twin Cities of Minneapolis-St. Paul southeast to the City of Hastings in Dakota County, just across the Mississippi River (**Figure 2-1**). The Red Rock Corridor study area is approximately 30 miles in length—11 miles from downtown Minneapolis to downtown St. Paul and 19 miles from St. Paul to Hastings. The Corridor has regional, statewide, and national significance as a primary transportation route for automobile, truck, and rail travel. It also includes Trunk Highway (TH) 61, a principal arterial and part of the national scenic highway system.

According to the 2000 Census, the Minneapolis-St. Paul metropolitan area is the 16th largest in the U.S., with a population of 2,968,806 in the metropolitan statistical area (MSA) and 2,388,593 in the urbanized area. The annual growth rate in the MSA between 1990 and 2000 was 1.58 percent. Total employment in the MSA was 1,524,404.

2.2 Land Use

Several cities in the study area adopted land use and/or comprehensive plans supportive of transit improvements prior to the initiation of the AA Study. A number of the plans are specifically aimed at increasing densities near potential transit stops or stations in order to promote increased ridership both on the existing express bus system and a future transitway system, should a system be implemented. Land use and planning highlights relative to transit are discussed below by study area city. Status on the development of each study area city's comprehensive plan is also provided below. Metropolitan area communities are required to update comprehensive plans by the end of 2008, based on the Metropolitan Council's recently updated Regional Development Framework, so many are in the process of developing comprehensive strategies for year 2030.

Hastings

Hastings has recently adopted a master plan for the downtown area. The master plan includes a transit center and shared parking for transit and commercial use. According to *City of Hastings 2020 Comprehensive Plan*, the Downtown Redevelopment District was established in 1973 to encourage redevelopment of the historic downtown neighborhood and commercial area. In addition, the site is located in Hastings' Conservation District, which supports the preservation of neighborhood character by requiring the type and intensity of infill development to be consistent with existing neighborhood standards. The Conservation District imposes more stringent development and design controls than other areas within the City.

Comprehensive Plan Status

The City of Hastings has been meeting with its comprehensive planning committee since February 2007 and held a public open house on a concept plan September 12, 2007. The updated comprehensive plan is anticipated to be finished in summer 2008.

The Circulation and Movement element of the plan currently includes the goal of "continuing to plan for the long-term possibility of commuter rail service with a terminal at the former railroad depot in

downtown." The City also plans to lobby for commuter bus service to downtown St. Paul as a "starter system" and has outlined the goal of continuing to promote a downtown environment that is walkable, dense, diverse, and in keeping with its historic architectural character. *(City of Hastings Comprehensive Plan: Concept Plan for Discussion, August 23, 2007.*

Newport

Newport's Comprehensive Plan, adopted in 1999, includes transit-supportive features such as mixed-use development and higher-density housing. The plan incorporates an envelope for transit and transit stops. Newport has rezoned based on the comprehensive plan to allow for the higher-density housing and mixed-use development.

Comprehensive Plan Status

The City of Newport has undertaken a revisioning process, including a revisioning document that will guide the update of its comprehensive plan. The revisioning document was presented in workshops to the city council and planning commission in 2007, and includes a statement in support of a transit station to accommodate the Red Rock Corridor. Provisions of the proposed station area include mixed-use development to incorporate a potential city government center, high-density residential and other uses. The City plans to begin its comprehensive plan update in late 2007.

St. Paul Park

St. Paul Park's Comprehensive Plan, adopted in 1999, allows for transit-supportive features such as higher-density housing and mixed-use development. Although it is not directly addressed in the Comprehensive Plan, the zoning does allow transit-oriented development.

Comprehensive Plan Status

The City of St. Paul Park held its first comprehensive planning meeting on September 10, 2007. The development of the 2030 comprehensive plan will continue into 2008, with final plan adoption anticipated by October 2008.

Cottage Grove

The *Cottage Grove Comprehensive Plan*, adopted October 18, 2000, identified a transition zone which was designated for use as a possible location for a multimodal transit hub. This area is currently zoned for low density residential and commercial uses, with the intent of supporting commercial, medium-density residential, and office/service uses in the future. The land use designation applied to this area reflects the projected change in land uses through redevelopment, most likely spearheaded by the introduction of a transit hub. The existing Cottage Grove park-and-ride is located in this transition zone.

Comprehensive Plan Status

The City of Cottage Grove is in the midst of its comprehensive plan update for 2030 and plans to finish the plan by May 2008. The transportation element of the plan will include Red Rock Corridor.

Woodbury

The *City of Woodbury Comprehensive Plan*, adopted May 10, 2000, recognizes concern for the ability of the regional transportation system to absorb the traffic volumes generated in the region in the future. The plan identifies several potential transit services and facilities, including an intermodal transportation station for transit and commuter rail near the east end of the Wakota Bridge in Newport. This station would facilitate east-west bus services along I-494 and provide a connection point for transfers to local

fixed-route services in Cottage Grove and South St. Paul. A timed transfer shuttle system between municipal park-and-ride facilities and the transfer station could transfer Woodbury passengers to other regional route services at the facility, including commuter rail and possibly light rail transit.

Comprehensive Plan Status

Woodbury initiated its 2030 comprehensive planning process in April 2007, and began holding a series of citizen task force meetings in September 2007. The new plan will include special focus on several areas, including transportation system impacts on land use and livability.

St. Paul

St. Paul's existing comprehensive plan was adopted in December 1997 and readopted in January 2002. One of the highest transportation priorities in the plan is to significantly improve transit. The city's top priority within this capacity is to support the Central Corridor between downtown St. Paul and downtown Minneapolis for development of a transit way, and designates the University Avenue corridor as a corridor for growth. Although the Minnesota Union Depot is not specifically referenced, the plan allows for transit-supportive features such as higher-density development.

Comprehensive Plan Status

A St. Paul Comprehensive Plan 2008 Scoping Report was prepared in October 2006 by the Comprehensive Planning Committee. This report gave a snapshot of existing conditions and compared existing and future elements of the plan. Currently there are five separate task forces working on different elements of the plan: housing, land use, parks, transportation, and water. Plan drafts will be made available for public review in early 2008.

Minneapolis

The City of Minneapolis Comprehensive Plan, known as *The Minneapolis Plan* was adopted in March 2004. The "Movement" section of the plan focuses on development of transit corridors and the growth of services and land development in these corridors. Commuter rail and light rail transit are specifically mentioned; particularly Northstar Commuter Rail and Hiawatha LRT.

Comprehensive Plan Status

The City of Minneapolis completed its first round of community forums on the Comprehensive Plan update in May 2007. A second round of forums will take place in fall 2007, after a draft plan is released for public review. It is anticipated that the plan will be submitted for final approval in spring 2008.

2.2.1 Station Area Site Conditions

There are eight proposed station areas under evaluation in the AA. As noted in the previous section, each of the corridor communities is in the process of updating their comprehensive plans. Throughout the AA process, the Red Rock team has worked closely with the corridor communities regarding proposed station site locations that are consistent with each of their respective visions for future development on or near the proposed stations.

A summary of the existing land use features at each of the proposed sites is presented below.

Hastings

The proposed Hastings station site is located on the southeast and southwest corners of the Main Street (2nd Street) and Bailley Street intersection in Hastings, MN. A wastewater treatment plant is located on the northeast corner of the intersection and a parking lot is located on the northwest corner; residential areas are located south-southwest of the site; Canadian Pacific railroad tracks and residential areas are located to the east; and small commercial shops are located to the west. The site is found within the eastern portion of Hastings' Downtown Redevelopment District.

The site currently consists of an unimproved parking lot and the adjacent historic railroad depot (see Photos A1-1 to A1-3 in **Appendix A**). TH 61, Lake Isabelle, the Mississippi River, governmental buildings, emergency services (e.g., police and fire departments), and public parks are located in the greater vicinity (see **Figure 2-2**).

Cottage Grove

The proposed Cottage Grove site is an existing park-and-ride facility located at 7500 West Point Douglas Road South (see Photos B-1 to B-3 in **Appendix A**). The site is located between two major interchanges (TH 61/80th Street and TH 61/Jamaica Avenue). TH 61 is located northeast of the site; railroad tracks, Hamlet Park, and potential wetlands are located to the southwest; undeveloped land and a single-family residence are located to the southeast; and undeveloped land and a commercial facility that appears to be abandoned are located to the northwest. Elementary schools, public parks, fallow agricultural land, an auto distribution center, the South Washington County School District Transportation Center, Allina Medical Center, and several commercial and residential areas are located in the greater vicinity (see **Figure 2-3**).

The City is considering an alternate station site at Langdon Village. This site was evaluated in the station area planning process and may still be considered as part of the city's comprehensive plan update. Further studies will be conducted to determine whether the site is consistent with the technical and physical needs of a station and ancillary uses. A final selection on station location will be made once this study is completed.

Newport

The proposed Newport site is located on 7th Avenue, between 14th Street and 15th Street. A newly constructed highway interchange (Glen Road) is located north of the site (beyond 15th Street); residential areas are located to the south and west; and railroad tracks (CP and BNSF), TH 61, commercial facilities, and residential areas are located to the east. Veolia Environmental Services and Onyx Waste Services currently occupy the site (see Photos C-1 to C-3 in **Appendix A**). These facilities are potential environmental concerns as related to hazardous materials. Numerous storage containers are located in the western portion of the site (back storage area). A potential wetland is also located on the site. The Mississippi River, public parks, and vacant lots are located in the greater vicinity (see **Figure 2-4**).

Lower Afton Road

The proposed Lower Afton Road site is an existing park-and-ride facility located in the southeast quadrant of the northbound TH 61 and Lower Afton Road intersection in St. Paul, MN (see Photos D-1 and D-2 in **Appendix A**). The site also includes the area between southbound TH 61 and BNSF tracks, near an unimproved access road (see Photo D-3). A small area of woodland and a potential wetland are located north of the site; grassland with scattered trees is located to the south; Point Douglas Road,

woodlands, and a steep hillside are located to the east; and railroad tracks and Pigs Eye Lake Park are located to the west. Pigs Eye Lake, Battle Creek Regional Park, Boys Totem Town, and small residential areas are located in the greater vicinity (see **Figure 2-5**).

According to the City of St. Paul's most recent zoning map (sheets 31 and 32, revised January 2005), the eastern portion of the site is currently zoned as residential and the western portion is zoned for industrial use.

Snelling Avenue (BNSF Alignment Option)

The proposed Snelling Avenue BNSF station site is located at the terminus of Norris Circle, south of the Norris Circle and Energy Lane intersection, in St. Paul. Commercial facilities and multi-family residential areas are located north of the site; the BNSF railroad, commercial facilities, and residential areas are located to the south; commercial facilities and residential areas are located to the east; and commercial facilities, Great River School (charter school), and St. Jude Medical Center are located to the west. The site currently consists of Norris Circle, a parking lot, and railroad right-of-way (see Photos F-1 to F-3 in **Appendix A**). Como Park, McMurray Field, Midway Stadium, Hamline University, Hmong Academy, Snelling Avenue, and several commercial and residential areas are located in the greater vicinity (see **Figure 2-6**).

According to the City of St. Paul's most recent zoning map (sheet 11, revised January 2005), the site is currently zoned for industrial use.

Snelling Avenue (CP Rail Alignment Option)

The proposed Snelling Avenue – CP station site is located south of the Hamline Avenue and Selby Avenue intersection, beneath the Canadian Pacific railroad overpass, in St. Paul. Concordia University, commercial facilities, and residential areas are located north of the site; the CP railroad and mixed residential/commercial areas are located to the south; a small public park (Hamline and Hague Park) and residential areas are located to the east; and commercial facilities and residential areas are located to the west. The site currently consists of Hague Avenue, an overpass, unimproved areas, and railroad right-of-way (see Photos E-1 to E-3 in **Appendix A**). Higher Ground Academy (charter school), a power substation, Snelling Avenue, I-94, and several commercial and residential areas are located in the greater vicinity (see **Figure 2-7**).

According to the City of St. Paul's most recent zoning map (sheet 18, revised January 2005), the eastern portion of the site is currently zoned as residential and the western portion is zoned for industrial use.

University of Minnesota

The proposed University of Minnesota (U of M) site is located north of the 6th Street/23rd Avenue and U of M transitway intersection, between a parking lot and the BNSF railyard, in Minneapolis. The BNSF railyard and commercial facilities are located north of the site; U of M facilities and commercial areas are located to the south; the BNSF rail yard and industrial facilities are located to the east; and a power substation and U of M facilities are located to the west. The site currently consists of a gravel access road, unimproved areas, and railroad right-of-way (see Photos G-1 to G-3 in **Appendix A**). Due to the railyard and industrial facilities in the immediate area, the site has the potential for environmental concerns as related to hazardous materials. Additional U of M facilities and several commercial and residential areas are located in the greater vicinity (see **Figure 2-8**).

The proposed station location is located within the boundaries of the Southeast Minneapolis Industrial (SEMI) study area, which is located just east of the University of Minnesota and is bounded by University Avenue SE, 15th Avenue SE, Elm Street SE and the Minneapolis-St. Paul border. A small area plan for the SEMI area was adopted by the City of Minneapolis in 2001, and was amended into the City's comprehensive plan in 2006 (*note: the land use identified in the SEMI plan is currently not in the regional model*). The plan focuses on increasing the City's high-tech industrial workforce in cooperation with the University of Minnesota.

U of M is currently in the process of constructing the Twin City Federal (TCF) Bank Stadium in proximity to the proposed station location. The stadium will be located on the University's Huron Avenue parking complex. The stadium will reflect a horseshoe design, with the capacity of 50,000. Construction on the stadium is scheduled to be completed in time for the start of the fall 2009 football season.

Downtown Stations

The downtown St. Paul station would be located at the Minnesota Union Depot on 4th Street, between Sibley and Wacouta Streets. The downtown Minneapolis Intermodal station would be located to the south of the existing BNSF tracks, between 4th and 5th Street. Both stations have been studied extensively in previous documents. Specifically, in November 2003, the *St. Paul Union Depot Analysis* was prepared for RCRRA and in August 2006, the *Intermodal Station Siting and Feasibility Study* was prepared for the HCRRA. Therefore a detailed discussion of surrounding land use is not included specifically in this section. (*See Section 3.2 and **Figure 3-2** for a summary of previous and upcoming activities at the Depot, along with a figure identifying its location in downtown St. Paul. See **Appendix B** for the proposed location of the Downtown Minneapolis Intermodal Station.)*

2.3 Population

Population growth in the study area **(Table 2.1)** has been increasing and is projected to continue to increase at a rate higher than the core of both Minneapolis and St. Paul. In the southeastern portion of the study area, beyond I-494, population growth rates range from two times higher than the study area average for Hastings to three times higher for Cottage Grove (see **Figures 2-9 to 2-11**). As the population increases, demand for transportation also increases.

Figures 2-12 through 2-15 show the distribution of the population who are typically more transit-supportive or transit-dependent, for example students and seniors. Students and seniors are scattered throughout the corridor, with concentrations in portions of Hastings, Cottage Grove, St. Paul Park, Newport, and Woodbury. Zero- and one-car households also are scattered throughout the corridor, with higher concentrations in the Woodbury/Newport area, as well as downtown Minneapolis. Persons with disabilities are scattered throughout the study area, but with more of a concentration in St. Paul and Newport. Poverty-level households are also scattered, but have generally higher concentration in the areas around Minneapolis and St. Paul, with a pocket of high concentration in the Cottage Grove area as well.

Table 2.1 – Projected Population Growth 2000-2030

Area	2000 Population	2030 Population	Population Change 2000-2030	Percent Change 2000-2030
Minnesota	4,919,479	6,268,400	1,348,921	27%
Minneapolis-St. Paul MSA (MN portion)	2,868,847	3,784,300	915,453	32%
Dakota County	355,904	501,000	145,096	41%
Washington County	201,130	332,190	131,060	65%
Ramsey County	511,035	566,840	55,805	11%
Hennepin County	1,116,200	1,298,480	182,280	16%
Minneapolis[1]	107,869	128,352	20,456	19%
St. Paul[1]	186,061	217,317	31,256	17%
St. Paul Park[1]	8,154	10,871	2,717	33%
Woodbury[1]	15,453	27,378	11,925	77%
Newport[1]	3,719	5,054	1,335	36%
Cottage Grove[1]	25,079	46,845	21,766	87%
Hastings[1]	18,201	30,000	11,799	65%
Study Area	376,859	488,954	110,095	29%

[1] City populations are for the portions within the study area as defined in Figure 2-1.

Source: Minnesota Department of Administration, State and Community Services, Land Management Information Center. 2000 Population is from the 2000 U.S. Census. Projected values are rounded.

2.4 Employment

Although the highest employment densities in the study area are in the downtowns of both St. Paul and Minneapolis, the highest employment growth, in terms of overall percent of change, is projected for the other corridor communities. As might be expected from a population that depends predominantly on the private automobile for access to jobs, employment growth is spread around the fringe cities near major transportation intersections. Jobs in Cottage Grove have increased due to both the industrial park west of Highway 61 and the growth in commercial jobs along 80th Street just east of Highway 61. The employment growth rate in Newport, St. Paul Park, and Cottage Grove ranges from three to eight times the average employment growth in the study area (see **Figures 2-16 to 2-18**).

Table 2.2 – Projected Employment Growth 2000-2030

Area	2000 Employment	2030 Employment	Employment Change 2000-2030	Percent Change 2000-2030
Minneapolis	220,939	275,915	54,976	25%
St. Paul	163,465	192,977	29,512	18%
St. Paul Park	1,783	2,650	867	49%
Woodbury	4,104	6,175	2,071	50%
Newport	2,035	6,500	4,465	219%
Cottage Grove	4,572	8,560	3,988	87%
Hastings	8,317	9,400	1,083	13%
Study Area	408,940	508,204	99,264	24%

*Note: Employment figures are for the portions of the cities within the study area as defined in **Figure 2-1.***

2.5 Existing and Forecast Travel Demand

Despite growth in some of the outlying areas, 94 percent of the jobs in the study area are within Minneapolis and St. Paul. The 2030 growth projected in the study area portions of Minneapolis and St. Paul is nearly 85,000 jobs. The primary commute pattern is to the downtowns of both Minneapolis and St. Paul. This pattern is expected into continue in 2030.

In 1998, the average daily traffic (ADT) on Highway 61 ranged from 34,500 (north of I-494) to 52,000 (south of I-494). Based on these numbers, the forecast average daily traffic for 2030 without any transit improvements ranges from 55,000 to over 100,000 vehicles per day. This increase ranges from 60 to 105 percent between 1998 and 2030. As an interim indicator, ADT collected in 2004 ranged from 40,000 (north of I-494) to 55,000 (south of I-494).

2.6 Condition of Transportation Infrastructure

Highway 61 is classified as a principal arterial. North of Hastings and continuing to I-94, Highway 61 is primarily a four-lane expressway with at-grade intersections, some of which are signalized. As part of the Wakota Bridge project, improvements are underway on Highway 61 in the vicinity of I-494. These improvements include extending the freeway section from CSAH 19 to Carver Avenue. A second project for the Corridor is the Highway 61 Mississippi River Bridge in Hastings. These projects are described in greater detail in **Section 3.0**.

Outside of these projects, Minnesota Department of Transportation's (Mn/DOT) goal for Highway 61 is to manage the system.

2.7 Congestion

In 2000, Highway 61, the principal arterial serving the study area, was classified as a congested corridor. Many intersections in the vicinity of I-494 operated at a level of service (LOS) F in the morning peak hour, the evening peak hour, or both. As described above, construction is underway to relieve congestion in the vicinity of Highway 61 and I-494. Additionally, current volumes on the two-lane Hastings Bridge

are at approximately 30,000 vehicles per day. The Hastings Bridge is a congested area of the corridor, and is projected to get worse in the future.

Even with highway improvements, the projected (2025) classification of the Highway 61 corridor is still considered congested, according to the Metropolitan Council. Since no improvements are planned beyond the current construction, the classification as congested will be appropriate for 2030.

2.8 Capacity

The through lanes of Highway 61 and the majority of intersections and ramps operated at LOS D, E or F during at least one of the peak hours in the year 2000. With the projected traffic growth and no planned improvements, all key locations on Highway 61, including ramps and intersections, are forecast to operate at LOS F during both peak periods in year 2030.

2.9 Existing Transit Service

Metro Transit operates peak-period service on Routes 361, and 365 between Cottage Grove and the downtowns of St. Paul and Minneapolis. Human Services, Inc. (HSI), a non-profit corporation contracting with the Metropolitan Council, provides transit service in the rural areas of the county, operating midday service on South County Circulator Route 320. Route 320 is a dial-a-ride transit service within the city limits of Newport, St. Paul Park, and parts of Cottage Grove. Additionally, Route 364 is operated by HSI. Route 364 currently provides peak period service from St. Paul Park and Newport to downtown St. Paul. **Tables 2.3 and 2.4** summarize transit service in the study area.

Table 2.3 – Year 2007 (Second Quarter) Average Weekday Peak Period Ridership

Route	Destination	2007 Average Weekday Ridership
361	St. Paul	280
365	Minneapolis	450
364	St. Paul	60
320	Circulator/Dial-A-Ride Service	70
Total		**860**

Note: Ridership for Routes 361 and 365 reflect 15 to 30 minute peak period service.

Table 2.4– Year 2007 (Second Quarter) Average Weekday Transit Ridership (Express Routes Between the Downtowns) on Route 94

Route	Destination	April 2007 Average Weekday Ridership
94 BCD	St. Paul/ Minneapolis	3,920

In Cottage Grove and Newport, two local routes serve residents and serve as a feeder route to the express routes. The City of Hastings operates an intracity dial-a-ride bus system (Transportation Around the City, or TRAC). This system does not provide intercity transportation.

2.10 Park-and-Ride Facilities

Two park-and-ride lots are currently served by transit in the study area (**Figure 2-19**). The Cottage Grove park-and-ride was opened in October 2003 with 494 spaces. In October 2006, use averaged 224 cars per day. The Lower Afton Road park-and-ride was expanded to 114 spaces by Mn/DOT in 2005. Use averaged 79 cars per day in October 2006.

The City of Hastings has approximately 40 spaces in proximity to the railroad depot. Although not currently served by transit, the City of Hastings anticipates these spaces being available for transit service in the future (as part of a plan for shared parking). There are two other public parking lots in the downtown area of Hastings (**Figure 2-20**) serving the higher density of businesses in the downtown area, particularly along historic Main Street.

2.11 Existing Rail Service

Commuter rail in the Red Rock Corridor is proposed for operation over the mainline tracks of the CP railway and BNSF railway, both major freight facilities that also accommodate daily long distance Amtrak service. Union Pacific Railroad (UP) also uses the corridor. The track is Class 4, consisting primarily of continuously welded rail. The line is primarily double-track. Commuter rail would share the existing tracks with the following freight rail trains:

- BNSF from St. Paul to Minneapolis (BNSF Midway Subdivision): 87 trains per day
- CP from St. Paul to Minneapolis (CP Merriam Park Subdivision): 12 -26 trains per day
- CP/BNSF from Hastings area to St. Paul: 68 trains per day

BNSF Midway Subdivision

The BNSF Midway Subdivision is located less than one mile to the north of University Avenue. As stated in the Central Corridor Commuter Rail Technical Feasibility Study (*RCRRA, December 2001*), the alignment was originally part of the Great Northern Railway, and for many years was the route used by both Northern Pacific and Great Northern passenger trains between the Saint Paul Union Depot and Hennepin Avenue station in downtown Minneapolis.

CP Merriam Park Subdivision and Minnesota Commercial (MC) Segment

The CP Merriam Park Subdivision runs on a southeast to northwest diagonal alignment through the City of St. Paul. Originally, most of this alignment was part of the Milwaukee Road mainline. Currently, AMTRAK's Empire Builder uses this route. The AMTRACK Midway Station is also located on the MC tracks just north of the University Avenue overpass.

As defined in greater detail in Section 6.0 of this report, based on ridership forecast and capital cost estimates developed for the commuter rail alternatives, at this time it is most cost effective to define the first phase of the commuter rail from Hasting to the Minnesota Union Depot in downtown St. Paul, with ultimate service to downtown Minneapolis in a subsequent phase. Hence, more detailed track information for the St. Paul to Hastings section is presented below and shown in **Figure 2-21.**

Minnesota Union Depot to Hoffman Junction

Minnesota Union Depot (the Depot) to Hoffman is a one-mile segment owned and dispatched by CP. CP, UP, and Amtrak are the primary users of this segment along the Mississippi River. This route is double track, and is controlled by Centralized Traffic Control (CTC). This allows a dispatcher to direct traffic on either track in either direction using remotely controlled signals and power switches.

The tracks at the Depot are adjacent to the main lines. No passenger trains currently use the Depot. UP uses this track as a connection from South St. Paul to access routes west to Minneapolis and east to Wisconsin and Chicago. CP uses the route for service to industries and as a secondary mainline between St. Paul and Merriam Park. Amtrak's Empire Builder also operates in each direction daily over this route.

BNSF's and CP's main route from Minneapolis connects into the Red Rock corridor at Hoffman. This junction is a wye configuration, allowing trains moving on any route access to either of the other routes. There also are complete universal crossovers at Hoffman Junction allowing trains to move from any one of the four tracks to any of the other tracks in either direction. The two CP-owned tracks (Minnesota Union Depot Route) are the southernmost tracks, and tie into the west ends of both CP and UP yards located just east of Hoffman. The two BNSF-owned tracks coming from Minneapolis are north of the MUD route and continue east to Hastings/Prescott. BNSF dispatchers control the junction and must be contacted to use the tracks through Hoffman.

Hoffman to Newport

This is a six-mile segment of track that is jointly owned and operated by BNSF and CP. Amtrak also uses this route to and from Chicago. This segment is double track CTC, and is part of both BNSF and CP Chicago main lines. It is dispatched by BNSF. There are universal crossovers at Oakland and Newport, which allow dispatchers to direct trains to the appropriate tracks as they approach Hoffman for routing to Minneapolis, MUD, or various rail yards in the vicinity.

CP has a large freight classification facility in this segment, St. Paul Yard, which is located south of the two main tracks and south of Hoffman. UP also has a yard in this area, as well as BNSF. Train counts from a simulation completed in 2000 for movement through this junction indicate that CP has 45 to 50 movements, BNSF has 55 to 60 movements, and UP has 15 to 20 movements daily, making this a very busy junction for three Class 1 railroads.

In addition to through trains and trains entering and leaving the yard, CP also serves large industrial customers located south of the main lines between Dunn and Newport. A 10-mph lead track that parallels Main 2 allows CP switch engines to serve the customers while remaining clear of the main tracks. The functionality of this track must be maintained with any proposed improvements, so the main track will remain open during commuter service hours.

Newport to St. Croix Tower

This is a 10-mile segment of double track that is also jointly owned and operated by BNSF and CP, and Amtrak also uses this route. While there are two main tracks, they are on separate rights-of-way and lie up to two miles apart on different elevations. This reduces the opportunity to connect with crossovers to improve line capacity. Red Rock commuter trains would likely use the northernmost track in both directions, because it provides better access to commuter rail stations.

CP has an automobile uploading facility and some industries located on Main 1 at Cottage Grove. A CP local switches these facilities daily based on schedule information. The local blocks main one for about one hour daily while it is switching these industries.

St. Croix Tower to Hastings

At St. Croix Tower, BNSF and CP each have separate routes eastward. The CP line continues through Hastings on the west side of the Mississippi, and the BNSF line crosses to the east side of the Mississippi River at Prescott, WI and continues south on the WI (east) side of the Mississippi River. There is a crossover located at St. Croix Tower for westward movements, allowing CP trains coming from Hastings to cross over for movements to St. Paul. There is an additional crossover for westward movements east of the CP connection, however this crossover is not well-maintained and is infrequently used by BNSF trains. Amtrak operates on the CP route to Hastings. This route is on single track CTC with sidings for meeting and passing trains. The route passes over the Mississippi River at Hastings via a single-track drawbridge that, based on data from CP, is opened two to five times daily for a period of between 15 and 60 minutes.

2.12 Environmental Conditions

Introduction of a new mode or increased frequency of public transportation service in Red Rock Corridor will create impacts to the environment, some of which will be beneficial and others adverse. General site conditions are summarized in Section 2.2.1 of this report. As part of the AA, and scoping study observations were made along the corridor and at potential station sites for wetlands, existing land uses, general visual and aesthetic features, community facilities, and historic and cultural features. In addition, environmental findings documented in the *Commuter Rail Feasibility Study* provide a conceptual overview of the project's anticipated environmental impacts based on information that was available at the time of the study, including air quality, noise hazardous waste and endangered species identification.

Preliminary evaluation of the study area resulted in the identification of the following resources in the study corridor:

- Wetlands
- Floodplains
- Threatened and endangered species and rare plant communities
- Properties that are significant because they are on, or eligible for, the National Register of Historic Places (Section 106 properties), or because they have local significance as determined by the Heritage Preservation Commission or similar local authorities
- Parks, recreation lands, and cultural resource sites that may qualify to receive protection under 49. U.S.C. 303 and 23 U.S.C. 138 (Section 4(f) properties)
- Suspect land uses located in an industrial and railroad context that, upon further investigation, may be brownfield/polluted sites within or immediately adjacent to the Red Rock Corridor
- Potential air quality and noise impacts associated with increasing railroad capacity and/or increasing rail activity

The conceptual-level study of environmental issues is appropriate for the decision at hand in the Red Rock Corridor. As specific actions are further defined in the Red Rock Corridor (e.g. station area development or redevelopment) the appropriate level of environmental review will be conducted in compliance with the Minnesota Environmental Policy Act (MEPA) for locally funded projects, and NEPA for projects receiving federal funds.

Figure 2-1: Red Rock Study Corridor Basemap

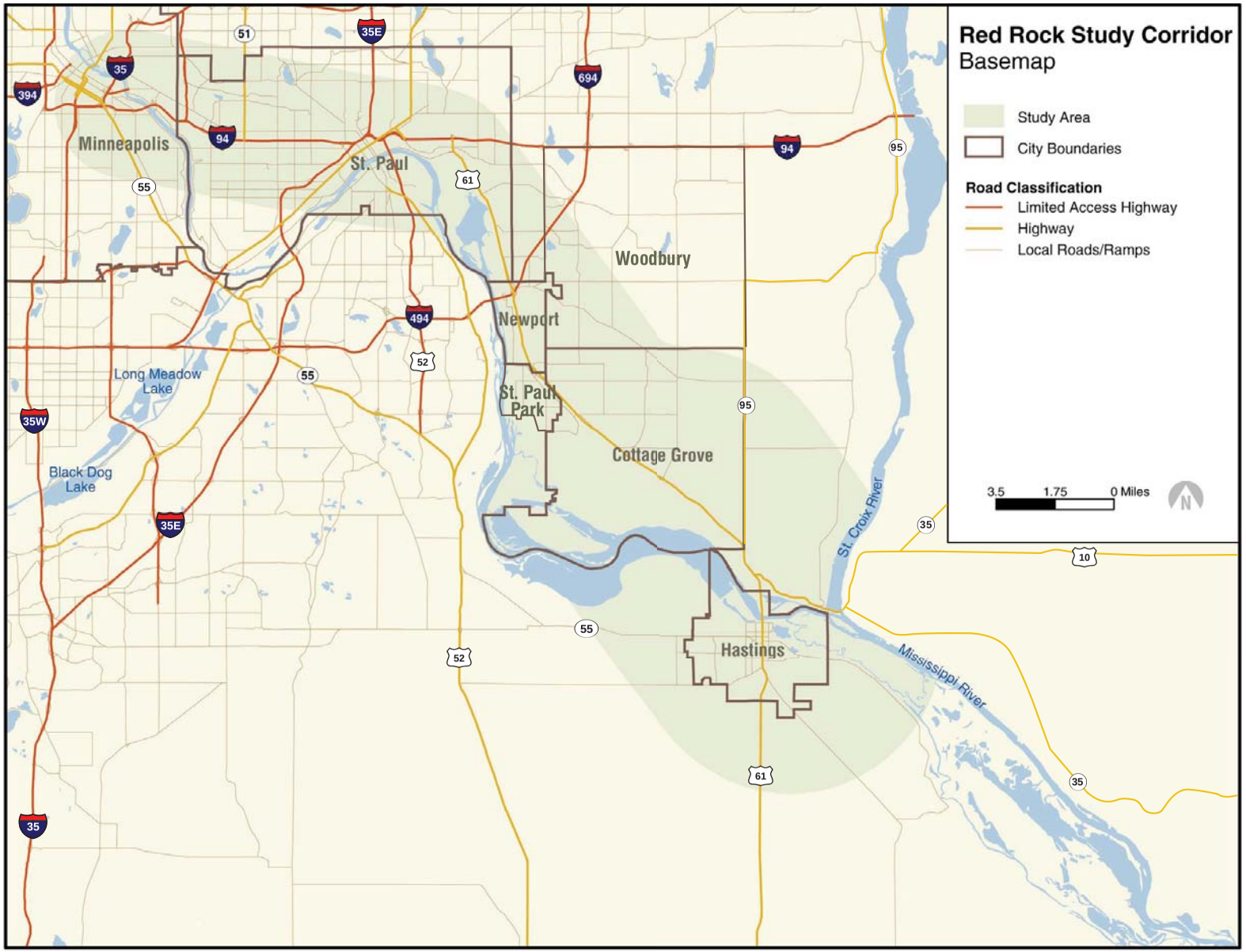


Figure 2-2: Existing Conditions - Hastings Station Area



Figure 2-3: Existing Conditions - Cottage Grove Station Area



Figure 2-4: Existing Conditions - Newport Station Area

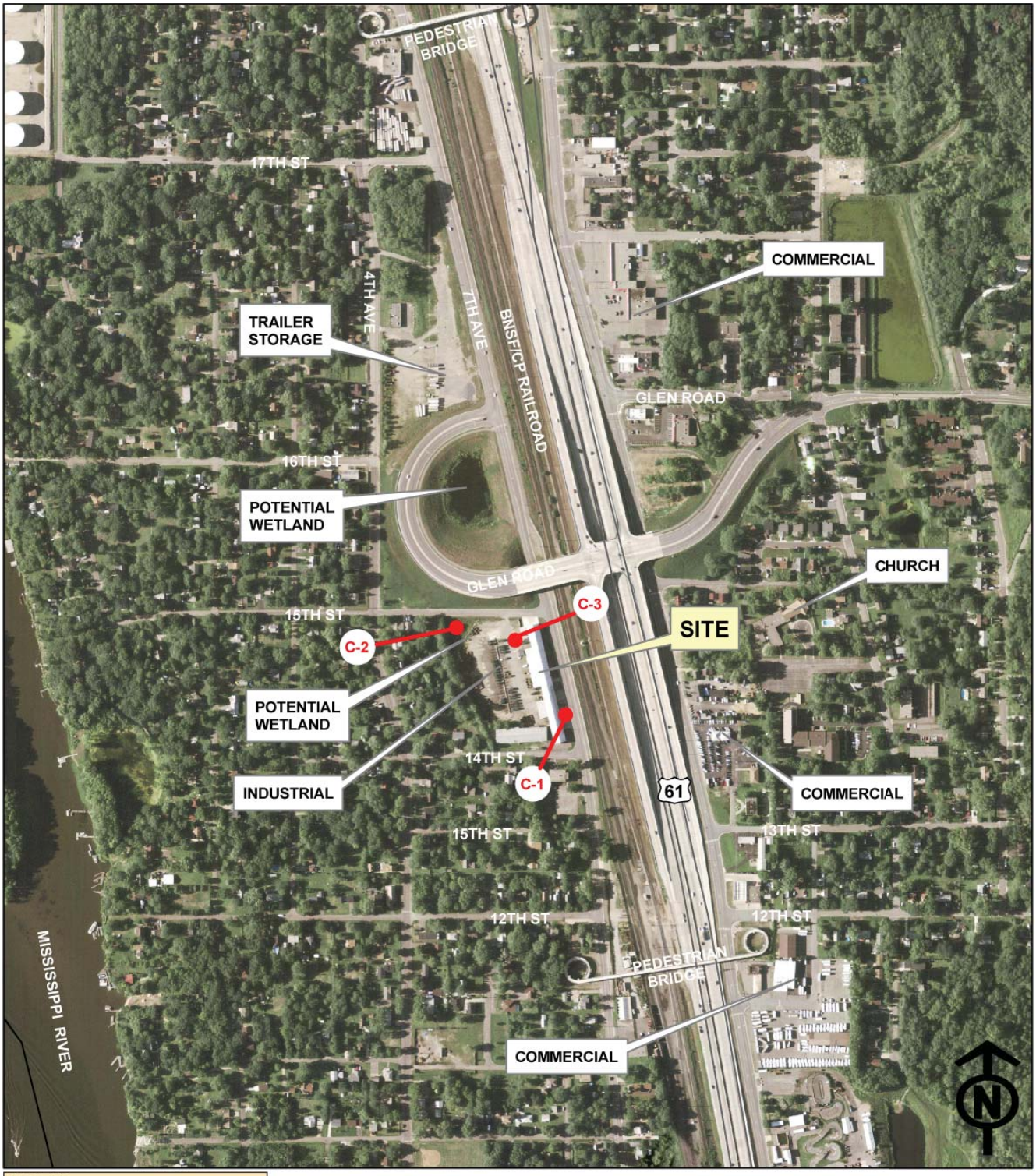
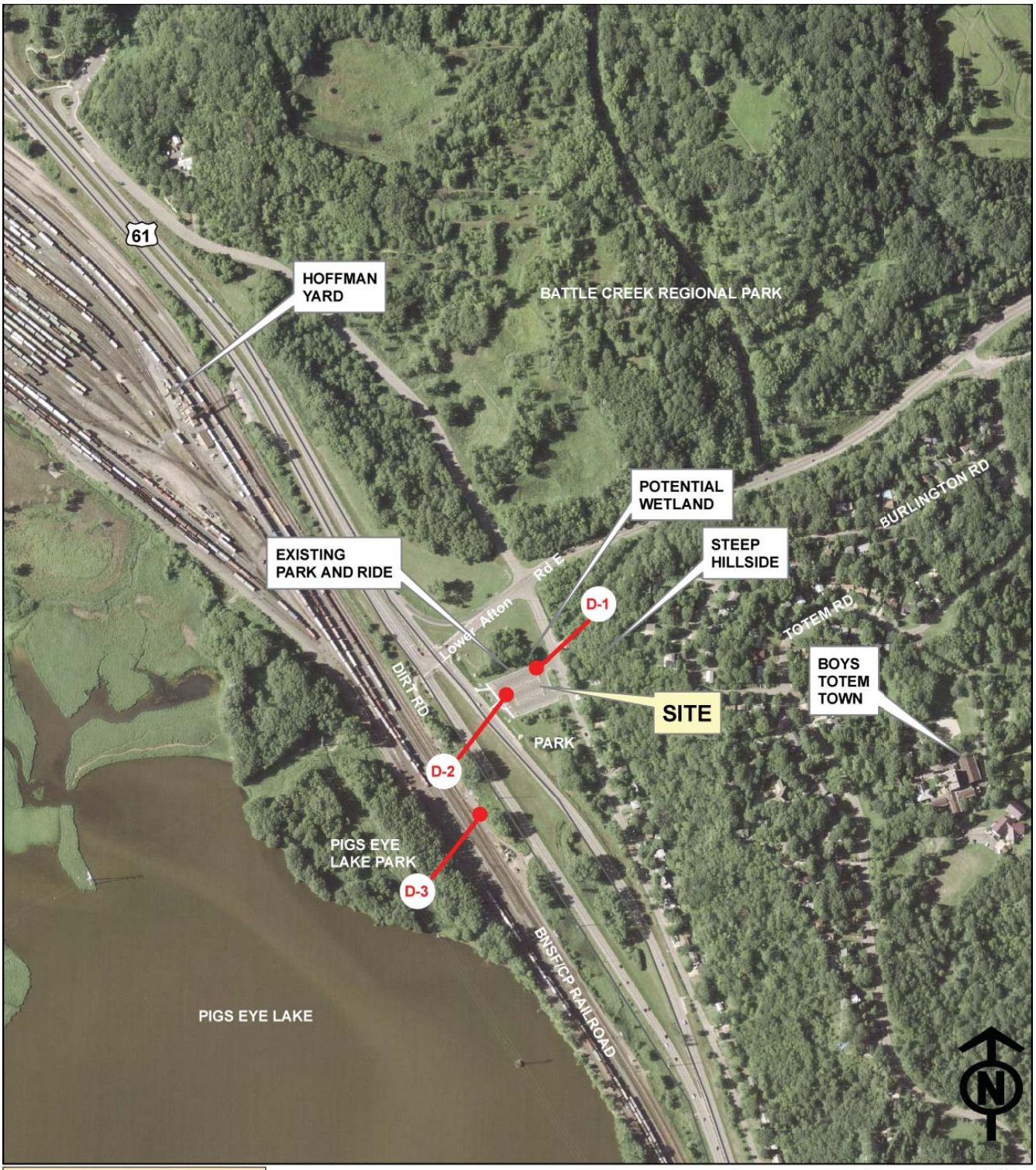
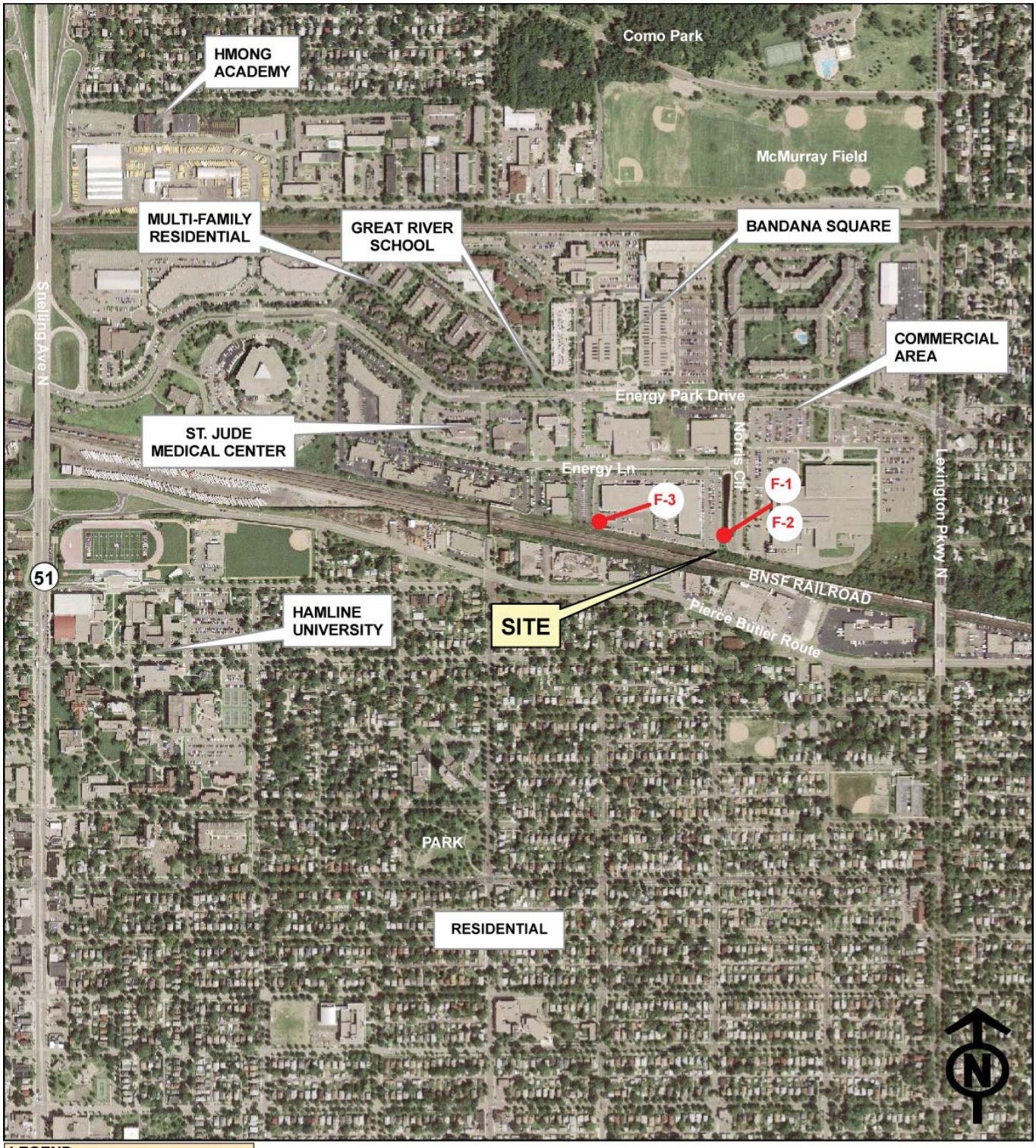


Figure 2-5: Existing Conditions - Lower Afton road Station Area



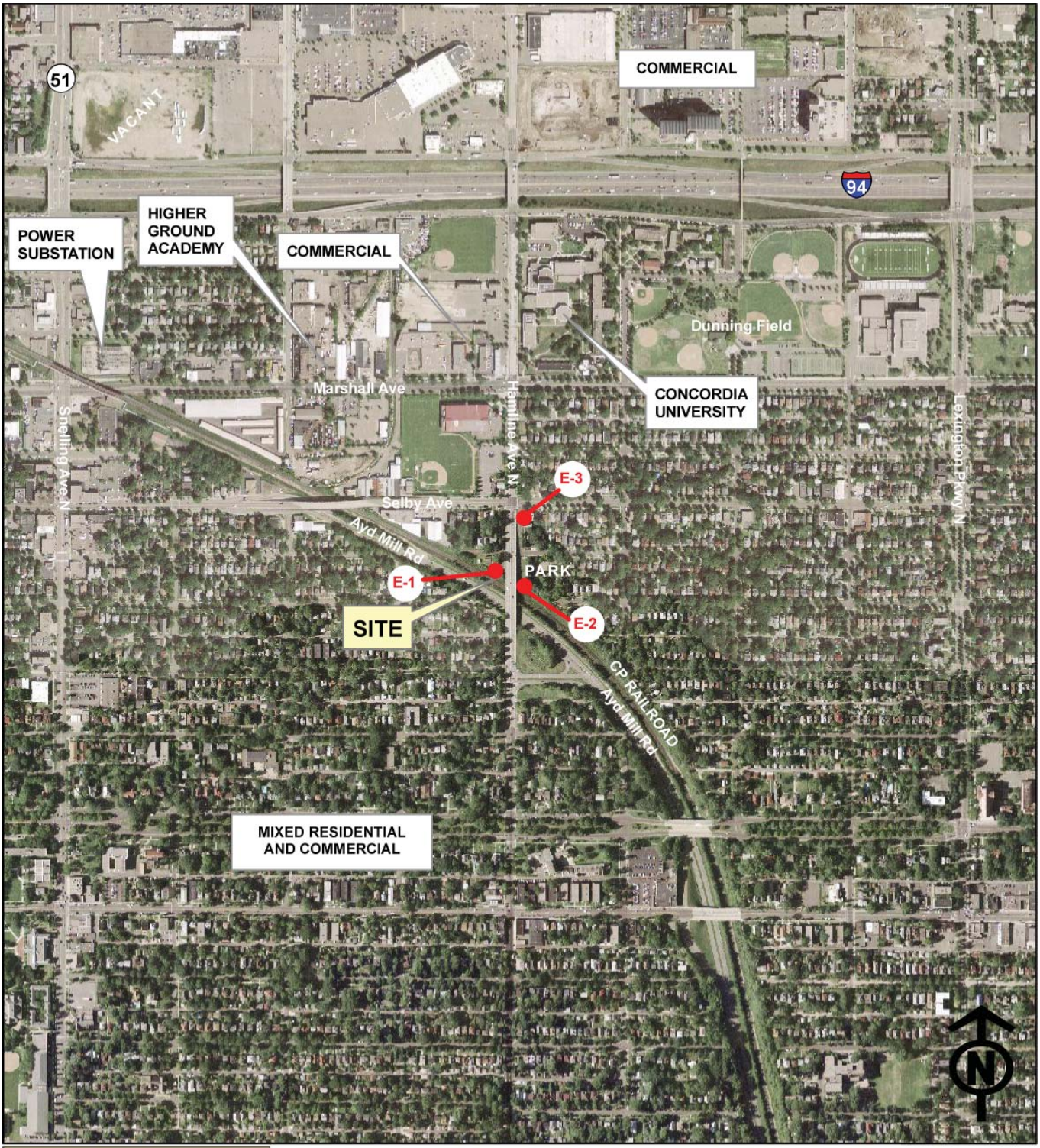
Kimley-Horn and Associates, Inc.

Figure 2-6: Existing Conditions - Snelling Station Area BNSF Alignment



Kimley-Horn and Associates, Inc.

Figure 2-7: Existing Conditions - Snelling Station Area (CP Railroad Alignment)



Kimley-Horn and Associates, Inc.

Figure 2-8: Existing Conditions - University Station Area



LEGEND

G-2 PHOTOS INCLUDED IN APPENDIX A

0 0.125 0.25 Miles

Kimley-Horn and Associates, Inc.

Figure 2-9: Population Density 2000

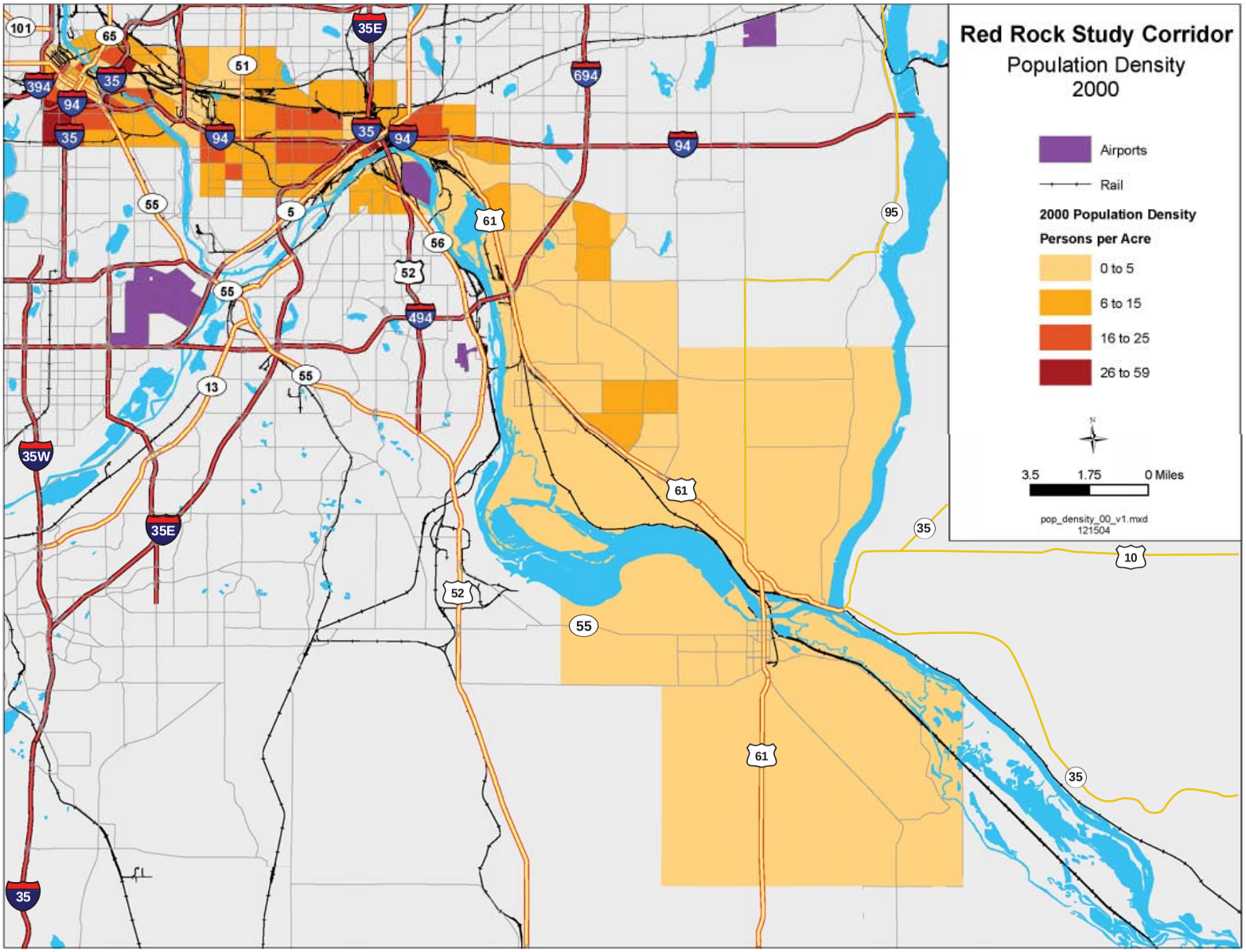


Figure 2-10: Projected 2030 Population Density

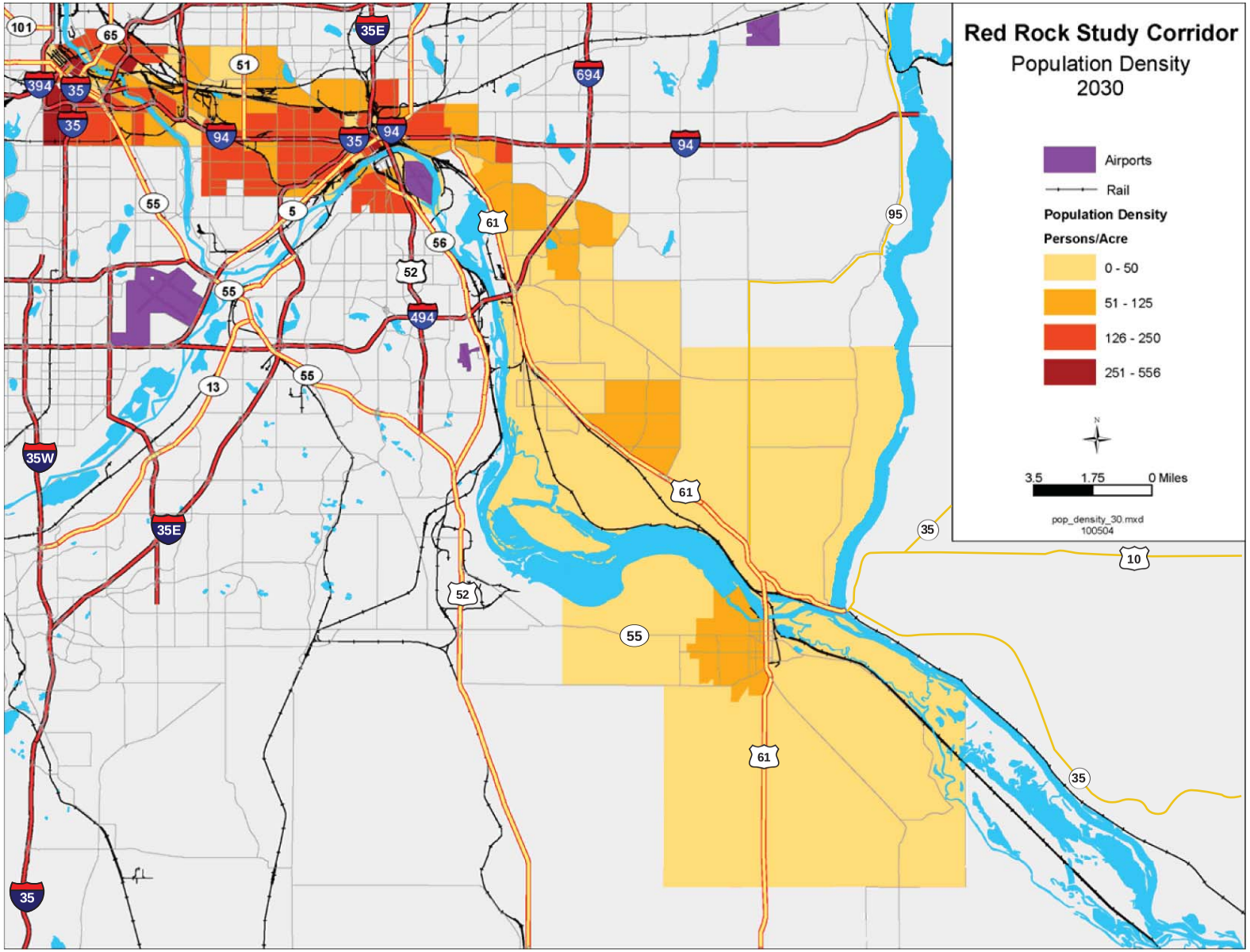
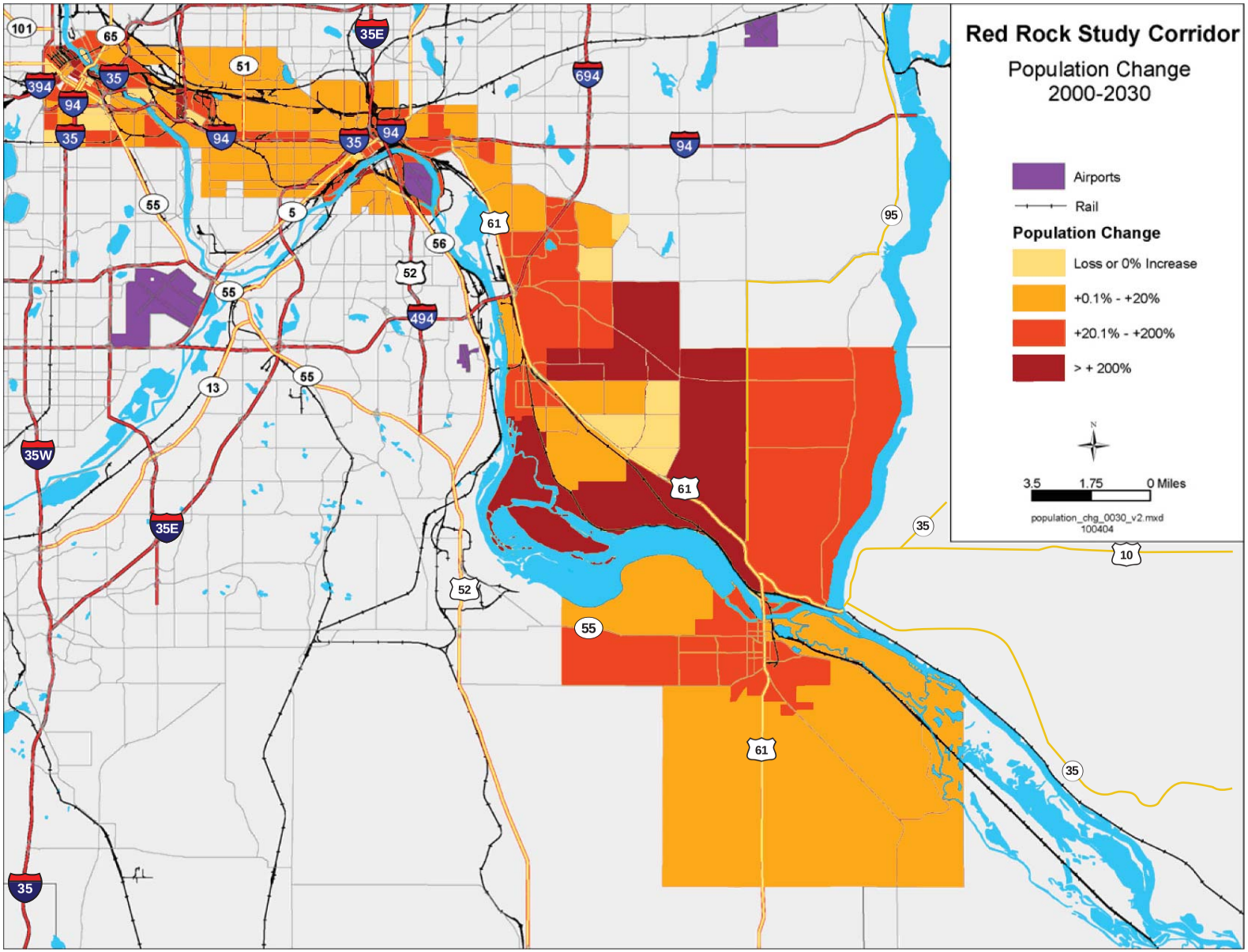
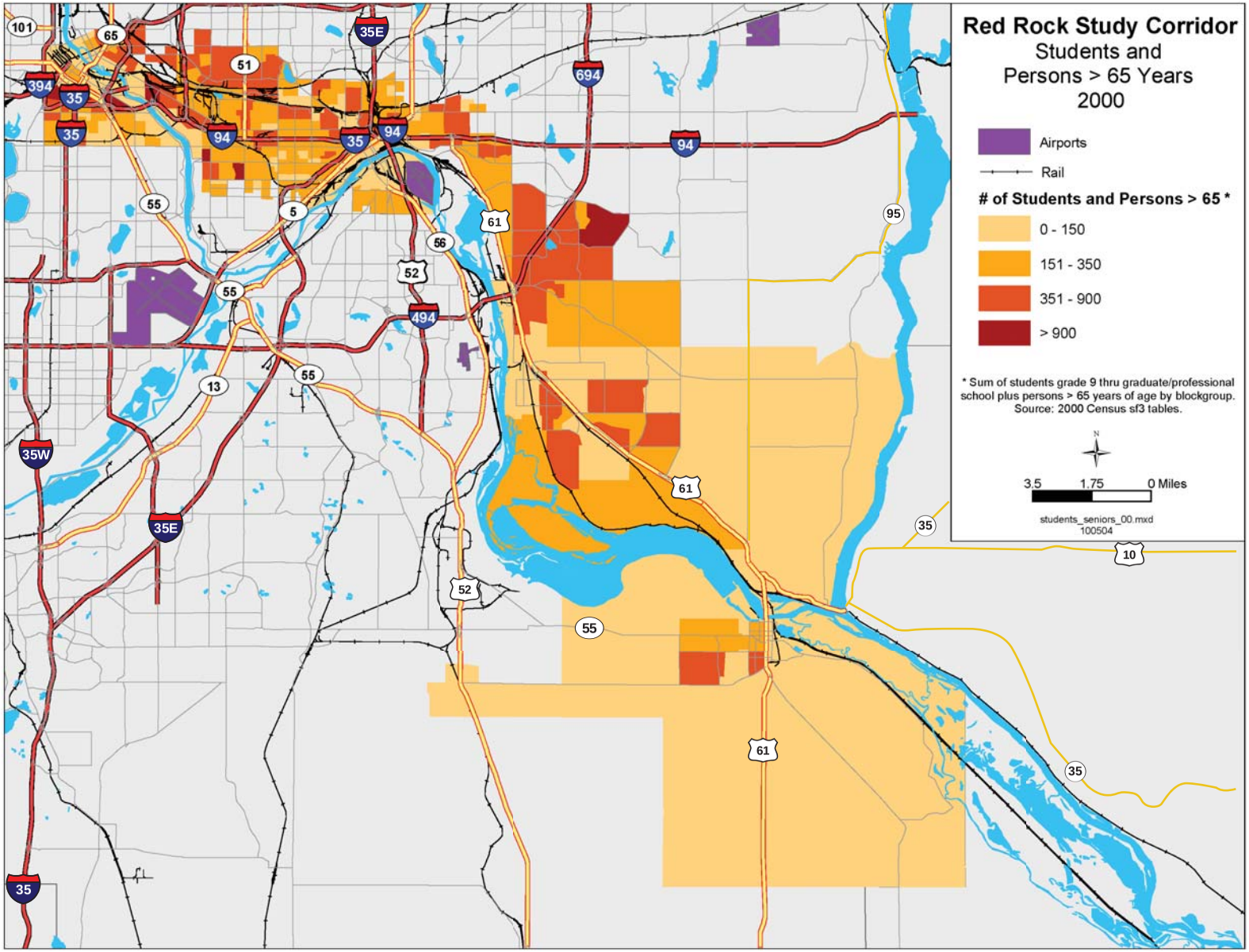


Figure 2-11: Projected Population Change 2000 to 2030



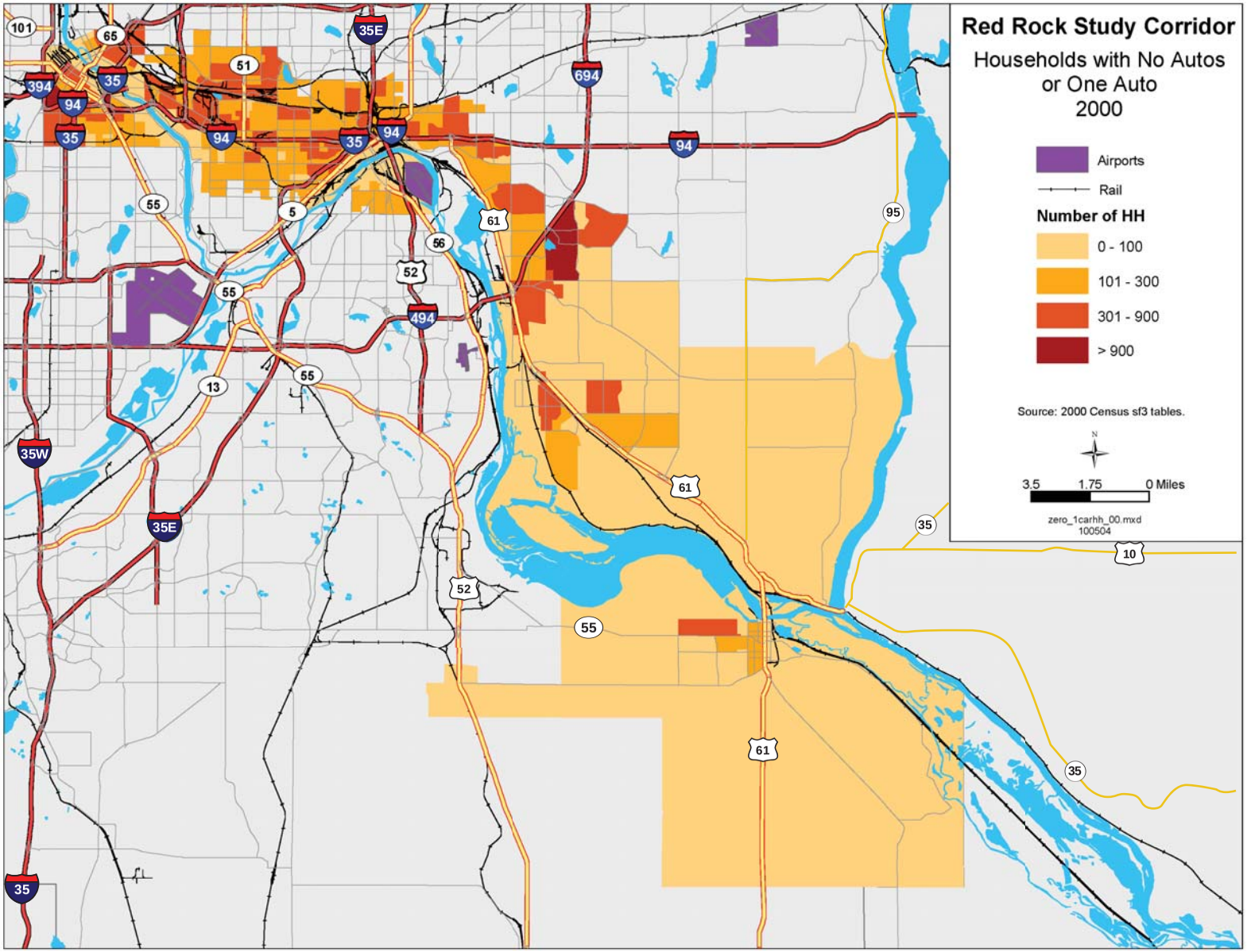
Kimley-Horn and Associates, Inc.

Figure 2-12: Students & Persons Greater Than 65 Years - 2000



Kimley-Horn and Associates, Inc.

Figure 2-13: Households with No Autos or One Auto - 2000



Kimley-Horn and Associates, Inc.

Figure 2-14: Persons with Disabilities (2000)

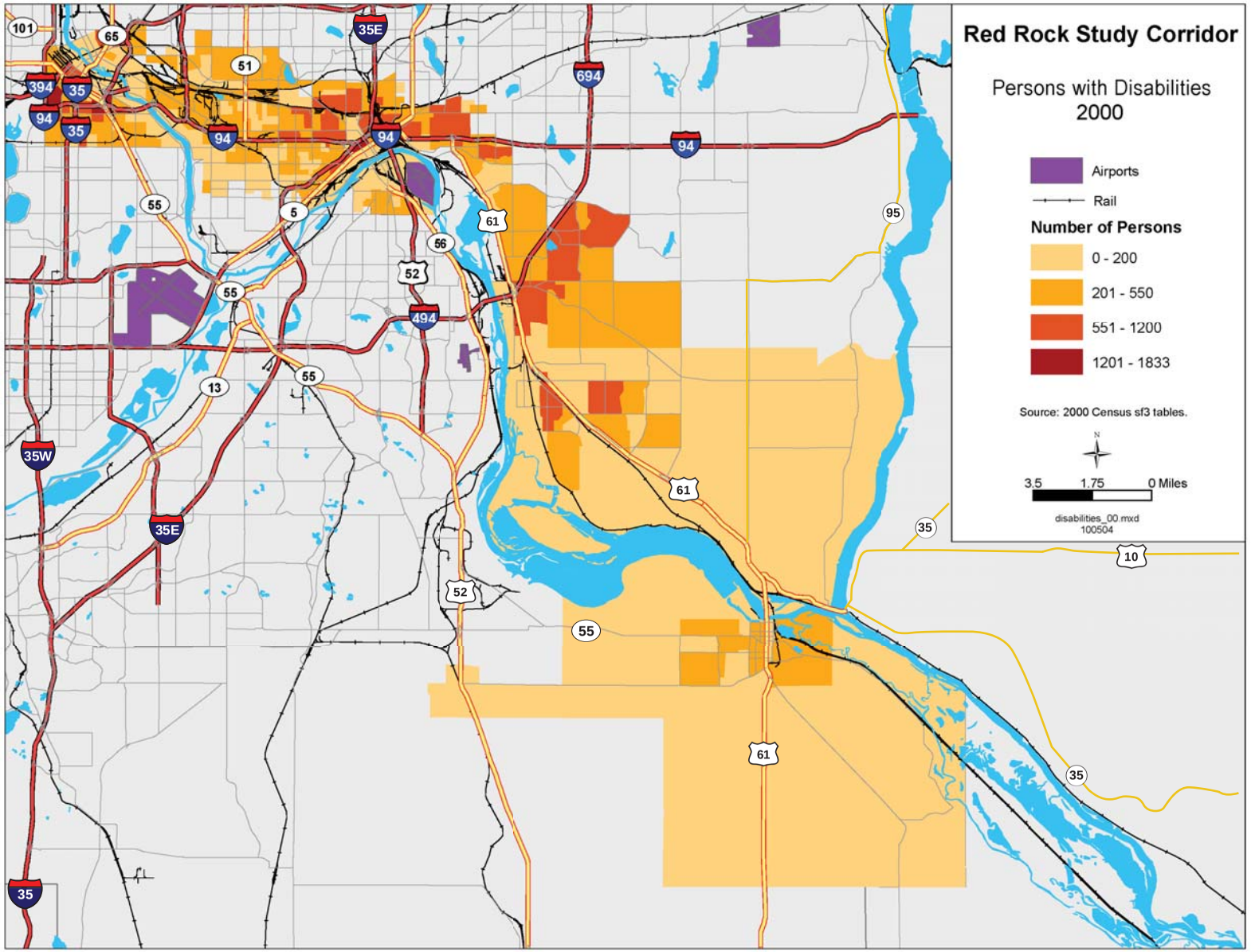


Figure 2-15: Families with Income Below Poverty Level 2000

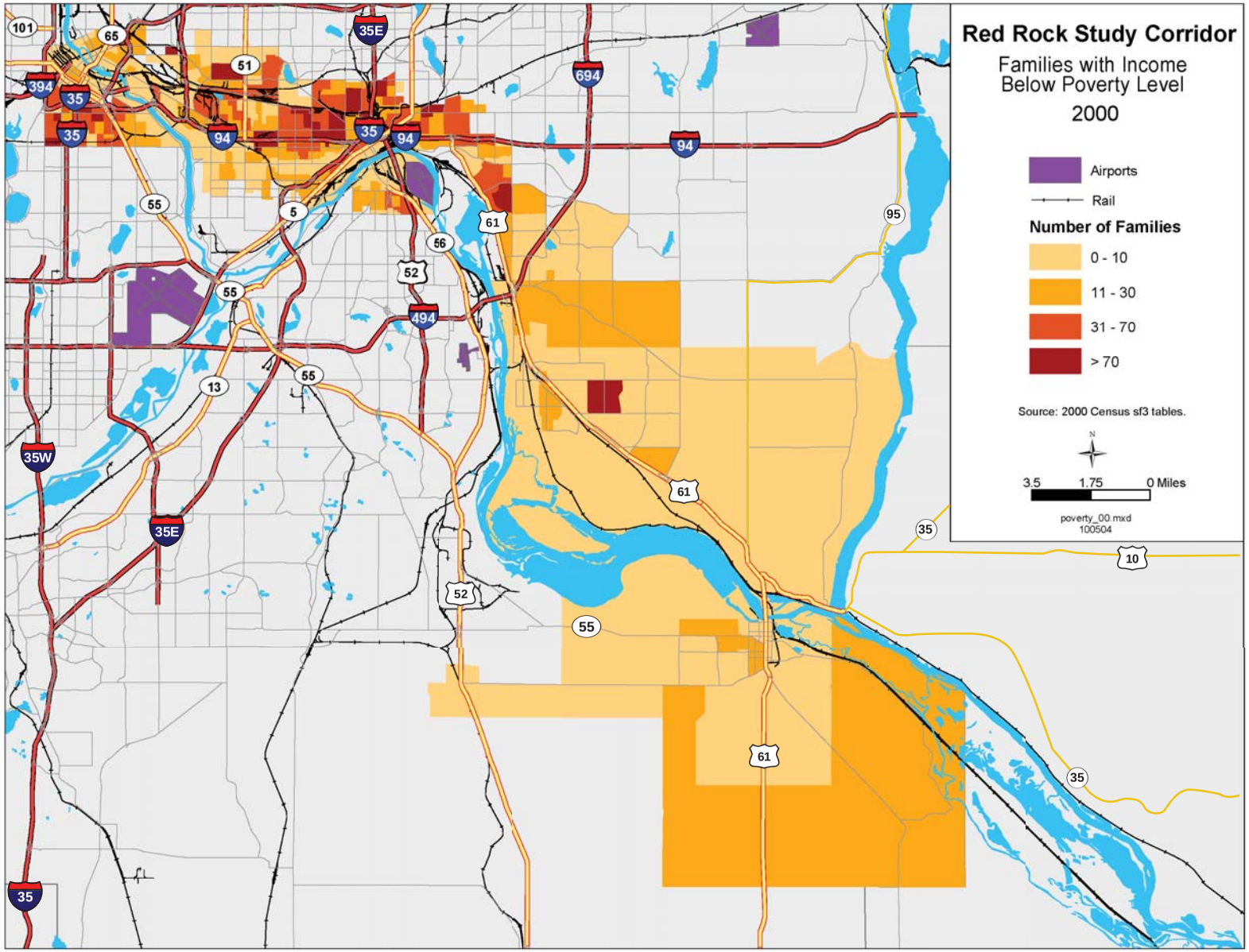


Figure 2-16: Employment Density 2000

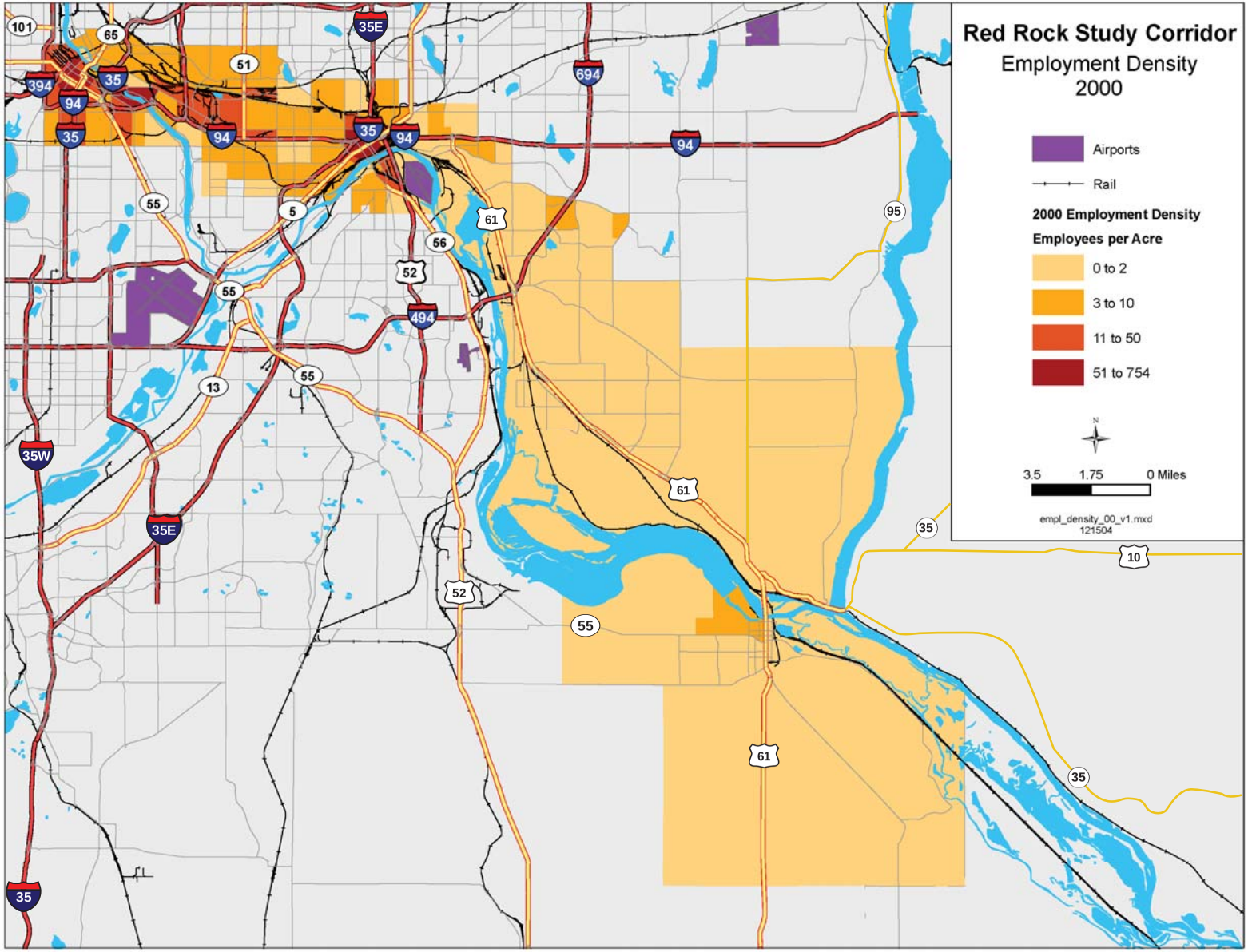


Figure 2-17: Employment Density 2030

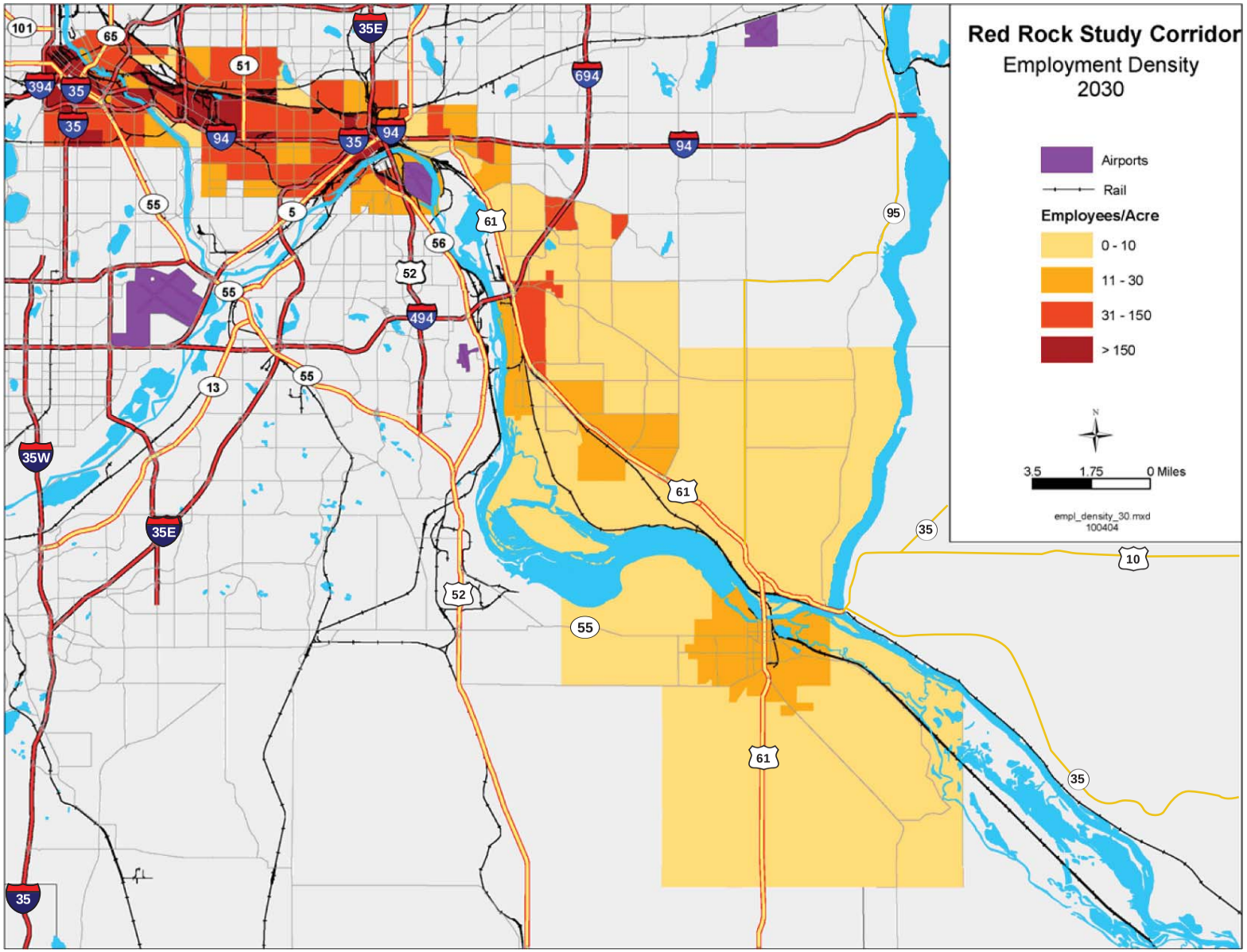


Figure 2-18: Projected Employment Change 2000-2030

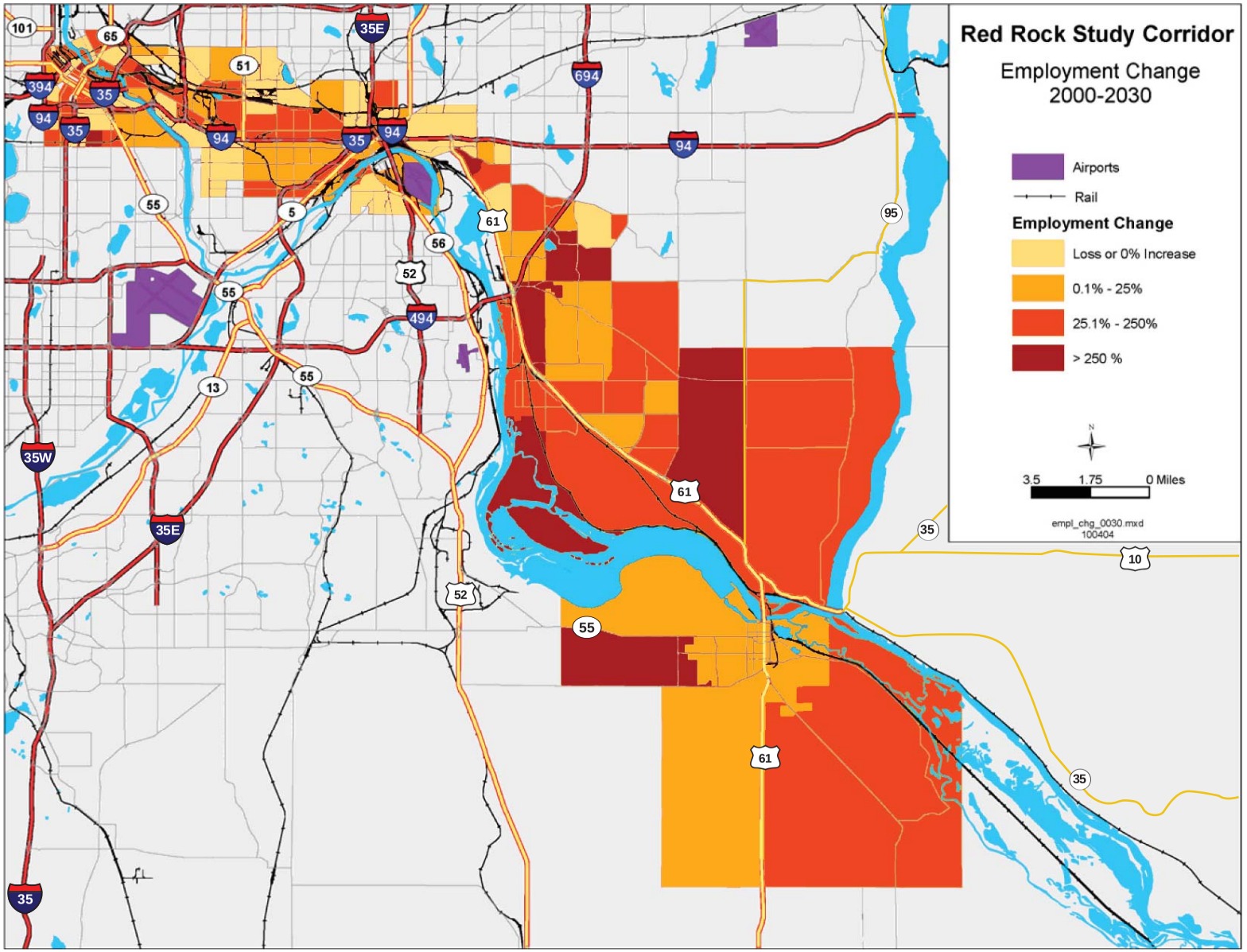


Figure 2-19: Existing Park-and-Ride Locations

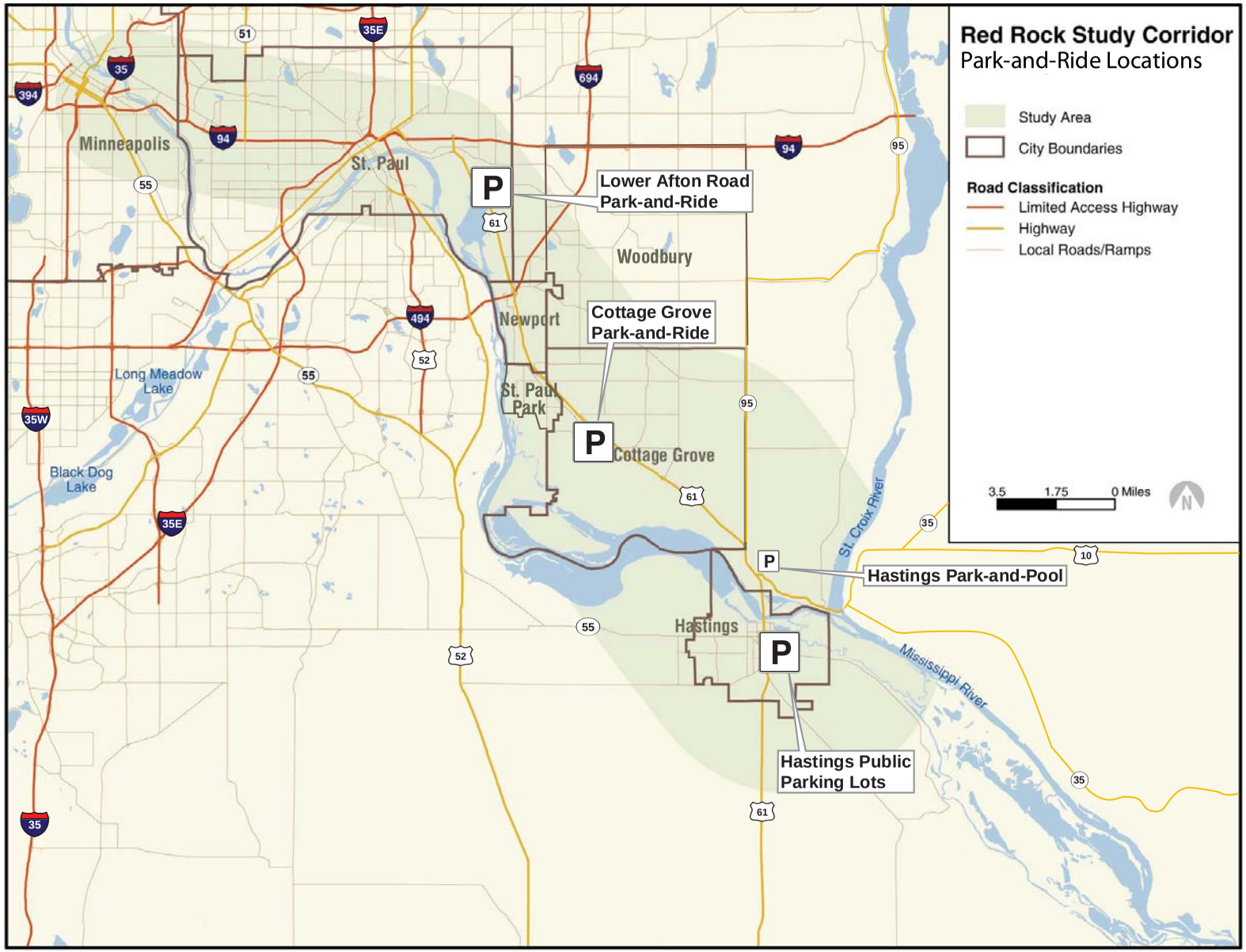


Figure 2-20: Downtown Hastings Parking



Figure 2-21: Existing Rail Facilities



3.0 REGIONAL SYSTEM

Graphics for Chapter 3.0 are included together at the end of this chapter.

3.1 Regional Planning Context

The Metropolitan Council's 2030 Regional Transportation Plan identifies the goals for the 2030 regional transit system for the Twin Cities Metropolitan Area as:

- Double current transit ridership by 2030
- Develop a network of transitways

The transitway development goal includes the advancement of an integrated network of dedicated transitways to provide a travel time advantage over single-occupant autos, improve transit service reliability, and boost the potential for transit-oriented development. The plan identifies Red Rock Corridor as a Tier 2 corridor, which means other projects in the region have undergone a higher level of analysis up to this point and will be considered first for funding (**Figure 3-1**).

3.2 Status of Area Projects

There are several transportation projects which have taken place within and in vicinity of the Red Rock corridor over the past ten years. In addition, various regional transit lines have been studied in the region, and have implications to the service and functionality of Red Rock corridor. A summary of these projects and studies, as well as a status update on each, is provided below.

Minnesota Union Depot

In 2002, Ramsey County Regional Railroad Authority (RCRRA) commissioned a study to evaluate potential locations for a multimodal transit facility in the downtown St. Paul area. The facility would serve as the major local and regional transit hub for the eastern metropolitan area, and would also provide for both a relocated Amtrak station and an eventual terminus for commuter trains and regional high-speed trains.

The initial phase of the study, completed in 2002, evaluated four alternative sites in the downtown St. Paul area which might accommodate such a facility. Based on the consideration of set transportation-related criteria, the Union Depot site (now referred to as the Minnesota Union Depot, or "the Depot") was selected as the preferred site for a multimodal terminal. Although the railroad tracks directly into the Depot were removed decades ago, the Depot is adjacent to UP, BNSF and CP tracks (**Figure 3-2**).

In November 2003, the *St. Paul Union Depot Analysis* was prepared for RCRRA (November 24, 2003, LTK Engineering Services). This study outlines a concept that shows how all of the modes planned to serve St. Paul could be accommodated and organized in a way that maximizes intermodal connectivity. Given that the timing of the introduction of various transit modes and corridors in the region is uncertain, the study recommends a phased approach to development of the terminal.

Status

Conceptual engineering and an environmental assessment on the Depot in downtown St. Paul is underway. This work will facilitate the first phase of the Depot project, which potentially includes Amtrak, Central Corridor LRT, intercity and local buses, and taxi service. The engineering and

environmental assessment will be completed in late 2007/early 2008, Ramsey County Regional Railroad Authority will take possession of the Depot concourse in 2010, and the Depot could open by 2012.

Central Corridor Light Rail Transit (CCLRT)

The 11-mile Central Corridor extends between downtown Minneapolis and downtown St. Paul, MN. A draft environmental impact statement (DEIS) was completed for the corridor in July 2004. The DEIS evaluated two build alternatives, including light rail transit (LRT) and busway/bus rapid transit (BRT) along University Avenue.

The potential impacts of each alternative were evaluated. A majority of the anticipated impacts fell under the social category, including land use, neighborhoods, and cultural resources. Hazardous materials and noise were the natural resource impacts anticipated to be of potential significance. The alternatives would also have significant impacts on roadway operations, parking, and utilities. At the end of the DEIS process, LRT was chosen as the preferred alternative.

Status

Preliminary engineering and final environmental review on the project began in summer 2007. Central Corridor light rail transit (CCLRT) is anticipated to be operational by 2014.

Northstar Commuter Rail

Preliminary engineering and environmental analysis on Northstar Corridor, an approximate 70-mile commuter rail line between downtown Minneapolis and Rice began in June 2000. A Draft EIS was prepared in October 2000, and a Final EIS was prepared in December 2002. The Final EIS identified a Minimum Operable Segment (MOS) of downtown Minneapolis to Big Lake, a distance of approximately 40 miles. This segment is referred to as Phase I of the project. Phase I will provide commuter rail service along existing BNSF track from downtown Minneapolis northwest to Big Lake. The downtown Minneapolis Intermodal Station will also provide connection to the existing Hiawatha LRT line and the future Central Corridor LRT line, in addition to the commuter rail alternative for Red Rock (see **Appendix B**). Phase I received funding and entered final design in fall 2006.

Status

Construction began on Phase I in 2007 and is anticipated to continue through 2009. The line from Minneapolis to Big Lake is anticipated to be open for service in late fall 2009. Phase II, which continues from Big Lake to the St. Cloud/Rice area, will be considered for future construction.

Midwest Regional Rail System

The Midwest Regional Rail Initiative (MWRRI) is a cooperative, multi-agency effort that began in 1996 and involves nine Midwest states (Indiana, Illinois, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin), as well as the Federal Railroad Administration and Amtrak. This initiative is an ongoing effort to develop an improved and expanded passenger rail system in the Midwest, focusing on connecting population centers via high-speed rail. Trains within the system would be capable of traveling up to 110 miles per hour on existing freight railroad rights-of-way. The system would be implemented in a hub and spoke system based out of Chicago.

Midwest Regional Rail would enter Minnesota at Le Cresent, with continued service to the Twin Cities. The system would use CP trackage and will cover approximately 150 miles in Minnesota. There would be

six new daily trains from the Twin Cities to Chicago, with a proposed travel time of 5.5 hours, a significant improvement over the existing single daily train with travel time of eight hours.

Status

The MWRRI is not currently funded. The proposed implementation plan reflects a ten-year phasing of corridor segments. According to the *Midwest Regional Rail System Executive Report* (September 2004, Transportation Management and Economics Systems in association with HNTB Corporation), the La Crosse, WI to Twin Cities segment is planned for revenue service nine years after receiving funding.

Wakota Bridge Project - Interstate 494/Highway 61

Construction of the Wakota Project began in 2002. The project includes reconstruction of I-494 between Concord Street in South St. Paul and Lake Road in Woodbury and the reconstruction of Highway 61 from the St. Paul Park Road interchange in St. Paul Park to Carver Avenue in St. Paul.

The signals on Highway 61 at 12th Street, Glen Road and 20th Street in Newport were replaced with an interchange near Glen Road. The existing signal at Carver Avenue in St. Paul was removed and replaced with a right-out only for Carver Avenue to northbound Highway 61 traffic. The other movements at the former Carver Avenue intersection are provided via Point Douglas Road to the Highway 61 interchange at the Maxwell Avenue/Bailey Road connection north of I-494. The improvements along Highway 61 upgraded it from a signalized arterial to a freeway type facility.

Status

The project is replacing the original Wakota Bridge, which was built in 1959, and providing two new river crossing bridges (one for eastbound I-494, one for westbound I-494) that will have five lanes in each direction. The westbound bridge opened to traffic in the fall of 2006 and currently carries three lanes in each direction. The old bridge removal was completed in 2007. Construction of the westbound bridge will start in 2008 and be completed by the fall of 2010. Further information on the Wakota Project is available on the project website (http://www.dot.state.mn.us/metro/projects/wakota/index.html).

Hastings Bridge Study

The Highway 61 Bridge spanning the Mississippi River at Hastings was opened in 1951. It carries two lanes over the river for a distance of approximately 1,800 feet, connecting a four-lane expressway with a four-lane arterial in downtown Hastings. The age and limited capacity of the bridge, which carried an average daily traffic county of 30,500 vehicles in 2002, has prompted discussion of its possible replacement.

Status

An in-depth inspection of the Hastings Bridge is underway and is expected to be completed by mid-September 2007, weather permitting. Mn/DOT will consider recommendations set forth in this study and will identify next steps in the maintenance or replacement of the bridge.

3.3 System Connectivity

In addition to service within the study area, the proposed Red Rock Corridor project would provide a link to other portions of the metropolitan area through connections with other transit systems.

Preliminary engineering is currently underway for Central Corridor, which will serve the area between downtown St. Paul and downtown Minneapolis. Central Corridor LRT is anticipated to be operational by 2014. Red Rock users could continue service through to Minneapolis and other areas (i.e. Midway area and the University of Minnesota) by transferring to Central Corridor LRT at the Minnesota Union Depot.

Red Rock users will also have the option of transferring to the Northstar Corridor Rail Project or Hiawatha LRT at the Downtown Minneapolis Intermodal Station. Northstar will provide commuter rail from downtown Minneapolis northwest to Big Lake, and is set to open in late fall 2009. The Hiawatha Light Rail line, already in service and extending southeast from downtown Minneapolis to the Mall of America, would provide a connecting link from the Red Rock Corridor to jobs at Minneapolis-St. Paul International Airport and the Mall of America.

Figure 3-3 schematically shows how transit within the Red Rock Corridor would provide connectivity to the Hiawatha Light Rail, Central Corridor Light Rail, and the Northstar project. By connecting with the three rail lines the services complement each other by extending transit between the airport, both downtowns, and locations both northwest and southeast of the Twin Cities.

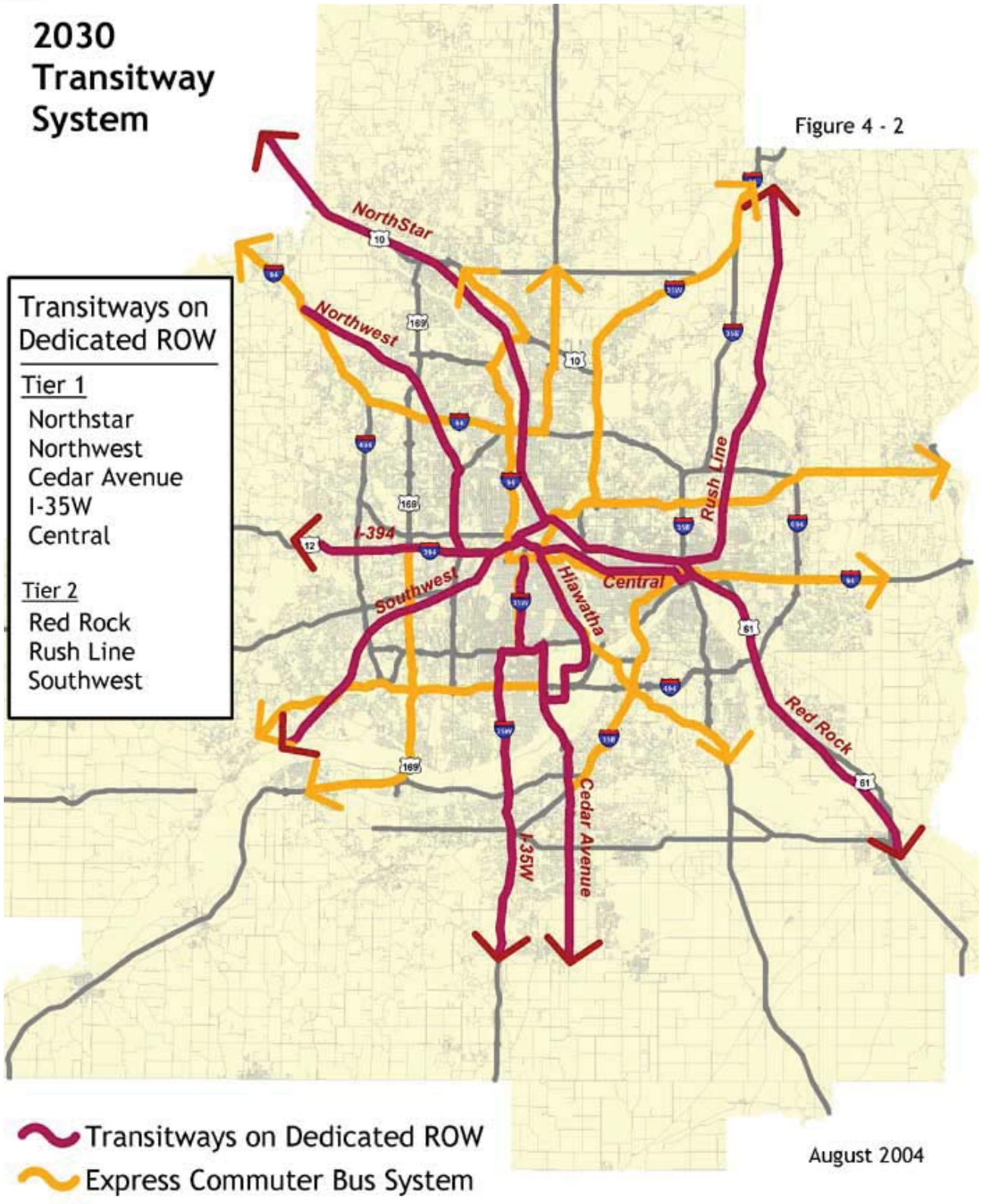

2030
Transitway
System
Figure 4 - 2
Transitways on
Dedicated ROW
Tier 1
Northstar
Northwest
Cedar Avenue
I-35W
Central
Tier 2
Red Rock
Rush Line
Southwest
NorthStar
Northwest
I-394
Southwest
Hiawatha
Central
Rush Line
Red Rock
Cedar Avenue
I-35W
Transitways on Dedicated ROW
Express Commuter Bus System
August 2004

Figure 3-2: Rail Alignments in Downtown St. Paul

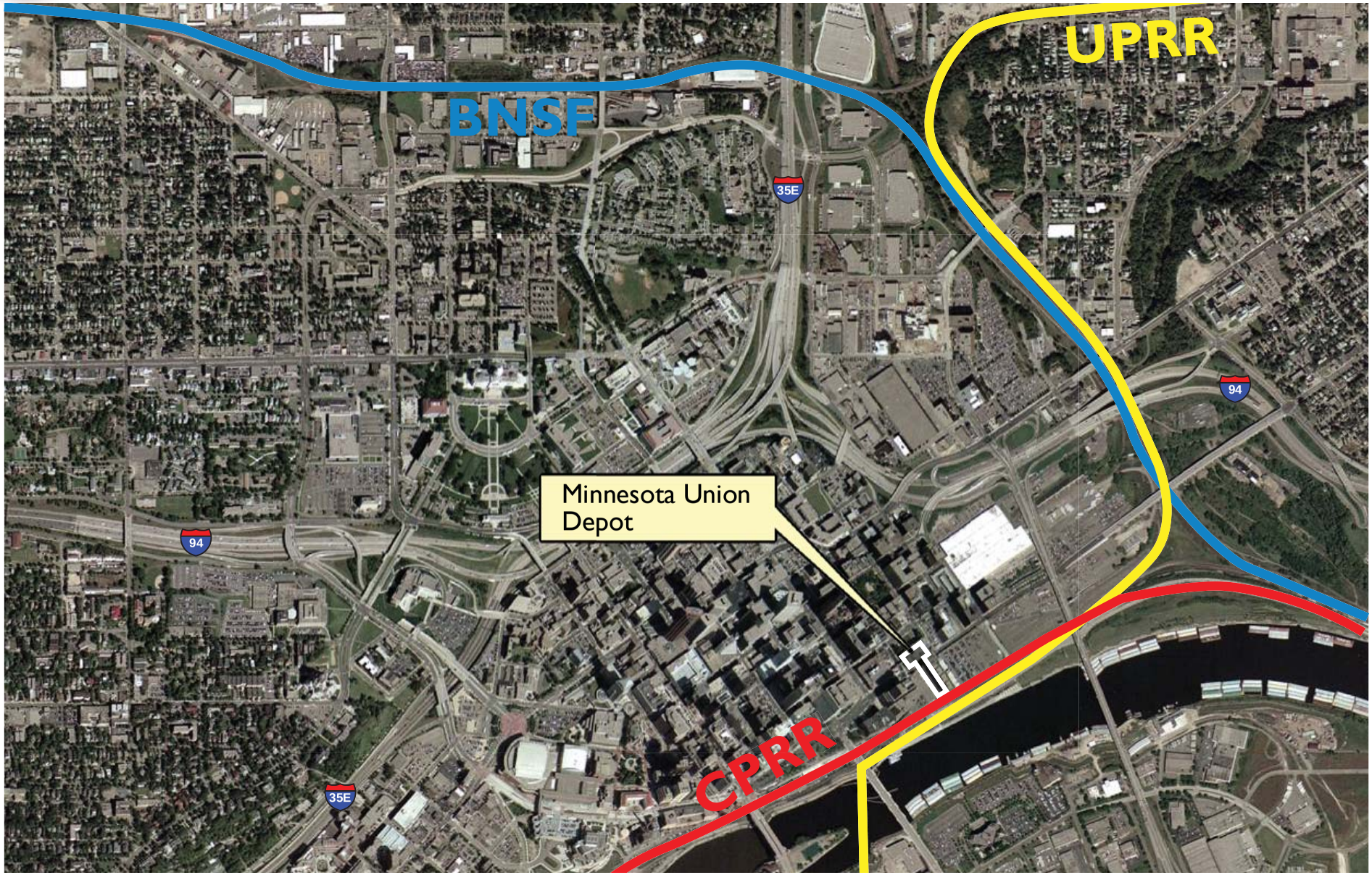
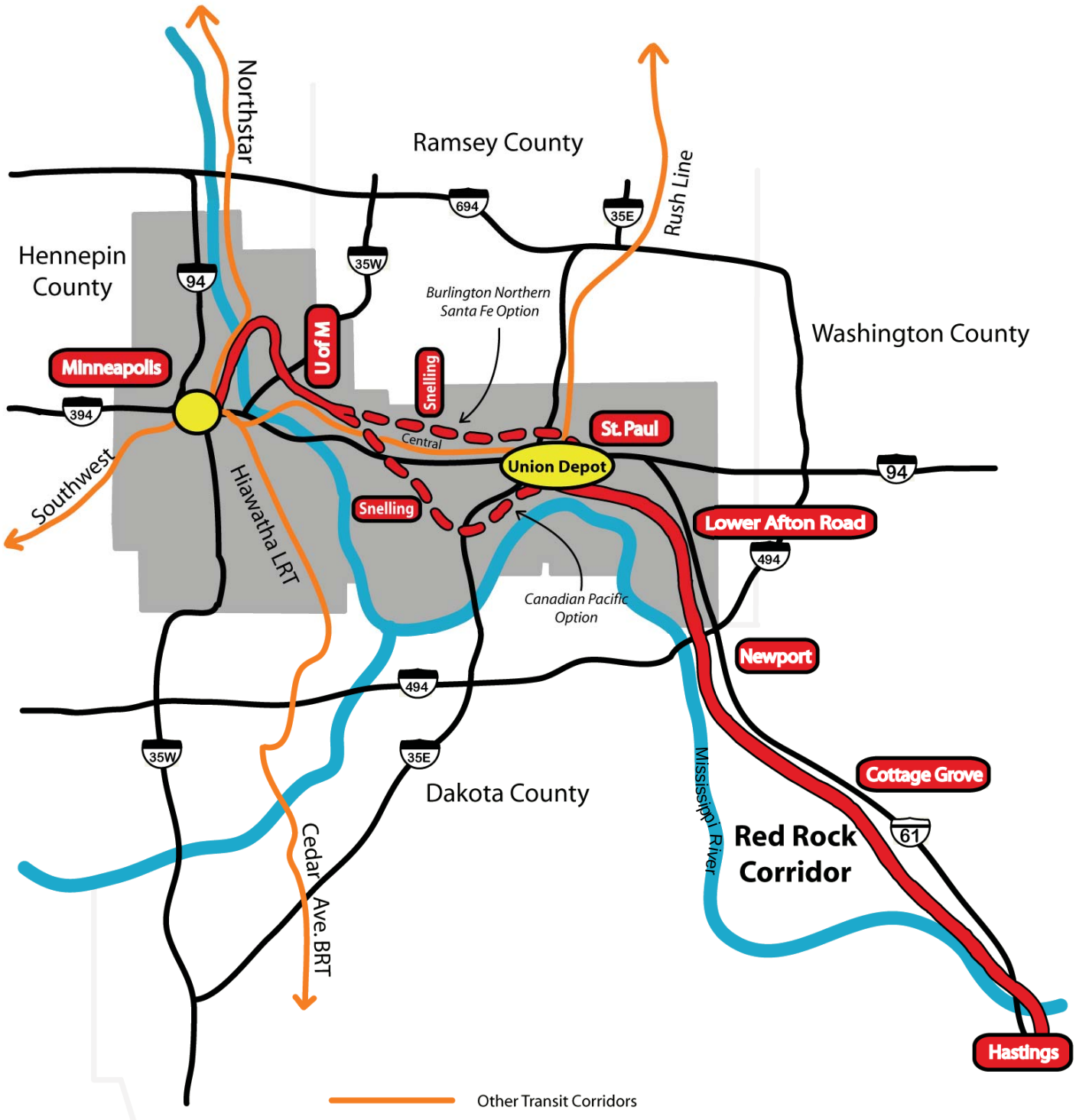


Figure 3-3: Regional System Connectivity



4.0 PURPOSE AND NEED FOR THE PROJECT

4.1 Need for Transportation Improvements

The project is needed to provide travelers with a choice and a means to avoid congestion and reduce travel time in the corridor, as well as to provide more modal options and increase mobility for peak-hour travel to employment in the study area.

Highway 61 is the principal arterial serving the study area. The Metropolitan Council projections for 2030 show the entire length of Highway 61 in the study area as a congested corridor. The existing bus service to two park-and-ride facilities is equally affected by congestion on Highway 61 and I-94. No transit alternative is currently available from Hastings to the Twin Cities.

Because of job growth in Minneapolis and St. Paul, increased mobility and greater access to employment is needed for both downtowns. The project should also provide system connectivity to increase transit destinations for persons using existing and planned transit systems in the Twin Cities area. In addition, providing access and transit connections to study area universities is also important.

The Purpose and Need statement establishes the conditions and problems in the study area that must be addressed in the analysis. It also serves as the basis for developing project goals and objectives, and takes the first step in creating evaluation measures to determine which alternatives should be considered as reasonable options for meeting the needs of the study area.

4.2 Project Goals and Objectives

The goals and objectives presented are based on FTA guidance and requirements for conducting transportation AA studies, as well as the study team's current understanding of the issues in the study area and throughout the Metro region (*note: although the Red Rock AA did not follow the FTA process, the defined goals and objectives set forth by FTA for AA evaluations accurately reflected the overall goals and objectives of the project, and hence were incorporated into the analysis*). Input received during initial public meetings and from the Red Rock TAC was also considered. In addition, goals and objectives are based on sensitivity to local issues and context, and are for use in community relations, public outreach, and the public involvement process.

The establishment of project goals and objectives articulates the desired end-state of whatever transportation investment results from the AA. It also drives the definition of the evaluation measures and quantitative and qualitative criteria to be used in comparing the performance of the alternatives with respect to these measures/criteria. Typically, evaluation measures are selected to assess how well each alternative meets the goals and objectives defined for a transportation improvement in a corridor or study area.

FTA guidance[1] recommends that goals, objectives, and measures should include the following common categories:

- **Effectiveness**—the extents to which alternatives solve the stated transportation problems in the corridor.
- **Impacts**—the extent to which the alternatives impact, positively or negatively, nearby natural resources and neighborhoods, air quality, the adjacent transportation network and facilities, land use, the local economy, etc.
- **Cost-effectiveness**—the extent to which the costs of the alternatives are commensurate with their benefits.
- **Financial feasibility**—the extent that funds required to build and operate the alternatives is likely to be available.
- **Equity**—the extent to which costs and benefits of the alternatives are distributed fairly across different population groups.

Given the issues in the study area, the RRCC recognizes that transportation alternatives need to be developed to address existing and emerging transportation needs while facilitating the projected growth. The set of specific goals and objectives has been developed to serve as a framework for the study and to help the Red Rock Corridor Commission and others compare and evaluate alternate transit technologies, alignments, and other transportation alternatives.

Based on the needs of the corridor identified in the purpose of and need statement for the project, the goals and objectives are shown in **Table 4.1**. The goals are divided into five major categories, each with measurable objectives.

[1] U.S. Department of Transportation, Federal Transit Administration, *Additional Guidance on Local Initiation of Alternatives Analysis Planning Studies, 2003.*

Table 4.1 – Goals and Objectives for the Red Rock Corridor

GOALS	OBJECTIVES
Cost Effectively Address Transportation Problems in the Corridor	▪ Increase connectivity and access from population centers to employment concentrations in both downtown St. Paul and Minneapolis. ▪ Increase connectivity and access to educational opportunities in the corridor (including the University of Minnesota). ▪ Mitigate the growing vehicular congestion problem in the corridor by providing viable alternatives to the private automobile. ▪ Provide acceptable benefit-cost ratio and competitive transportation system user benefits.
Provide Mode Choice to People in the Corridor	▪ Provide a transit option which is time and cost competitive to the private automobile.
Stimulate Community and Economic Development	▪ Support local initiatives to create higher density housing and mixed-use commercial/retail areas. ▪ Support a vibrant business community by increasing access for workers and customers to businesses in the corridor.
Enhance Regional Transit System Performance	▪ Increase capacity and transit ridership in the Red Rock Corridor and in the regional transit systems. ▪ Provide connectivity among transit services including the existing Hiawatha Corridor and the proposed Northstar and Central Corridors, expanding the destinations transit users can access. ▪ Decrease congestion in the study corridor (measured by total travel time for the transportation system made up of both the transit mode and the parallel highway facilities). ▪ Provide compatibility with existing and planned transit system infrastructure in the Twin Cities metropolitan area.
Improve Quality of Natural and Manufactured Environment	▪ Limit adverse impacts to natural, cultural, and other resources in the study area. ▪ Support environmental benefits, including reduced emissions. ▪ Reduce reliance on automobile travel by providing a transit choice, including a choice for the transit-dependent population. ▪ Provide a fair and equitable distribution of impacts and benefits across the various population groups in the study area.
Financially Feasible	▪ Implement a system for which the capital costs are likely to be available. ▪ Implement a sustainable system for which the operating and maintenance costs are likely to be available both through fare-box revenues and locally available financing.

5.0 ALTERNATIVES EVALUATION PROCESS

Graphics for Chapter 5.0 are included together at the end of this chapter.

5.1 Overview of Screening Evaluation Process

The purpose of the screening process is to reduce the list of *all* possible alternatives to those that initially seem reasonable or feasible for the specific study area. For example, in an area with cold temperatures and an active water source (lake, river), a water taxi or ferry option would be eliminated immediately as not being reasonable or feasible since the water source would freeze. Sufficient options and alternatives must be selected to ensure that decision makers are provided with all the information they need to make an informed decision, but providing too many options increases confusion and study costs. The screening process is necessary to identify and screen alternatives and assure that the goals and objectives of the project are met.

There are two parts to the evaluation methodology at this stage of the evaluation, namely technology and alignment options. In this first level of screening, various alignments and technologies are evaluated for fatal flaws on a qualitative basis rather than quantitative basis. As the screening process progresses into the next stage, more detailed information will be developed and more analytical measures applied (e.g. ridership forecasts, capital and operating cost estimates).

The following sections detail the Red Rock Corridor alignment and technology screening processes. This analysis applies limited measures of evaluation to all alignments and technologies to eliminate unfeasible options from further consideration. In addition, alternatives that offered little or no opportunity to meet the goals and objectives of the study were also eliminated.

5.1.1 Technology Screening

The screening criteria established for this level of screening is qualitative. These measures are used to narrow the universe of technology options to a number that can be combined with alignments and then be further developed and studied during later phases on a quantitative level. The criteria used for this level of screening are based on the goals and objectives described in previous sections, as well as requirements established by FTA. **Table 5.1** outlines the technology screening criteria, and **Table 5.2** summarizes the results of the initial Red Rock Corridor screening process. **Appendix C** provides details on the various technology options and more detail on how the screening criteria relate to each.

Table 5.1– Technology Screening Criteria

Criteria	Description
Proven Technology	The technology has been designed and fully implemented and is a known entity with a history that can be researched and studied.
Financial Feasibility	Cost associated with full implementation of appropriate technology. To what extent would there be sufficient funding to support this technology?
Compatibility with Existing Infrastructure	The alternative must be compatible with existing transportation systems and not require massive retrofit of existing infrastructure.
Compatibility with Travel Demand Patterns	Suitability of using the technology to address the travel requirements of travelers in the corridor.

Table 5.2 – Technology Screening Results

Modes	Screening Criteria				Explanation	Recommend to Detailed Alternatives
	Proven Technologies	Financial Feasibility	Compatibility with Existing Infrastructure	Compatibility with Travel Demand Patterns		
Commuter Rail	Pass	Pass	Pass	Pass	Recommend moving to detailed screening.	**Yes**
Heavy Rail	Pass	Fail	Fail	Partial	Cost prohibitive and no heavy rail systems exist in the area.	No
High-Speed Rail	Pass	Fail	Partial	Fail	High Speed rail is intended to serve the regional passenger market, not commuter patterns.	No *
Streetcar	Pass	Partial	Partial	Fail	Limited station spacing will not serve the needs of the corridor. Limited speed and availability of required ROW would not be appropriate for streetcar service.	No
Light Rail Transit (LRT)	Pass	Pass	Pass	Pass	Recommend moving to detailed screening.	**Yes ***
Bus Rapid Transit (BRT)	Pass	Pass	Pass	Pass	Recommend moving to detailed screening.	**Yes***
Commuter Bus	Pass	Pass	Pass	Pass	Considered in no-build and baseline alternatives. Recommend moving to detailed screening.	**Yes**
Local Bus	Pass	Pass	Pass	Partial	Considered in no-build and baseline alternatives. Recommend moving to detailed screening.	**Yes**
Maglev	Partial	Fail	Fail	Fail	Limited station spacing, unproven in winter weather, and not compatible with existing systems.	No
Automated Guideway Transit (AGT)/ Monorail	Pass	Fail	Fail	Partial	The cost of AGT/Monorail parallel infrastructure would be cost prohibitive, and no heavy rail system exists in the area.	No
Personal Rapid Transit/ Group Rapid Transit	Fail	Pass	Pass	Fail	Only prototype PRT systems exist in the U.S.; therefore, there is no PRT/GRT system in the study area.	No
Ferry	Pass	Fail	Fail	Pass	Winter weather, flooding, and lock schedules would limit system reliability. In addition, there is no access to any port facilities and any location of facilities would be poor in comparison to the highway network.	No
Air	Pass	Fail	Fail	Fail	There are no local commuter air facilities that would serve the corridor including downtown Minneapolis and downtown St. Paul Area	No

** The results of the initial screening reflect technology related decisions reached in 2004. As noted in the project history section, the Red Rock Corridor project was delayed due to revisions to the regional travel demand model. Since 2004, other regional initiatives have progressed, including the advancement of high-speed rail in the region. Although high-speed rail is not a part of this particular study, the potential improvements that would be required to accommodate high-speed rail would benefit the Red Rock Corridor from a capital perspective. LRT and BRT were also later screened during Phase II of the analysis to reflect changing conditions in the Central Corridor and TH 61.*

The initial project screening process conducted in 2004 for the Red Rock Corridor project resulted in the recommendation to carry the following technologies/modes forward into the next stage of the screening process.

- Commuter Rail
- Light Rail Transit
- Bus Rapid Transit
- Commuter (Express) Bus
- Local Bus

5.1.2 Alignment Screening

The objectives used in initial screening of the route alignments were:

- Access to major employment and residential centers
- Connections to other transit facilities
- Access to major educational centers
- Support for transit-oriented residential and commercial development.

From these objectives, more specific first level screening criteria were established to review alignments for the Red Rock Corridor. At the first screening level, these criteria do not encompass the full range of objectives to be considered in the corridor, but rather, cover those objectives which are important to addressing the needs for the project and are easily evaluated from the information developed previously for the corridor. This approach is used to minimize the amount of data and analysis collected for alternatives which have fatal flaws and can be readily identified as being infeasible to implement in the Red Rock Corridor. **Table 5.3** outlines these screening criteria and the results of the initial alignment screening process are summarized in **Table 5.4**.

Table 5.3 – Alignment Screening Criteria

Criteria	Description
Access	Proximity to businesses, residents, and other modes of transportation
Reliability	The ability to rely on a transportation option in terms of schedule and travel time
Availability of Right-of-Way (ROW)	Right-of-way must be available in order to consider the alignment; insufficient right-of-way will eliminate the alignment.

One additional criterion applicable to the Red Rock Corridor is significant geographic constraints. A large portion of the corridor, from north of Cottage Grove to Downtown St Paul is located in a fairly narrow area between a steep bluff and the Mississippi River. When applying the geographic limitations to the defined area of the corridor, the alignment options are limited to the Mississippi River, two railroad alignments (BNSF and CP), and TH 61 continuing onto I-94. Of these options, the railroad alignments can be configured into several similar options through switching operations. **Figures 5-1 to 5-3** show each of these alignment alternatives, including the railroad options potentially available using various combinations of CP and BNSF rail infrastructure.

When applying the screening criteria to these alignments, one option—the river—can be eliminated as being infeasible at this point. In winter, a river alignment is essentially unusable and, therefore, can not provide the reliable service that is an absolute requirement in meeting the transportation needs of the corridor. Therefore, the following alignment alternatives are recommended to move into the more detailed alternatives definition process in the next phase:

- Railroad (both BNSF and CP)
- Trunk Highway 61 continuing onto I-94

5.1.3 Summary of Initial Screening Process

From this initial screening process, technology and alignment alternatives were identified that have the potential to meet the goals and objectives of the study developed from the needs of the corridor. A broad range of strategies were explored and narrowed to a smaller list, which meet qualitative criteria incorporated in the purpose and need statement. The transit technologies and alignments recommended for further study were considered to be all those that have the potential to meet the needs of the corridor based on the level of information known at that time, and therefore justify further development to provide more quantitative data that can be used in evaluating their effectiveness.

Based on the initial screening process conducted in 2004 for the project, commuter rail, light rail, bus rapid transit, commuter (express) bus, and local bus were carried forward as potential technology alternatives, and alignment alternatives along the BNSF and CP railroad and also TH 61 and I-94 were be moved forward for further consideration. Combinations of these technologies and alignments were formed in the next phase of the study to develop detailed alternatives for more intense quantitative analysis.

5.1.4 Screening Process, Phase II

Following the initial screening process, resulting in the conclusions presented in section 5.1.3, the Red Rock Corridor project was put on hold for over a year. During that time, the regional travel demand model was revised, and subsequently approved by the FTA. Additionally, advancements to the Northstar Corridor project, the Central Corridor project, and improvements to TH 61 were made that have both direct and indirect impacts to the Red Rock Corridor project and alternatives that are considered feasible for further study and implementation.

During Phase II, BRT as defined for this study (e.g. exclusive right of way, signal priority, level boarding, station platforms, etc.) was screened from further analysis as it was determined that right-of-way limitations required to provide an exclusive travel lane in the corridor; would make this alternative cost-

prohibitive. To maximize transit ridership, while managing the investment to efficiently operate shoulder running buses in the corridor, the decision was made to define express bus service as an alternative for further consideration. With regard to LRT, it too was screened from further analysis in the Red Rock Corridor, given that that density levels in the corridor are not at a level sufficient to make LRT a cost-effective transit alternative. Additionally, the LRT alignment in the TH 61 right-of-way would present both construction/capital and operational challenges without yielding the level of ridership sufficient to justify the cost.

Following the restart of the Red Rock project in September 2006, one of the first tasks completed was a transit ridership corridor validation exercise with the new regional model. Based on the existing and forecast transit ridership in the corridor, it was determined that transit technology alternatives to be carried forward for more detailed evaluation could be screened to commuter rail, express bus, and local bus service. Commuter rail alternative alignments included both the CP and BNSF alignments between downtown St. Paul and Minneapolis. Express bus alignment alternatives were also carried forward on both TH 61 and I-94.

Preliminary station locations were also identified that were consistent with the original findings from the feasibility study as well as sites that reflected the local communities preference. Station locations evaluated in the ridership, capital, and operating plans included the following:

- Hastings
- Cottage Grove
- Newport
- Lower Afton Road
- Minnesota Union Depot
- Snelling Avenue (BNSF alignment)
- Snelling Avenue (CP alignment)
- University of Minnesota
- Minneapolis Intermodal Station

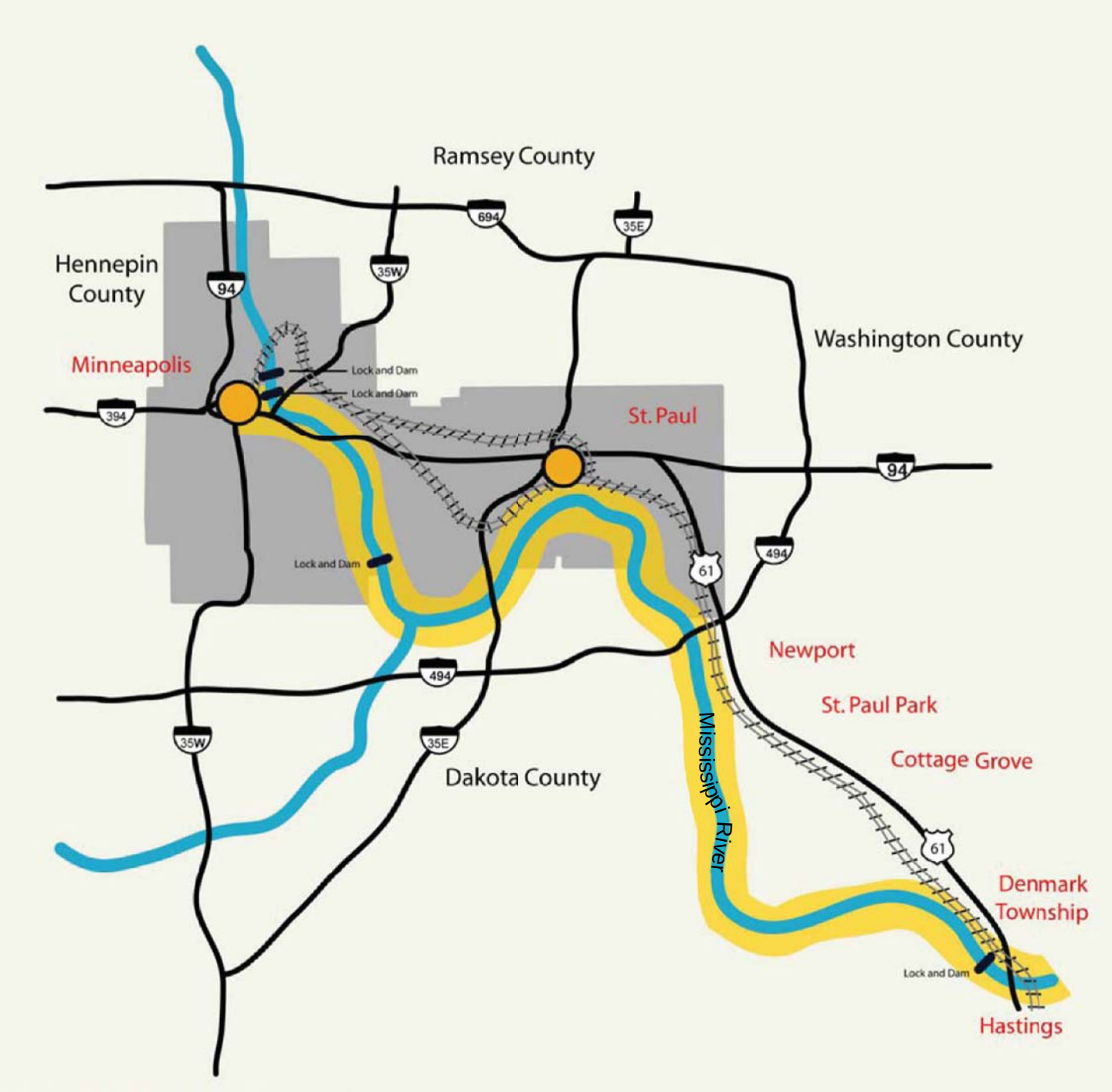
The specific location for each of the identified stations remains flexible and may change in the future based on development or redevelopment plans in each community. However, for commuter rail to operate in an efficient manner, stations will not be spaced closer than three miles apart.

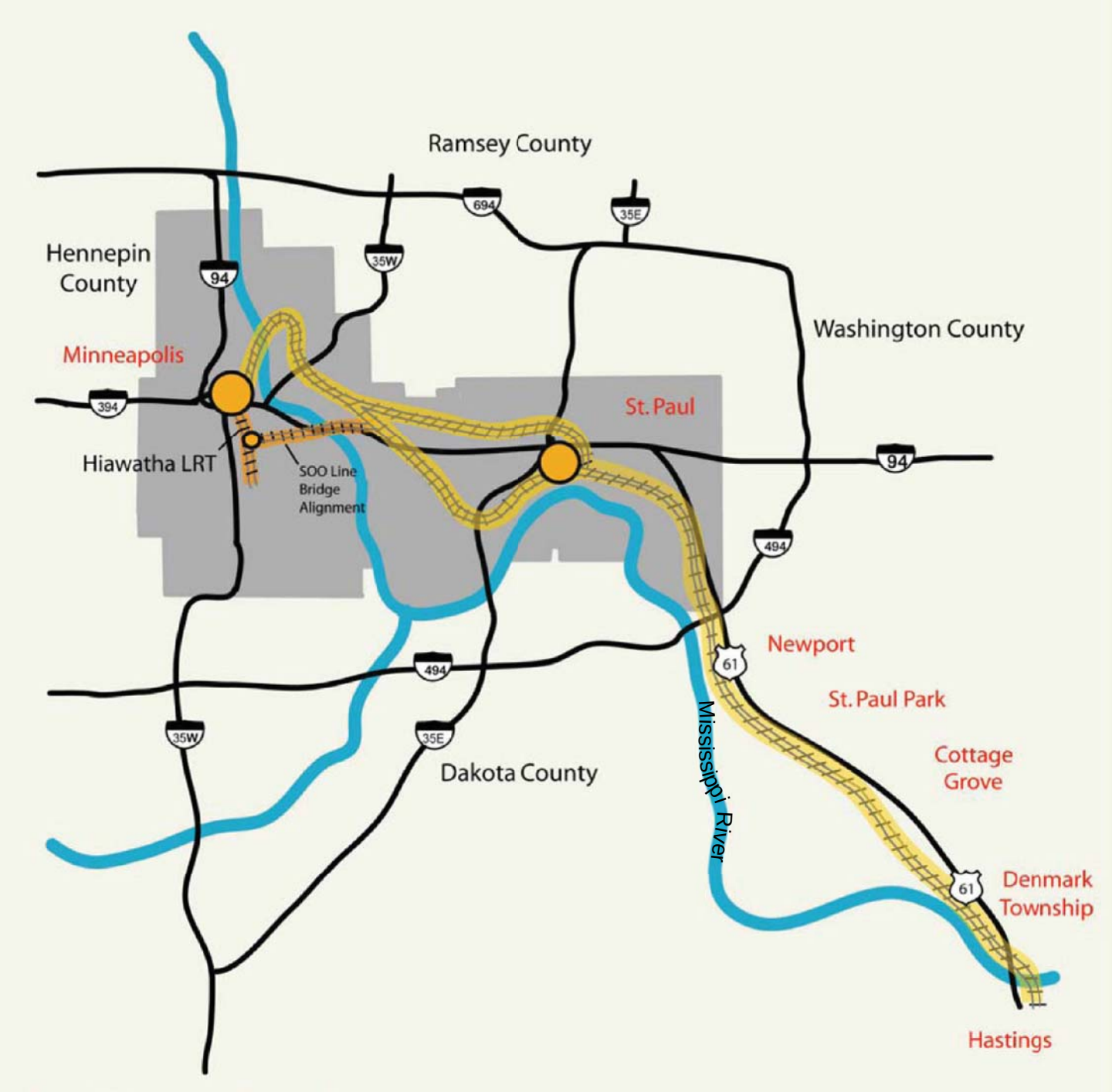
Table 5.4 – Alignment Screening Results					
Alignment	Screening Criteria			Notes	Recommend to Detail Alternatives
	Access	Reliability	Availability of ROW		
RAIL					
CP - *From Hastings to St. Paul Park (north of Cottage Grove)*	Pass	Pass	Pass	Feasibility studied previously during Red Rock Corridor feasibility study.	Yes
BNSF - *From Hastings to St. Paul Park (north of Cottage Grove)*	Pass	Pass	Pass	Feasibility studied previously during Red Rock Corridor feasibility study.	Yes
CP and BNSF - *From north of Cottage Grove to Downtown St. Paul*	Pass	Pass	Pass	Feasibility studied previously during Red Rock Corridor feasibility study.	Yes
BNSF - *From Downtown St. Paul to the St. Paul Midway Area*	Pass	Pass	Pass	Feasibility studied previously during Red Rock Corridor feasibility study.	Yes
CP - *From Downtown St. Paul to the St. Paul Midway Area*	Pass	Pass	Pass	Feasibility studied previously during Red Rock Corridor feasibility study.	Yes
BNSF to identified Downtown Multimodal Station	Pass	Pass	Pass	This is in the current Northstar alignment and end of line station.	Yes
SOO Line Bridge to Lake Street LRT Station - *From Midway to a connection with Hiawatha LRT*	Pass	Pass	Pass	Spur provides existing river crossing and potential for connection to Hiawatha LRT south of downtown Minneapolis.	Yes*
ROADWAY					
***TH 61* - Hastings to Downtown St. Paul**	Pass	Pass	Pass	Current and projected congestion limit reliability. Used in conjunction with capital investment for BRT technologies, alignment may have acceptable reliability.	Yes
I-94 - *St. Paul to Minneapolis*	Pass	Pass	Pass	Current and projected congestion limit reliability. Used in conjunction with capital investment for BRT technologies, alignment may have acceptable reliability.	Yes
RIVER					
Mississippi River from Hastings to St. Paul and on to Minneapolis	Fail	Fail	Pass	This alignment requires traversing four locks along alignment: one north of Hastings, one at Ford Parkway south of Minneapolis downtown, and two just south of Minneapolis downtown in the St. Anthony Falls area. Also limited by winter freeze conditions	No

Source: Kimley-Horn and Associates, Inc., 2004

***** *The results of the initial screening reflect technology related decisions reached in 2004. As noted in the project history section, the Red Rock Corridor project was delayed due to revisions to the regional travel demand model. Since 2004, other regional initiatives have progressed, including the advancement of high-speed rail in the region, final design and initiation of construction of the Northstar Commuter Rail Corridor, and the locally preferred alternative for the Central Corridor as LRT on University Avenue. Additionally, following the 2004 screening, the decision was reached that the western terminating point for the Red Rock Corridor would be the downtown Minneapolis Intermodal station. Hence, the Soo Line Bridge alignment was screened from more detailed analysis.*

Figure 5-1: Mississippi River Alignment




Ramsey County
694
35E
Hennepin County
94
35W
Washington County
Minneapolis
394
St. Paul
Hiawatha LRT
SOO Line Bridge Alignment
94
494
Newport
61
494
St. Paul Park
35W
35E
Dakota County
Mississippi River
Cottage Grove
61
Denmark Township
Hastings