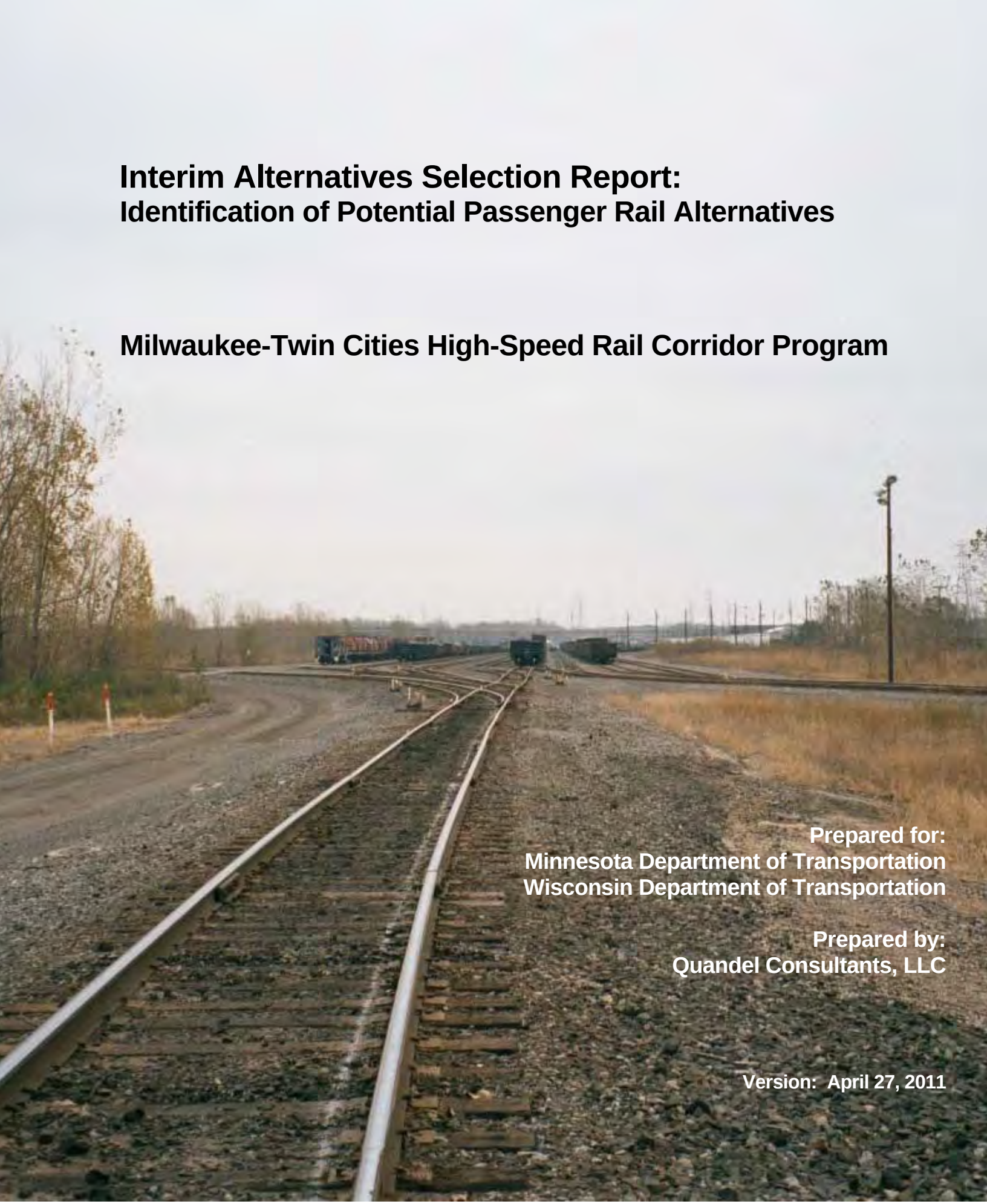
Appendix A – Interim Alternatives Selection Report: Identification of Potential Passenger Rail Alternatives

Interim Alternatives Selection Report:
Identification of Potential Passenger Rail Alternatives

Milwaukee-Twin Cities High-Speed Rail Corridor Program



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Minnesota Department of Transportation
Wisconsin Department of Transportation

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Minnesota Department of Transportation
Wisconsin Department of Transportation
U.S. Department of Transportation
Federal Railroad Administration

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1.0 INTRODUCTION

1.1 Purpose of Interim Alternatives Selection Report

The Minnesota Department of Transportation (Mn/DOT) and the Wisconsin Department of Transportation (WisDOT), in cooperation with the FRA, propose to construct and operate a high-speed passenger rail corridor between Milwaukee, Wisconsin and Minneapolis/St. Paul (Twin Cities), Minnesota. The purpose of the proposed action is to meet future regional travel demand and provide intermodal connectivity to existing and planned transportation systems in Minnesota and Wisconsin. The proposed action offers an opportunity to provide reliable and competitive passenger rail service as an attractive alternative transportation choice between Milwaukee and Twin Cities by:

- Decreasing travel times,
- Increasing frequency of service, and
- Providing safe and reliable service.

In addition, the project will:

- Improve overall system connectivity in the interstate transportation network in conformance with statewide and regional transportation plans
- Provide accessibility to major population centers,
- Improve freight rail mobility, and
- Minimize environmental impacts.

The need for the proposed action exists because:

1. **Travel demand** is projected to increase within the corridor placing a significant burden on existing transportation infrastructure
2. **Competitive and attractive alternative** modes of travel do not exist in the corridor
3. As travel demand increases a new travel mode must be **reliable** to attract riders from existing travel modes ;
4. **Intermodal connectivity** among existing transportation systems is limited

The Alternatives Analysis for the Milwaukee-Twin Cities High Speed Rail Corridor Program will identify the reasonable and feasible alternatives within the corridor that meet the Purpose and Need and document why a particular alternative does not meet the Purpose and Need and is eliminated from further consideration. The analysis will also identify a no-build/action alternative for the corridor. A brief technical memorandum outlining the proposed criteria and measures of effectiveness to identify the reasonable and feasible passenger rail alternatives has been developed and will be used in the analysis. An Alternatives Selection Report identifying these reasonable and feasible passenger rail alternatives will clearly indicate the following:

- why and how the particular range of project alternatives (potential passenger rail alternatives) was developed,
- how the results of the scoping process and other public and agency input was used in the alternatives analysis, and
- describe the process used to evaluate and eliminate the alternatives to arrive at the reasonable and feasible passenger rail alternatives

The purpose of this Interim Alternatives Selection Report is to clearly indicate the why and how the particular range of project alternatives was developed. This Interim Alternatives Selection Report will be presented to the Federal Railroad Administration and agencies for review and comment, and the content of the report will be presented to the public for review and comment during the first set of Public Involvement Meetings, prior to the analysis leading to the identification of the reasonable and feasible passenger rail alternatives that meet the Purpose and Need of the project.

1.2 Background

Eight Midwestern States, including Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio and Wisconsin have worked cooperatively with the FRA and Amtrak over the past decade to advance the Midwest Regional Rail Initiative (MWRRI), a plan to implement a high speed intercity passenger rail system in the region. The FRA has been an active participant in the funding and in reviewing the planning documents.

In 2004, the *Midwest Regional Rail Initiative Project Notebook* (the MWRRI Project Notebook) was produced. The Project Notebook was the culmination of a comprehensive ten-year study to assess the feasibility of a regional passenger rail network and produce an associated business plan.

As reported in the MWRRI Project Notebook, the Milwaukee-Twin Cities corridor is one of the corridors assessed and was scheduled for implementation in MWRRI Phase 2. MWRRI Phase 1 included Chicago-St. Louis, Chicago-Detroit, and Chicago-Milwaukee-Madison. The Chicago-Minneapolis/St. Paul is predicated on 6 round trip trains per day to Twin Cities with 4 additional round trips per day to Madison was scheduled for implementation one year after Phase 1.

The Chicago-St. Louis, Chicago-Detroit, and Chicago-Milwaukee corridors were authorized for designation as high-speed intercity passenger rail corridors by the Secretary of Transportation in 1992. On December 11, 1998 Then FRA Administrator Molitoris announced the *TEA-21* authorized extension of the Midwest High-Speed Rail Corridor from Milwaukee, WI to Minneapolis/St. Paul, MN, in the Federal Register. (Vol. 63, No. 238/ page 68500). By 2001, Chicago-Cleveland, Chicago-Cincinnati, Chicago-Indianapolis-Louisville, and Chicago-St. Louis-Kansas City were all designated high-speed intercity passenger rail corridors. Figure 1-1 depicts the national high-speed intercity passenger rail corridors designated as of December 31, 2010.

Figure 1-1. National High-Speed Intercity Passenger Rail Corridors

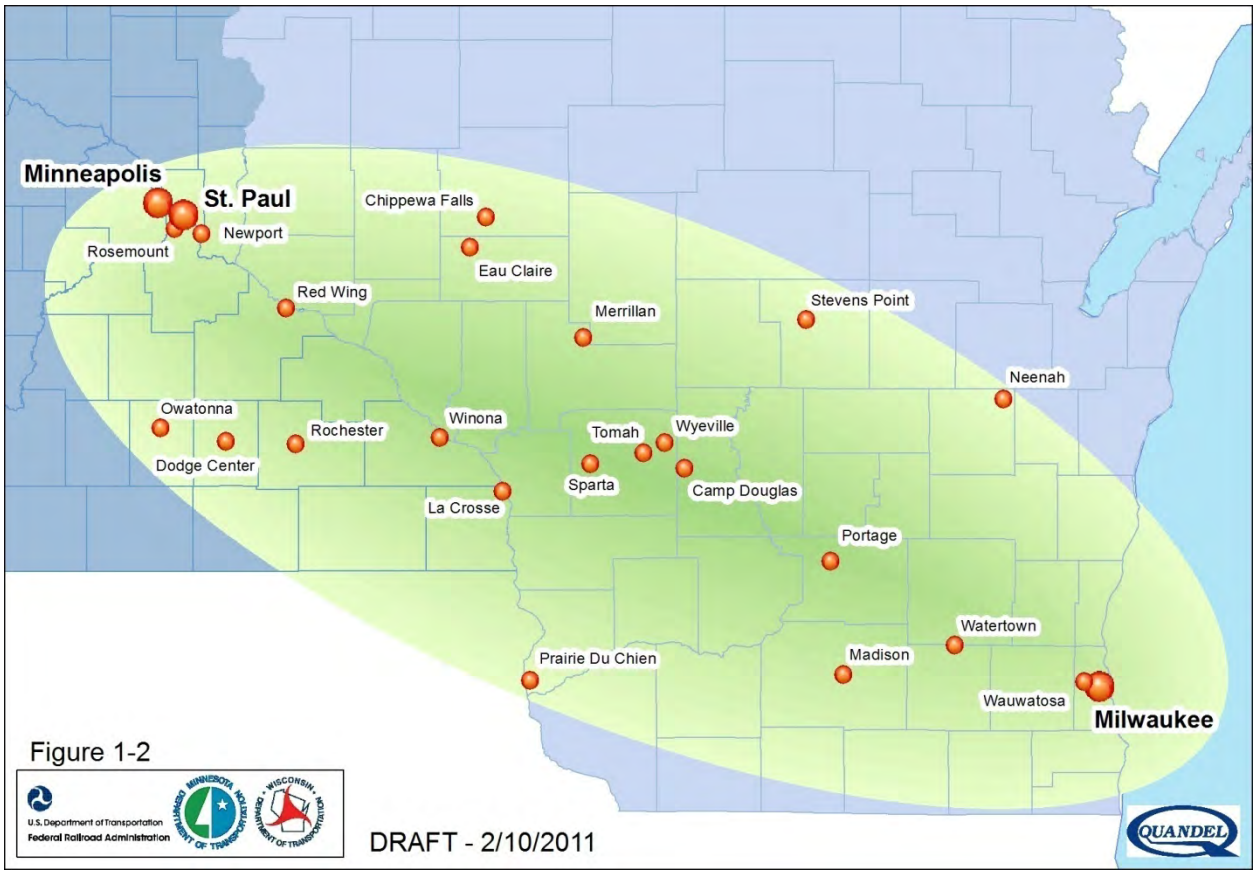
As reported in the MWRRI Service Development Plan prepared in September 2009, the exact route between Milwaukee and Minneapolis/St Paul was not determined; this phase was deferred until the preferred passenger rail route was selected. Minnesota, as the lead state, submitted an application to the Federal Railroad Administration to develop a Tier 1 EIS study. FRA selected Minnesota for an award for this project.

1.3 Project Study Area

The project study area is the Milwaukee-Twin Cities corridor. The Minnesota Department of Transportation (Mn/DOT) and the Wisconsin Department of Transportation (WisDOT) identified the Universe of Route Alternatives that includes all possible rail alternatives within the corridor. Since the project analyzes a two-state network of corridors, the project study area and Universe of Route Alternatives are limited to the existing, abandoned, and out of service rail lines serving the terminal cities in a reasonably direct manner that the public would consider as possible passenger rail routes.

Figure 1-2 depicts the Project Study Area.

Figure 1-2. Milwaukee-Twin Cities Project Study Area



2.0 IDENTIFICATION OF THE UNIVERSE OF ROUTES

2.1 Logical Termini

The limits of the Universe of Routes are identified by determining the logical termini for the corridor. The MWRRI Project Notebook designates that the Milwaukee Intermodal Station and St. Paul Union Depot be the logical termini for the corridor. However, multiple rail routes exist in the terminal areas requiring more detailed investigation in further studies. The designation of these stations as logical termini does not preclude other station sites from being studied and selected as the terminal stations.

After the Project Notebook was published, Minnesota DOT determined that the preferred location for the Twin Cities terminal station was MTI. This is supported by the Minnesota State Rail Plan published in February 2010, which states that all rail services be connected "to both the new Minneapolis downtown terminal (MTI) and St. Paul Union Depot".[1] This report assumes that the terminal station in the Twin Cities is located at the MTI with a stop at the St. Paul Union Depot.

Sections 2.1.1 and 2.1.2 discuss the Milwaukee and Twin Cities terminal areas.

2.1.1 Milwaukee-Area Network

The Milwaukee Intermodal Station is the designated terminal station, at 433 W. St. Paul Avenue in Milwaukee. The station is accessible from the Canadian Pacific Watertown Line. The station currently serves two Amtrak routes, the *Empire Builder*, and the *Hiawatha*. The *Empire Builder* provides once-daily service from Chicago through Milwaukee to Seattle/Portland. The *Hiawatha* provides seven round trips per day (six on Sundays) between Chicago and Milwaukee.[2] Figure 2-1 depicts the Milwaukee Intermodal Station.

[1] http://www.dot.state.mn.us/planning/railplan/finalreport/MNRailPlanFinalReportFeb2010.pdf

[2] www.amtrak.com

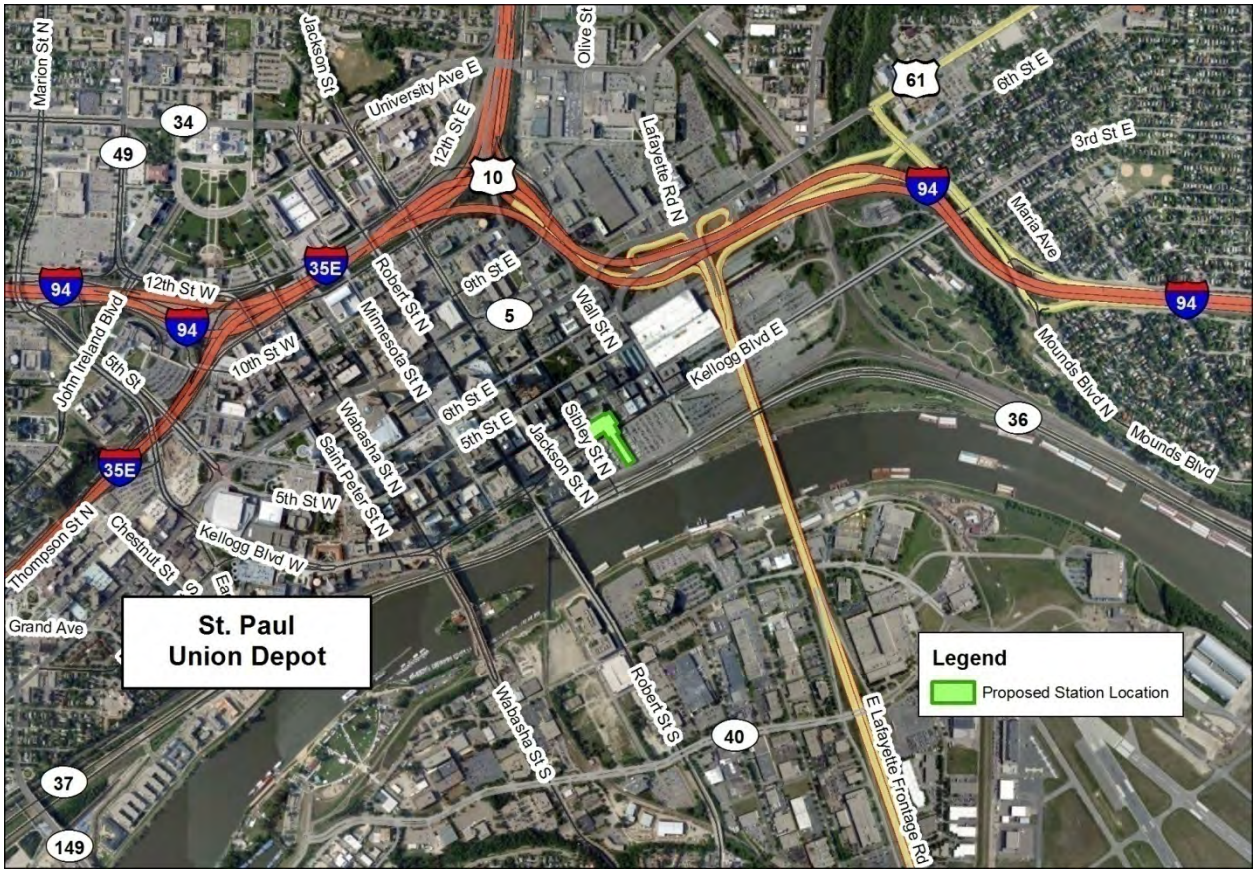
Figure 2-1. Milwaukee Intermodal Station

2.1.2 Twin Cities-Area Network

Several Twin Cities-Area locations are considered for use as the terminal station. The first location is the St. Paul Union Depot, located at 214 E. 4th Street in St. Paul. Access to a station at the Union Depot is provided by the Canadian Pacific River Line. Construction has begun at the St. Paul Union Depot in downtown St. Paul to convert it to a multimodal transit hub. The Ramsey County Regional Rail Authority is the lead agency. St. Paul Union Depot will be revitalized and refurbished to become the Union Depot Multi-Modal Transit Hub. Transit planned at the hub includes light rail, regional and intercity buses, passenger rail, and bicycle and pedestrian accessibility. Plans call for the use of St. Paul Union Depot as a stop on the *Empire Builder*. Figure 2-2 depicts the St. Paul Union Depot site.[3]

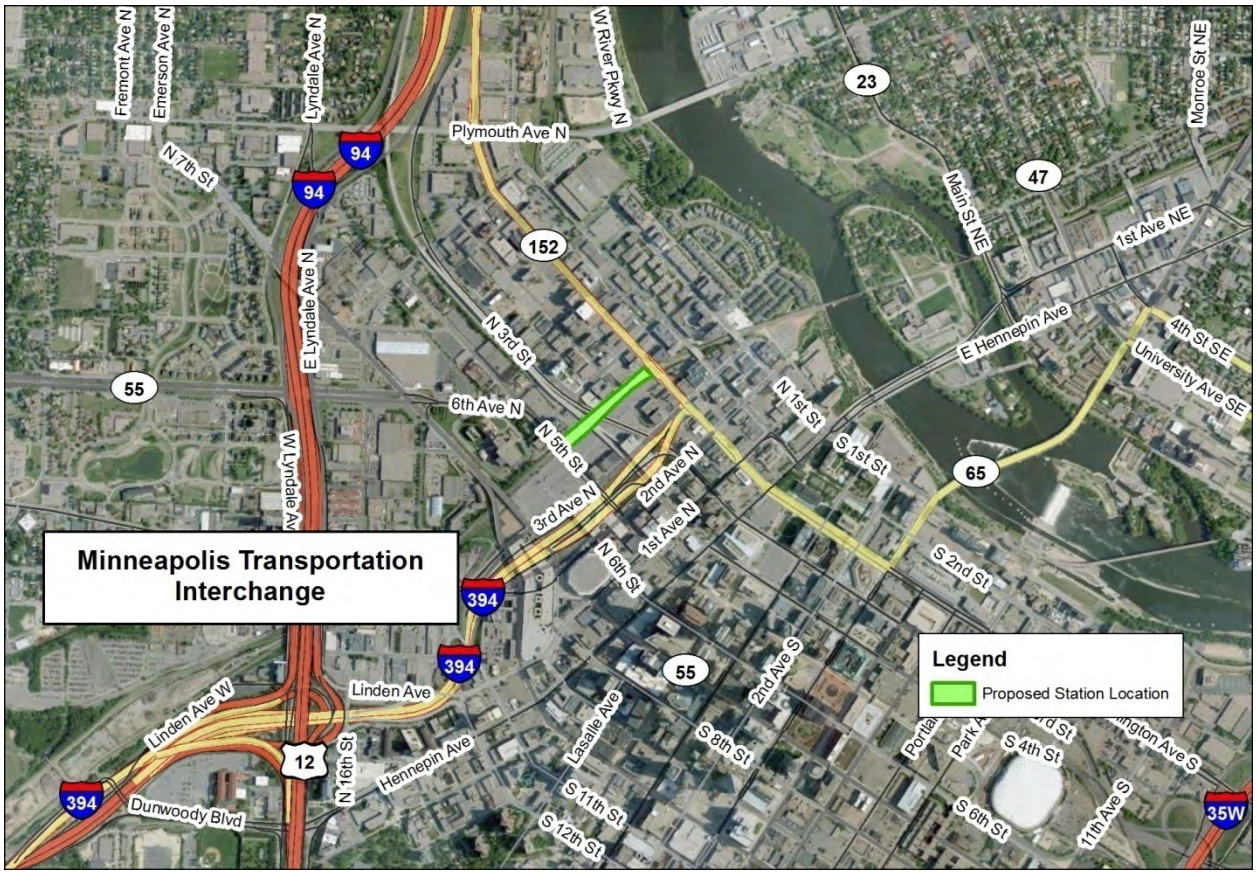
[3] http://www.uniondepot.org/

Figure 2-2. St. Paul Union Depot Center Site



The second Twin Cities location is the Minneapolis Transportation Interchange (MTI). The new intermodal station is planned in downtown Minneapolis near the new Target Field. This future multimodal transit station will be located adjacent and just north of the new Minnesota Twins Target Field ball park on 5th St. between 3rd Avenue and 5th Avenue and is planned to accommodate other modes of transportation, including light rail transit, commuter rail, taxi, pedestrian, bicycle, and integration of the nearby bus network. Access to the station would be provided by the BNSF Wayzata Line. Figure 2-3 depicts the MTI Site.

Figure 2-3. Minneapolis Transportation Interchange Site



2.2 Project Corridor

The corridor between Milwaukee and Twin cities is identified using geographic (GIS) data provided by Minnesota DOT and Wisconsin DOT. This information was verified using internet searches, Google Maps, Google Earth and available railroad track charts and timetables.

2.3 Stakeholder Input

The Wisconsin and Minnesota DOT representatives on the MWRRI Technical Steering Committee and the consultant have discussed working drafts of the technical memoranda that have been used to develop this Interim Alternatives Selection Report. A final draft was prepared incorporating review comments and submitted to Wisconsin and Minnesota on February 19, 2010. A conference call was held on February 25, 2010 and additional information and comments were obtained from Wisconsin and Minnesota DOT. The analysis reflects the following comments:

- Wisconsin requested that a route be added that includes the Canadian National line between Chippewa Falls, WI and Withrow, MN
- Wisconsin requested that routes be added that include the “400” and “Elroy-Sparta”

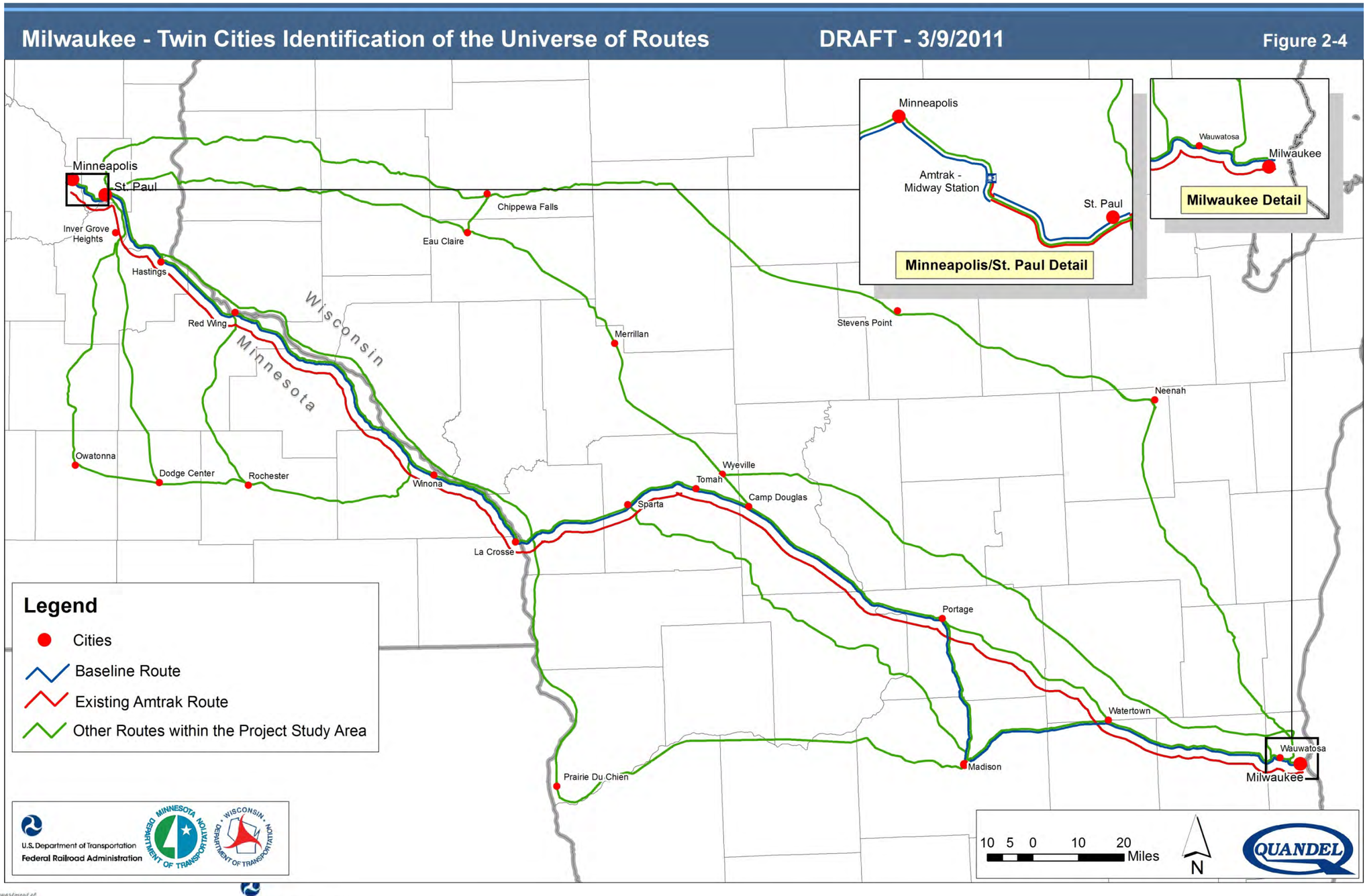
State Trails, two abandoned rail segments now owned by the Wisconsin Department of Natural Resources (WDNR), between Reedsburg, WI and Sparta, WI

- Wisconsin explained that the track between Camp Douglas, WI and Wyeville, WI is not abandoned; it is out of use, but still owned by Union Pacific
- Minnesota requested that routes be added that include an abandoned segment between Rochester, MN and Red Wing, MN
- Minnesota requested that routes be added that include an abandoned segment between Dodge Center, MN and Rosemount, MN

These comments from the DOTs were incorporated into the interim report.

Figure 2-4 depicts the Universe of Routes.

Figure 2-4. Identification of the Universe of Routes



2.4 Identification of the Baseline Route

Within the Evaluation to Identify the Potential Passenger Rail Alternatives, each of the routes is assessed against a baseline route for the purpose of making comparative route evaluations. For this analysis, the baseline route defined in the MWRRI Project Notebook was used. It is defined as:

- Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN-St. Paul, MN-Minneapolis, MN.

Route 4 was selected to be the baseline route since it was the route used between Milwaukee and the Twin Cities to develop the Midwest Regional Rail System (MWRRS)[4]. The MWRRS has been under development since 1995, when the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin, in partnership with the Federal Railroad Administration and Amtrak, began to evaluate the potential role of high speed rail in the Midwest.

A "normative statement" is used to assess each route against the baseline route. A normative statement is a value judgment given to data for the purposes of qualitatively assessing that data. A normative statement is given to the evaluation criteria described in section 4.0. Each of the routes is assessed considering the normative statement for the given criteria.

[4] Midwest Regional Rail Initiative. June 2004. MWRRI Project Notebook.

3.0 DEVELOPMENT OF ROUTE ALTERNATIVES AND TRACK SEGMENTS FOR EVALUATION

From the Universe of Routes, the route alternatives and track segments are developed. The route alternatives are developed by first identifying 'track segments' within the Universe of Routes. For the purpose of this Interim Report, a 'track segment' is a portion of rail defined by logical end points, junctions, or population centers. The track segments include existing track and/or right-of-way currently owned by private freight railroads, or an abandoned rail right-of-way with or without an existing track.

There are several alternatives that can be used to travel between St. Paul and Minneapolis and Milwaukee and Neenah. Sections 3.1 and 3.2 describe the alternatives used in this analysis. Section 3.3 defines the track segments and route alternatives.

3.1 St. Paul-Minneapolis

For the purposes of this analysis, it has been assumed that the routes will utilize the Canadian Pacific Railway Merriam Park Subdivision-Minnesota Commercial connection-BNSF Midway Subdivision-BNSF Wayzata Subdivision between St. Paul Union Depot and MTI. The Minnesota State Rail Plan states that this route between St. Paul Union Depot and MTI is assumed "because it does not require the back-out move out of St. Paul and is expected to remain as the preferred route for the Empire Builder after the 2012 move of Amtrak to St. Paul Union Depot"[5]. The other two possible routes for MWRRI trains would require the train's engineer to "change ends" after arrival at St. Paul Union Depot and depart from the east end of SPUD, turning north through BNSF Seventh Street. From Seventh Street the MWRRI trains would either move via the BNSF Midway Subdivision to Minneapolis Junction and MTI or via the BNSF St. Paul Subdivision-Union Street connection-BNSF Midway Subdivision to Minneapolis Junction and MTI. Either of these two routes would add a 10-15 minute time penalty to the train's overall trip time at St. Paul Union Depot while the train's engineer "changes ends."

Changing ends is the process in which the locomotive engineer secures the train after arrival (in this case at SPUD), disables the electrical and air brake controls in the leading (west) cab of the train, and walks to the other (east) end of the train. From the east control cab of the train, the engineer enables the electrical and air brake controls in that cab and then in conjunction with another crew member, makes the FRA-mandated air brake test to ensure that the train brakes are operating properly from the east cab. Then, after receiving a signal to proceed, the MWRRI train would depart east out of SPUD toward Seventh Street and use either the BNSF Midway Subdivision or the BNSF St. Paul Subdivision-Union Street connection-BNSF Midway Subdivision to Minneapolis Junction and MTI. Assuming no difficulties during the changing ends process, 10-15 minutes would be consumed to perform all the required tasks. For the eastbound trip from MWRRI to St. Paul and Chicago, the process would be reversed at SPUD. The train would arrive at SPUD from MTI and the engineer would change ends for the trip east out

[5] http://www.dot.state.mn.us/planning/railplan/finalreport/MNRailPlanFinalReportFeb2010.pdf

of SPUD to Chicago. The 10-15 minute penalty would be incurred by each train that changes ends at SPUD.

In order to use the changing ends process, it is assumed that the MWRRI trains will all use a "push-pull" configuration. The train's locomotive will be on one end of the train and a passenger car equipped with a control cab will be on the other end of the train. Using the push-pull configuration eliminates the need to physically turn the train around to make a trip in the opposite direction. Amtrak's Empire Builder between Chicago and the Pacific Northwest currently uses conventional equipment that is not configured for push-pull operations. Because Amtrak operations are not part of the scope of this report, the effects of the various route and train equipment configurations on Amtrak's operations are not discussed further here.

3.2 Milwaukee-Neenah

For the purposes of analysis, it has been assumed that routes will utilize the MWRRI Baseline route between Milwaukee and Neenah. The MWRRI Baseline route uses the "West Bend Route Option", as described in the MWRRI Project Notebook and the Milwaukee-Green Bay Passenger Rail Feasibility Study[6]. This baseline route utilizes the Canadian Pacific track from the Milwaukee Intermodal Station through Grand Avenue Junction to the North Milwaukee Junction. Between North Milwaukee Junction and Granville, the route uses the Wisconsin & Southern track. From Granville to West Bend, the route utilizes Fox Valley and Western track. The route then uses abandoned track (now rails-to-trails) owned by Wisconsin DNR between West Bend and Eden. Finally, the route utilizes Canadian National track between Eden and Fond du Lac.

The "West Bend Route Option" was selected as the baseline route because it has a shorter route distance and utilizes shorter distances of Canadian National and Canadian Pacific transcontinental mainlines.

If the routes between Milwaukee and Neenah are identified as reasonable and feasible routes, a full alternative analysis involving the other alternative routes between Milwaukee and Neenah will be conducted to determine the preferred passenger rail route. If required, this analysis will occur in the final alternatives analysis within the Tier 1 EIS.

3.3 Route Alternatives and Track Segments for Evaluation

The track segments are described in Table 3-1 by a track segment identifier, start and end points, and the owner of the route segment. The owners of the route segments are determined by using SPV's "Comprehensive Railroad Atlas of North America" and verified using Federal Railroad Administration data. The track segments are used to develop the route alternatives for the project study area. The routes alternatives are described in Table 3-2 by route number, the combination of track segments within the route alternative, communities along the route alternative (specific station locations are

[6] Milwaukee-Green Bay Passenger Rail; Feasibility Study of Route Alternatives, TEMS, Inc. and Charles H. Quandel & Associates, November 2001

not yet identified), and the owner(s) of the right-of-way of the route alternative. The track segments and route alternatives are depicted in Figure 3-1.

Table 3-1. Milwaukee-Twin Cities Track Segments

Track Segment	Start	End	Owner(s)
A	Milwaukee, WI	Grand Avenue, Milwaukee, WI	Canadian Pacific Railway (CP)
B	Grand Avenue, Milwaukee, WI	Wauwatosa, WI	CP
C	Wauwatosa, WI	Watertown, WI	CP
D	Grand Avenue, Milwaukee, WI	North Milwaukee, WI	CP
E	Watertown, WI	Portage, WI	CP
F	Watertown, WI	Madison, WI	WisDOT and Wisconsin River Rail Transit Commission (WRRTC)/UP[7]
G	Madison, WI	Portage, WI	CP
H	Madison, WI	Sparta, WI	UP/Wisconsin DNR (Abandoned between Reedsburg, WI and Sparta, WI)[8]
I	Wauwatosa, WI	Butler Junction West, WI	UP
J	Madison, WI	La Crosse, WI	UP/WisDOT and WRRTC/Burlington Northern Santa Fe (BNSF)[9]
K	Portage, WI	Camp Douglas, WI	CP
L	Camp Douglas, WI	Wyeville, WI	UP
M	Wyeville, WI	Eau Claire, WI	UP
N	Camp Douglas, WI	Sparta, WI	CP
O	Sparta, WI	La Crosse, WI	CP
P	Chippewa Falls, WI	Eau Claire, WI	UP
Q	La Crosse, WI	Hastings, WI	BNSF
R	La Crosse, WI	Winona, MN	CP

[7] WSOR operates on the Watertown-Madison rail segment
[8] WSOR operates on the Madison-Reedsburg rail segment
[9] WSOR operates on the Madison-Prairie du Chien segment

S	Winona, MN	Red Wing, MN	CP
T	Winona, MN	Rochester, MN	CP
U	Rochester, MN	Red Wing, MN	Former Chicago & North Western (Abandoned between Rochester, MN and Red Wing, MN)
V	Red Wing, MN	Hastings, MN	CP
W	Rochester, MN	Dodge Center, MN	CP
X	Dodge Center, MN	Owatonna, MN	CP
Y	Dodge Center, MN	Inver Grove Heights, MN	Former Chicago & North Western (Abandoned between Dodge Center, MN and Inver Grove Heights, MN)
Z	Owatonna, MN	Inver Grove Heights, MN	UP
AA	Hastings, MN	St. Paul Junction, St. Paul, MN	CP/BNSF/St. Paul Union Depot Co. (SPUDC)
BB	Inver Grove Heights, MN	Robert Street, St. Paul, MN	UP
CC	Chippewa Falls, MN	Seventh Street, St. Paul, MN	CN/CP/BNSF
DD	Eau Claire, MN	Seventh Street, St. Paul, MN	UP/BNSF
EE	Seventh Street, St. Paul, MN	St. Paul Junction, St. Paul, MN	SPUDC
FF	St. Paul Junction, St. Paul, MN	St. Paul Union Depot, St. Paul, MN	SPUDC
GG	St. Paul Union Depot, St. Paul, MN	Robert Street, St. Paul, MN	CP/UP/SPUDC
HH	Robert Street, St. Paul, MN	Minneapolis, MN	CP/Minnesota Transfer (MNNR)/BNSF
II	North Milwaukee, WI	Chippewa Falls, WI	WisDOT/ Union Pacific (UP)/ Canadian National (CN)/ Wisconsin DNR (Rails-to-Trails between West Bend, WI and Eden, WI)[10]
JJ	Butler Junction West, WI	Wyeville, WI	UP
KK	North Milwaukee, WI	Butler Junction West, WI	WSOR/CP/UP

[10] Wisconsin & Southern Railroad (WSOR) operates on the Grand Avenue-North Milwaukee-Granville rail segment

Table 3-2. Milwaukee-Twin Cities Route Alternatives

Route Number	Track Segments	Communities Served	Owner(s)
1	A-B-C-E-K-N-O-R-S-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/BNSF/UP/SPUDC/MNNR
2	A-B-C-E-K-N-O-R-T-W-X-Z-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/UP/BNSF/SPUDC/MNNR
3	A-B-C-E-K-N-O-Q-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	CP/BNSF/UP/SPUDC/MNNR
4	A-B-C-F-G-K-N-O-R-S-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/BNSF/UP/SPUDC/MNNR
5	A-B-C-F-G-K-N-O-R-T-W-X-Z-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/UP/BNSF/SPUDC/MNNR

6	A-B-C-F-G-K-N-O-Q-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/BNSF/UP/ SPUDC/MNNR
7	A-B-C-F-J-R-S-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/BNSF/UP/ SPUDC/MNNR
8	A-B-C-F-J-R-T-W-X-Z-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/BNSF/UP/ SPUDC/ MNNR
9	A-B-C-F-J-Q-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/BNSF/UP/ SPUDC/MNNR
10	A-B-C-E-K-L-M-DD-EE-FF-GG-HH	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	CP/UP/BNSF/SPUDC/ MNNR
11	A-B-C-F-G-K-L-M-DD-EE-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/UP/BNSF/ SPUDC/MNNR
12	A-B-I-JJ-M-DD-EE-FF-GG-HH	Milwaukee, WI Wauwatosa, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	CP/UP/BNSF/SPUDC/ MNNR

12A	A-D-KK-JJ-M-DD-EE-FF-GG-HH	Milwaukee, WI Wiscona Jct, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	CP/WSOR/UP/ BNSF/SPUDC/MNNR
13	A-D-II-P-DD-EE-FF-GG-HH	Milwaukee, WI Fond du Lac, WI Neenah, WI Stevens Point, WI Chippewa Falls, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	CP/WisDOT/ Abandoned/UP/CN/ Wisconsin DNR (Rails-to-Trails)/BNSF/ SPUDC/MNNR
14	A-D-II-CC-EE-FF-GG-HH	Milwaukee, WI Fond du Lac, WI Neenah, WI Stevens Point, WI Chippewa Falls, WI Withrow, MN St. Paul, MN Minneapolis, MN	CP/WisDOT/ Abandoned/UP/ Wisconsin DNR (Rails-to-Trails)/CN/ BNSF/SPUDC/MNNR
15	A-B-C-F-H-O-Q-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/Wisconsin DNR (Abandoned)/ BNSF/UP/SPUDC/ MNNR
16	A-B-C-F-H-O-R-S-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/ Wisconsin DNR (Abandoned)/ BNSF/UP/SPUDC/ MNNR
17	A-B-C-F-H-O-R-T-W-X-Z-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/Wisconsin DNR (Abandoned)/UP/ BNSF/SPUDC/MNNR

18	A-B-C-E-K-N-O-R-T-U-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/Former Chicago & North Western (C&NW)(Abandoned)/ BNSF/ UP/SPUDC/ MNNR
19	A-B-C-F-G-K-N-O-R-T-U-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/Former C&NW (Abandoned)/ BNSF/UP/SPUDC/ MNNR
20	A-B-C-F-J-R-T-U-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/WSOR/BNSF/ Former C&NW (Abandoned)/UP/ SPUDC/MNNR
21	A-B-C-F-H-O-R-T-U-V-AA-FF-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/Wisconsin DNR (Abandoned)/ BNSF/Former C&NW (Abandoned)/UP/ SPUDC/ MNNR
22	A-B-C-E-K-N-O-R-T-W-Y-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/Former C&NW (Abandoned)/UP/ BNSF/SPUDC/ MNNR

23	A-B-C-F-G-K-N-O-R-T-W-Y-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/Former C&NW (Abandoned)/ UP/BNSF/SPUDC/ MNNR
24	A-B-C-F-J-R-T-W-Y-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/BNSF/Former C&NW (Abandoned)/ UP/SPUDC/MNNR
25	A-B-C-F-H-O-R-T-W-Y-BB-GG-GG-HH	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	CP/WisDOT and WRRTC/ Wisconsin DNR (Abandoned)/UP/ BNSF/SPUDC/MNNR

The description of each route alternative is as follows (station locations have not yet been determined):

- Route 1 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Hastings-St. Paul-Minneapolis
- Route 2 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 3 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis
- Route 4 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-St. Paul-Minneapolis
- Route 5 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 6 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Hastings-St.

Paul-Minneapolis

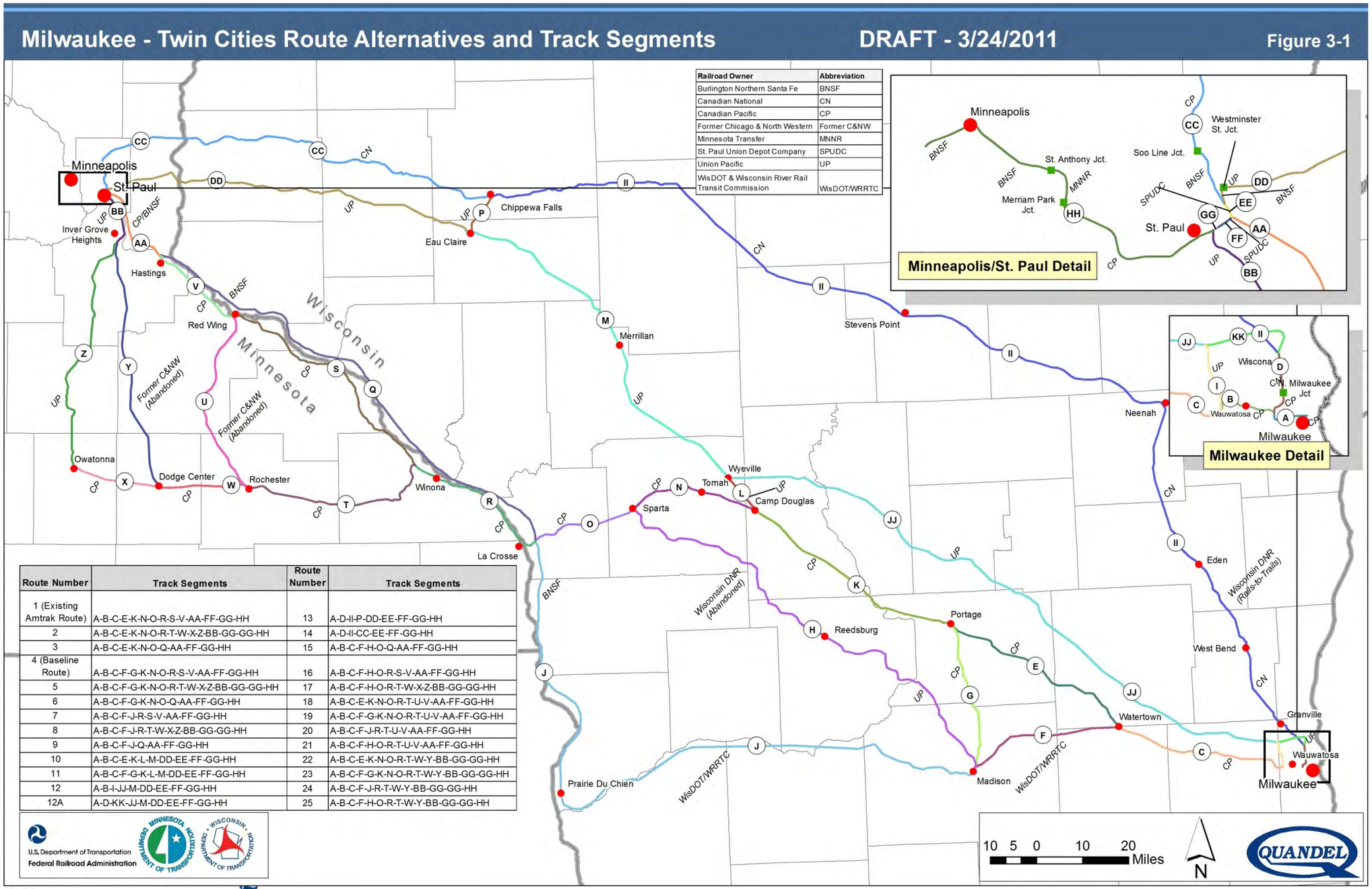
- Route 7 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-St. Paul-Minneapolis
- Route 8 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 9 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Hastings-St. Paul-Minneapolis
- Route 10 - Milwaukee-Watertown-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 11 - Milwaukee-Watertown-Madison-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 12- Milwaukee-Wauwatosa-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 12A - Milwaukee - Wiscona Jct.- Wyeville – Merrillan - Eau Claire - St. Paul - Minneapolis
- Route 13 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Eau Claire-St. Paul-Minneapolis
- Route 14 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Withrow-St. Paul-Minneapolis
- Route 15 – Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Hastings-St. Paul-Minneapolis
- Route 16 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-St. Paul-Minneapolis
- Route 17 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 18 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Red Wing-St. Paul-Minneapolis
- Route 19 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester-Red Wing-St. Paul-Minneapolis
- Route 20 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester-Red Wing-St. Paul-Minneapolis
- Route 21 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-Rochester- Red Wing-St. Paul-Minneapolis
- Route 22 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Dodge Center-Randolph-Inver Grove Heights-St. Paul-Minneapolis
- Route 23 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-

Rochester- Dodge Center-Randolph- Inver Grove Heights-St. Paul-Minneapolis

- Route 24 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester- Dodge Center-Randolph- Inver Grove Heights-St. Paul-Minneapolis

- Route 25 - Milwaukee-Watertown-Madison-Reedsburg-Sparta-La Crosse-Winona-Rochester- Dodge Center-Randolph- Inver Grove Heights-St. Paul-Minneapolis

Figure 3-1. Milwaukee-Twin Cities Route Alternatives and Track Segments



Route Number	Track Segments	Route Number	Track Segments
1 (Existing Amtrak Route)	A-B-C-E-K-N-O-R-S-V-AA-FF-GG-HH	13	A-D-II-P-DD-EE-FF-GG-HH
2	A-B-C-E-K-N-O-R-T-W-X-Z-BB-GG-GG-HH	14	A-D-II-CC-EE-FF-GG-HH
3	A-B-C-E-K-N-O-Q-AA-FF-GG-HH	15	A-B-C-F-H-O-Q-AA-FF-GG-HH
4 (Baseline Route)	A-B-C-F-G-K-N-O-R-S-V-AA-FF-GG-HH	16	A-B-C-F-H-O-R-S-V-AA-FF-GG-HH
5	A-B-C-F-G-K-N-O-R-T-W-X-Z-BB-GG-GG-HH	17	A-B-C-F-H-O-R-T-W-X-Z-BB-GG-GG-HH
6	A-B-C-F-G-K-N-O-Q-AA-FF-GG-HH	18	A-B-C-E-K-N-O-R-T-U-V-AA-FF-GG-HH
7	A-B-C-F-J-R-S-V-AA-FF-GG-HH	19	A-B-C-F-G-K-N-O-R-T-U-V-AA-FF-GG-HH
8	A-B-C-F-J-R-T-W-X-Z-BB-GG-GG-HH	20	A-B-C-F-J-R-T-U-V-AA-FF-GG-HH
9	A-B-C-F-J-Q-AA-FF-GG-HH	21	A-B-C-F-H-O-R-T-U-V-AA-FF-GG-HH
10	A-B-C-E-K-L-M-DD-EE-FF-GG-HH	22	A-B-C-E-K-N-O-R-T-W-Y-BB-GG-GG-HH
11	A-B-C-F-G-K-L-M-DD-EE-FF-GG-HH	23	A-B-C-F-G-K-N-O-R-T-W-Y-BB-GG-GG-HH
12	A-B-I-JJ-M-DD-EE-FF-GG-HH	24	A-B-C-F-J-R-T-W-Y-BB-GG-GG-HH
12A	A-D-KK-JJ-M-DD-EE-FF-GG-HH	25	A-B-C-F-H-O-R-T-W-Y-BB-GG-GG-HH

Minnesota Department of Transportation
Wisconsin Department of Transportation
U.S. Department of Transportation
Federal Railroad Administration

4.0 EVALUATION TO IDENTIFY THE POTENTIAL PASSENGER RAIL ALTERNATIVES

Based on the draft Purpose and Need of the project, evaluation criteria and associated measures have been developed to compare the differences between the alternatives and the baseline. These criteria address the basic feasibility of the alternatives. The evaluation criteria and measure that have been established are described in Table 4-1.

Table 4-1. Evaluation Criteria & Measures

Evaluation Criteria	Measure
Route Distances	Provide a quantifiable means to measure and compare route length from end point to end point
Route Populations	Provide a quantifiable means to measure and compare ridership potential
Physical Constraints	Provide locations where physical constraints are within abandoned rights-of-way

In order to evaluate the alternatives, a percentage difference between each route and the baseline (each alternative rail route is compared against the baseline, Route 4 - Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN- St. Paul, MN-Minneapolis, MN) is calculated for evaluation criteria #1 and #2. For evaluation criterion #3 (Physical Constraints), the presence of physical constraints along a route eliminates a route from further analysis.

As stated in section 2.4, a normative statement is given to each evaluation criterion to assess routes against that criterion and the baseline route. The recommendation of whether an alternative should be eliminated from further analysis or retained as a potential passenger rail alternative for further analysis is based on how the data for each criterion compares against the normative statement and the baseline route.

4.1 Evaluation Criterion #1: Route Distance

Comparing the distances between alternative rail routes is a quantitative and simple way of differentiating among all alternatives. Rail route distance can be used as a relative indicator of travel times and operating and maintenance costs. More direct routes can be expected to offer more favorable values.

Route distances between the suggested corridor end points are calculated using GIS data provided by Minnesota DOT and Wisconsin DOT.

Normative Statement: Routes with a greater negative difference in route distance compared to the baseline route are better than routes with a greater difference in route distance compared to the baseline route.

Table 4-2 summarizes the distances for each of the route alternatives. The shortest routes, Routes 1, 3, 10, 12, and 12A, are the most direct routes from Milwaukee to Twin

Cities, with distances near 330 miles. The longest routes, Routes 5, 8, 20, and 24, each have route distances greater than 400 miles. Each alternative rail route is compared against the baseline, Route 4 - Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN- St. Paul, MN-Minneapolis, MN.

Table 4-2. Route Distances

Route Number	Route Distance (Miles)	Difference vs. Baseline (Miles)	Difference vs. Baseline (%)
Baseline (Route 4)	*355.4*	-	-
1	332.3	(23.1)	(6%)
2	388.0	32.6	9%
3	333.8	(21.6)	(6%)
4	355.4	-	-
5	411.1	55.7	16%
6	356.9	1.5	0%
7	373.2	17.8	5%
8	428.9	73.5	21%
9	374.7	19.3	5%
10	328.3	(27.1)	(8%)
11	351.4	(4.0)	(1%)
12	329.1	(26.3)	(7%)
12A	338.2	(17.2)	(5%)
13	360.8	5.4	2%
14	367.6	12.2	3%
15	345.0	(10.4)	(3%)
16	338.8	(16.6)	(5%)
17	399.2	43.8	12%
18	365.9	10.5	3%
19	389.0	33.6	9%
20	406.8	51.4	14%
21	377.1	21.7	6%
22	372.6	17.2	5%
23	395.7	40.3	11%
24	413.5	58.1	16%
25	383.8	28.4	8%

Assessment: The states reviewed the route distance data and arrived at a consensus that the differences in route distance to the baseline are not significant enough. The states determined that route distance is not a discriminator at this level of analysis. Therefore, this criterion is not used to eliminate any alternative routes from further

analysis.

4.2 Evaluation Criterion #2: Route Population

The draft Purpose and Need for the Milwaukee-Twin Cities high-speed rail corridor program describes one project purpose as providing accessibility to major population centers. Since long term population, employment, and income across the two states are expected to grow consistently through the year 2040, travel demand in the major population centers will also grow consistently.[11] This demonstrates that providing rail service accessible to major population centers is a factor for deciding which alternative is the best option for the project.

In order to determine which alternatives best serve the larger population centers between Milwaukee and Twin Cities, the populations are calculated for each alternative using GIS software and US census data from the year 2000. The population for each alternative route includes census tract populations found within a 20-mile band of the track, and within a 20-mile radius of each of the terminal stations.

Normative Statement: Routes with a greater positive difference in population compared to the baseline route are better than routes with a lesser difference in population.

The route populations for each alternative are shown in Table 4-3. Each alternative rail route is compared against the baseline, Route 4 - Milwaukee, WI-Madison, WI-Tomah, WI-La Crosse, WI-Red Wing, MN-Twin Cities, MN.

[11] Midwest Regional Rail Initiative. June 2004. MWRRI Project Notebook, Page 4-26

Table 4-3. Route Populations

Route Number	Route Population	Difference vs. Baseline	Difference vs. Baseline (%)
Baseline (Route 4)	4,531,967	-	-
1	4,189,108	(342,859)	(8%)
2	4,364,774	(167,193)	(4%)
3	4,191,266	(340,701)	(8%)
4	4,531,967	-	-
5	4,709,506	177,539	4%
6	4,536,198	4,231	0%
7	4,516,380	(15,587)	(0%)
8	4,692,046	160,079	4%
9	4,520,512	(11,455)	(0%)
10	4,189,633	(342,334)	(8%)
11	4,534,565	2,598	0%
12	4,170,904	(361,063)	(8%)
12A	4,170,904	(361,063)	(8%)
13	4,534,499	2,532	0%
14	4,556,877	24,910	1%
15	4,568,404	36,437	1%
16	4,565,621	33,654	1%
17	4,758,421	226,454	5%
18	4,342,984	(188,983)	(4%)
19	4,695,226	163,259	4%
20	4,668,967	137,000	3%
21	4,693,125	161,158	4%
22	4,368,523	(163,444)	(4%)
23	4,729,643	197,676	4%
24	4,696,820	164,853	4%
25	4,719,501	187,534	4%

Assessment: The states reviewed the route population data and arrived at a consensus that the differences in route population are not significant enough. The states determined that route population is not a discriminator at this level of analysis. Therefore, this criterion is not used to eliminate any alternative routes from further analysis.

4.3 Evaluation Criterion #3: Physical Constraints

Site conditions that make the construction and operation of a passenger rail line particularly costly or difficult may be considered physical constraints. When these conditions effectively prohibit rail line construction or operation and cannot be mitigated,

the route is considered untenable and is eliminated from further evaluation.

Some physical constraints may be identified that can be mitigated by purchasing the site feature or planning to build around it. When physical constraints of this type occur in series along a particular corridor, they may not be as readily mitigated as single occurrences. In these cases, the section will be removed from consideration due to the aggregate impact of the separate occurrences.

Normative Statement: Routes with physical constraints should be considered for elimination while routes with no physical constraints should not be considered for elimination.

The following paragraphs examine abandoned and out of use segments of track along routes within the Milwaukee-Twin Cities corridor. A description of each physical constraint is given, if any, along with a licensed Google Earth image depicting the defect.

Routes 10 and 11

An out of use segment of track, 9.6 miles in length, is proposed for use between Camp Douglas and Wyeville, WI. The right-of-way is owned by Union Pacific Railroad. This segment has no physical constraints and is retained for further analysis.

Routes 13 and 14

The abandoned segment of track between West Bend and Eden, WI was previously owned by Fox Valley & Western Railroad. This 21.0 mile segment is currently owned by Wisconsin DNR for use as a Rails-to-Trails path. This segment has no physical constraints and is retained for further analysis. Refer to section 3.0 for the method used to identify the Milwaukee-Neenah alternatives.

Route 12

The proposed connection between Segment B and Segment I in Wauwatosa, WI has physical constraints that make the route untenable. There currently is no connection between these two segments. There are three options to connect Segment B and Segment I:

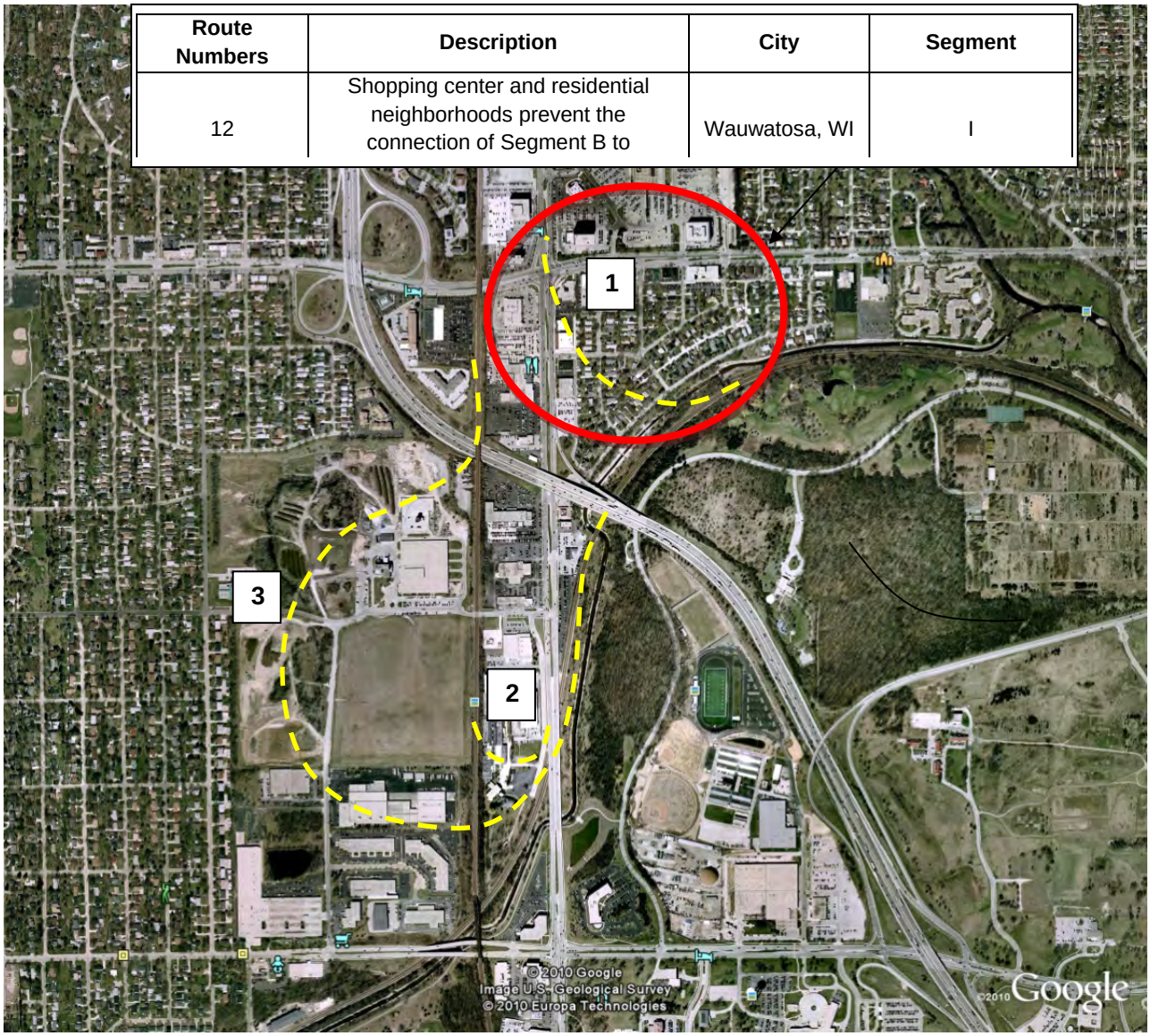
1. A connection that is geometrically feasible. This type of connection cannot be constructed due to the presence of a shopping mall and residential neighborhoods.
2. A connection that minimizes the amount of land acquisition. This type of connection is not geometrically feasible.
3. A connection using a flyover is extremely cost prohibitive and has the potential for significant environmental impacts.

Since none of these connections can be constructed due to the potential for significant adverse effects to the surrounding neighborhoods, the connection is considered untenable. Since Segment I does not connect to any segment to the east, Segment I is eliminated from further analysis, thereby eliminating Route 12 from further consideration. Figure 4-1 shows the three types of proposed connections and the physical constraint in

Wauwatosa.

Figure 4-1. Physical Constraints in Wauwatosa, WI

Route Numbers	Description	City	Segment
12	Shopping center and residential neighborhoods prevent the connection of Segment B to	Wauwatosa, WI	I



Routes 15, 16, 17, 21, and 25

Within Segment H, an abandoned portion of track, 55.8 miles in length, is proposed for use between Reedsburg and Sparta, WI. The right-of-way was previously owned by Chicago & North Western Railroad. It is currently being used as two recreational trails, known as the '400 State Trail' and the 'Elroy-Sparta State Trail'. A recreational trail does not automatically eliminate a segment from further analysis. There are no remnants of railroad embankments or track along the segment. However, approximately 1/5 mile of abandoned right-of-way has been used for an industrial site. Reconstruction of this segment would require demolition of this area and would be disruptive to the community. Due to the potential for significant adverse impacts, these physical constraints are considered untenable and the segment is eliminated from further analysis which eliminates Routes 15, 16, 17, 21, and 25 from further consideration. Figure 4-2 shows the physical constraints in Elroy.

Figure 4-2. Physical Constraints in Elroy, WI

Route Numbers	Description	City	Segment
15, 16, 17, 21, and 25	Commercial & residential buildings within the abandoned right-of-way	Elroy, WI	H

Routes 18, 19, 20, and 21

Within Segment U, an abandoned portion of track, 47 miles in length, is proposed for use between Rochester and Red Wing, MN. The right-of-way was previously owned by Chicago Great Western Railroad. There are no remnants of railroad embankments or track along the segment. However, the communities of Pine Island, MN and Goodhue, MN were built directly on railroad rights-of-way. Additionally, 1/3 mile of abandoned right-of-way has been used for an industrial site in Rochester, MN. Reconstruction of this segment would require demolition of numerous buildings within this community. Due to the potential for significant adverse impacts to these communities, these the combination of these physical constraints make this segment untenable, and the segment is eliminated from further analysis, thereby eliminating Routes 18, 19, and 20 from further consideration (Route 21 was eliminated above). Figure 4-3 shows the physical constraints in Pine Island, Figure 4-4 shows the physical constraints in Goodhue, and Figure 4-5 shows the physical constraints in Rochester.

Figure 4-3. Physical Constraints in Pine Island, MN

Route Numbers	Description	City	Segment
18, 19, 20, and 21	Commercial & residential buildings within the abandoned right-of-way	Pine Island, MN	U

Figure 4-4. Physical Constraints in Goodhue, MN

Route Numbers	Description	City	Segment
18, 19, 20, and 21	Commercial & residential buildings within the abandoned right-of-way	Goodhue, MN	U

Figure 4-5. Physical Constraints in Rochester, MN

Route Numbers	Description	City	Segment
18, 19, 20, and 21	Industrial buildings within the abandoned right-of-way	Rochester, MN	U

Routes 22, 23, 24, and 25

Segment Y is an abandoned segment of track, 57 miles in length proposed for use between Dodge Center and Inver Grove Heights, MN. The right-of-way was previously owned by Chicago Great Western Railroad. There are no remnants of railroad embankments or track along the segment. However, industrial buildings have been built in abandoned right-of-way in West Concord, Kenyon, Dennison, and Coates, MN. There are also homes in the right-of-way in Kenyon. This segment has multiple physical constraints and is eliminated from further analysis, thereby eliminating Routes 22, 23, and 24 from further consideration (Route 25 was eliminated above). Figure 4-6 shows the physical constraints in West Concord, Figure 4-7 shows the physical constraints in Kenyon, Figure 4-8 shows the physical constraints in Dennison, and Figure 4-9 shows the physical constraints in Coates.

Figure 4-6. Physical Constraints in West Concord, MN

Route Numbers	Description	City	Segment
22, 23, 24, and 25	Industrial buildings within the abandoned right-of-way	West Concord, MN	Y

Figure 4-7. Physical Constraints in Kenyon, MN

Route Numbers	Description	City	Segment
22, 23, 24, and 25	Industrial buildings within the abandoned right-of-way	Kenyon, MN	Y

Figure 4-8. Physical Constraints in Dennison, MN

Route Numbers	Description	City	Segment
22, 23, 24, and 25	Industrial buildings within the abandoned right-of-way	Dennison, MN	Y

Figure 4-9. Physical Constraints in Coates, MN

Route Numbers	Description	City	Segment
22, 23, 24, and 25	Industrial buildings within the abandoned right-of-way	Coates, MN	Y

Table 4-4 summarizes the physical constraints on each route including the name of the town the physical constraint is located in, the location within the town, and the type of physical constraint that exists.

Table 4-4. Physical Constraints

Route Number	Segment of Track in Which Physical Constraint is Located	Physical Constraint
1	None Identified	None Identified
2	None Identified	None Identified
3	None Identified	None Identified
4	None Identified	None Identified
5	None Identified	None Identified
6	None Identified	None Identified
7	None Identified	None Identified
8	None Identified	None Identified
9	None Identified	None Identified
10	None Identified	None Identified
11	None Identified	None Identified
12	I	Shopping center and residential neighborhoods prevent the connection between two segments in Wauwatosa, WI
12A	None Identified	None Identified
13	None Identified	None Identified
14	None Identified	None Identified
15	H	Includes industrial buildings on the right-of-way in Elroy, WI
16	H	Includes industrial buildings on the right-of-way in Elroy, WI
17	H	Includes industrial buildings on the right-of-way in Elroy, WI
18	U	Includes towns of Pine Island, MN, Zumbrota, MN and Goodhue, MN built directly on railroad rights-of-way
19	U	Includes towns of Pine Island, MN, Zumbrota, MN and Goodhue, MN built directly on railroad rights-of-way
20	U	Includes towns of Pine Island, MN, Zumbrota, MN and Goodhue, MN built directly on railroad rights-of-way
21	H and U	Includes industrial buildings on the right-of-way in Elroy, WI and towns of Pine Island, MN, Zumbrota, MN and Goodhue, MN built directly on railroad rights-of-way
22	Y	Includes industrial buildings on the right-of-way in West Concord, Kenyon, Dennison, and Coates, MN
23	Y	Abandoned track right-of-way between Dodge Center, MN and Rosemount, MN (57 miles) – Includes industrial buildings on the right-of-way in West Concord, Kenyon, Dennison, and Coates, MN
24	Y	Abandoned track right-of-way between Dodge Center, MN and Rosemount, MN (57 miles) – Includes industrial buildings on the right-of-way in West Concord, Kenyon, Dennison, and Coates, MN
25	H and Y	Includes industrial buildings on the right-of-way in Elroy, WI, West Concord, MN, Kenyon, MN, Dennison, MN and Coates, MN

Assessment: The states reviewed the physical constraints and arrived at a consensus that Routes 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, and 25 have either a very severe physical constraint, as in the case of Routes 12, 15, 16, and 17 or a combination of physical constraints that make the route untenable. The states agreed that Routes 12,

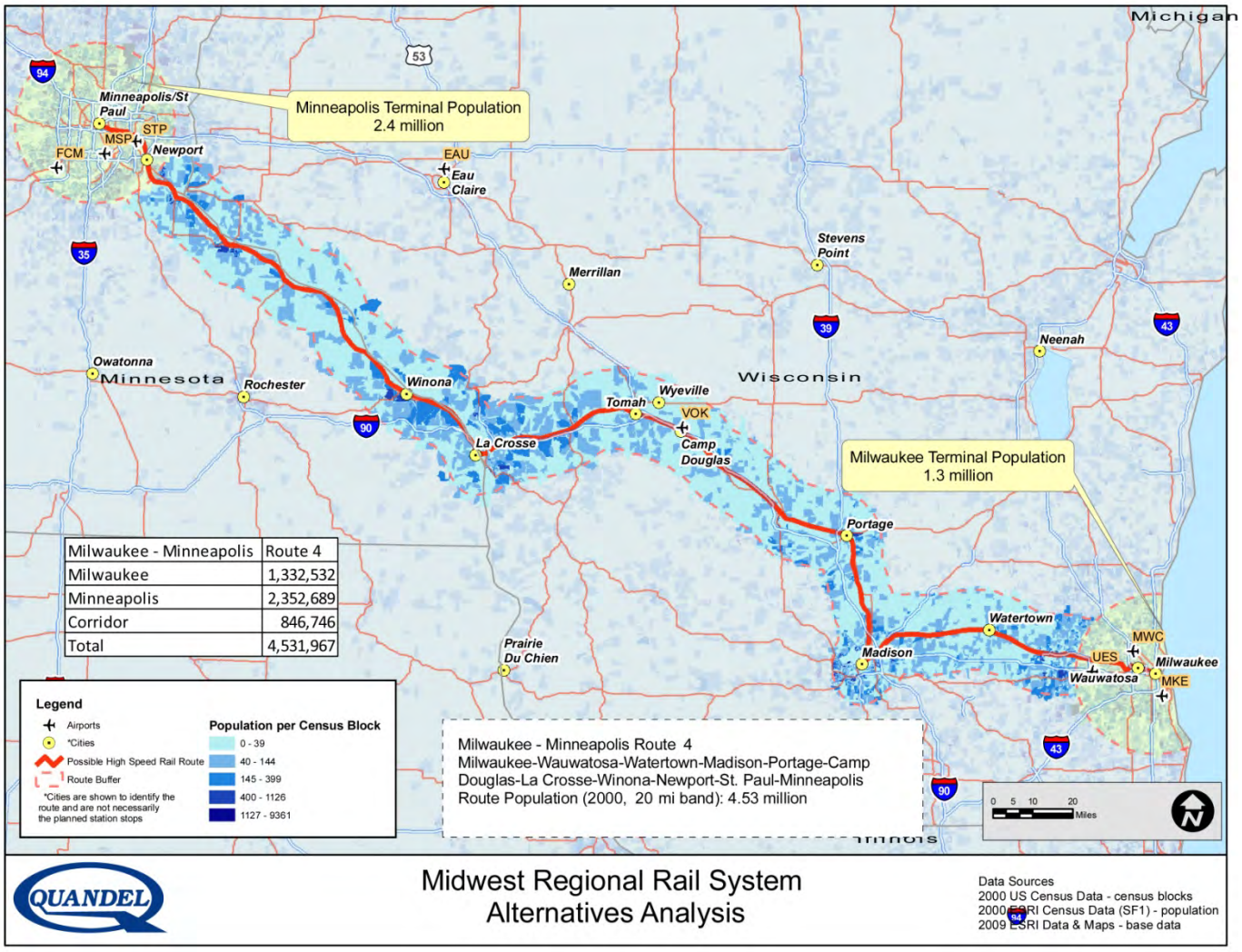
15, 16, 17, 18, 19, 20, 21, 22, 23, 24, and 25 should be eliminated from further analysis.

5.0 EVALUATION SUMMARY

The evaluation criteria of route distance and population centers were used to measure and compare each of the alternatives to the baseline route with consideration of the normative statements for each criterion. As stated previously, Route 4 was selected as the baseline route in the MWRRI Project Notebook. Please refer to Section 2.4 of this report.

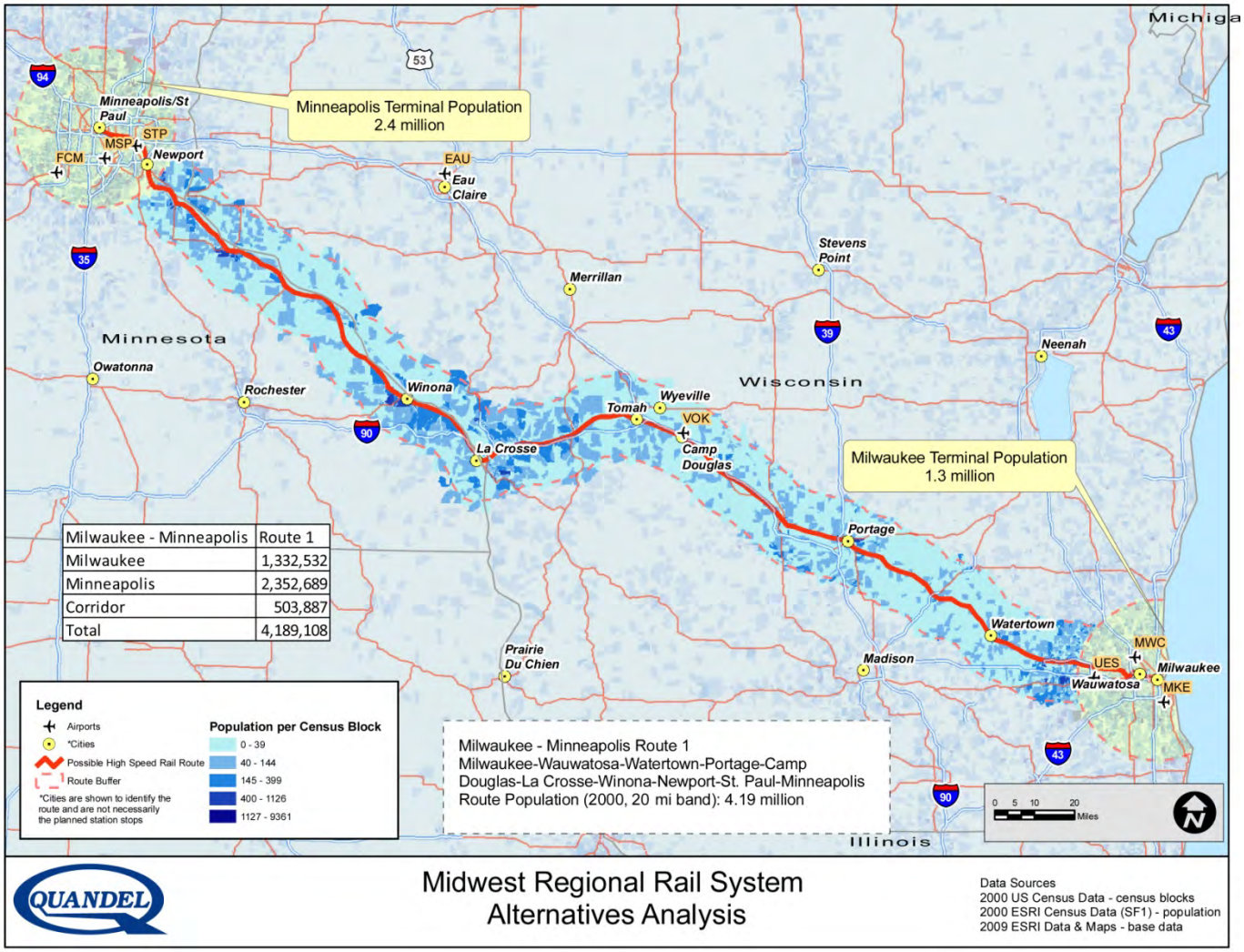
Figures 5-1 through 5-26 show a map of each alternative within the universe of routes detailing route population at each terminal, the route population within the corridor, and the total route population. A summary is also included with the map that documents the difference in the route distance and route population compared to the baseline. The summary also provides information about physical constraints along the alternative route.

Figure 5-1. Route 4 – Baseline Route



Route 4 was selected to be the baseline route since it was the route used between Milwaukee and the Twin Cities to develop the Midwest Regional Rail System (MWRRS). Please see section 2.4 for a description of the MWRRS and the baseline route.

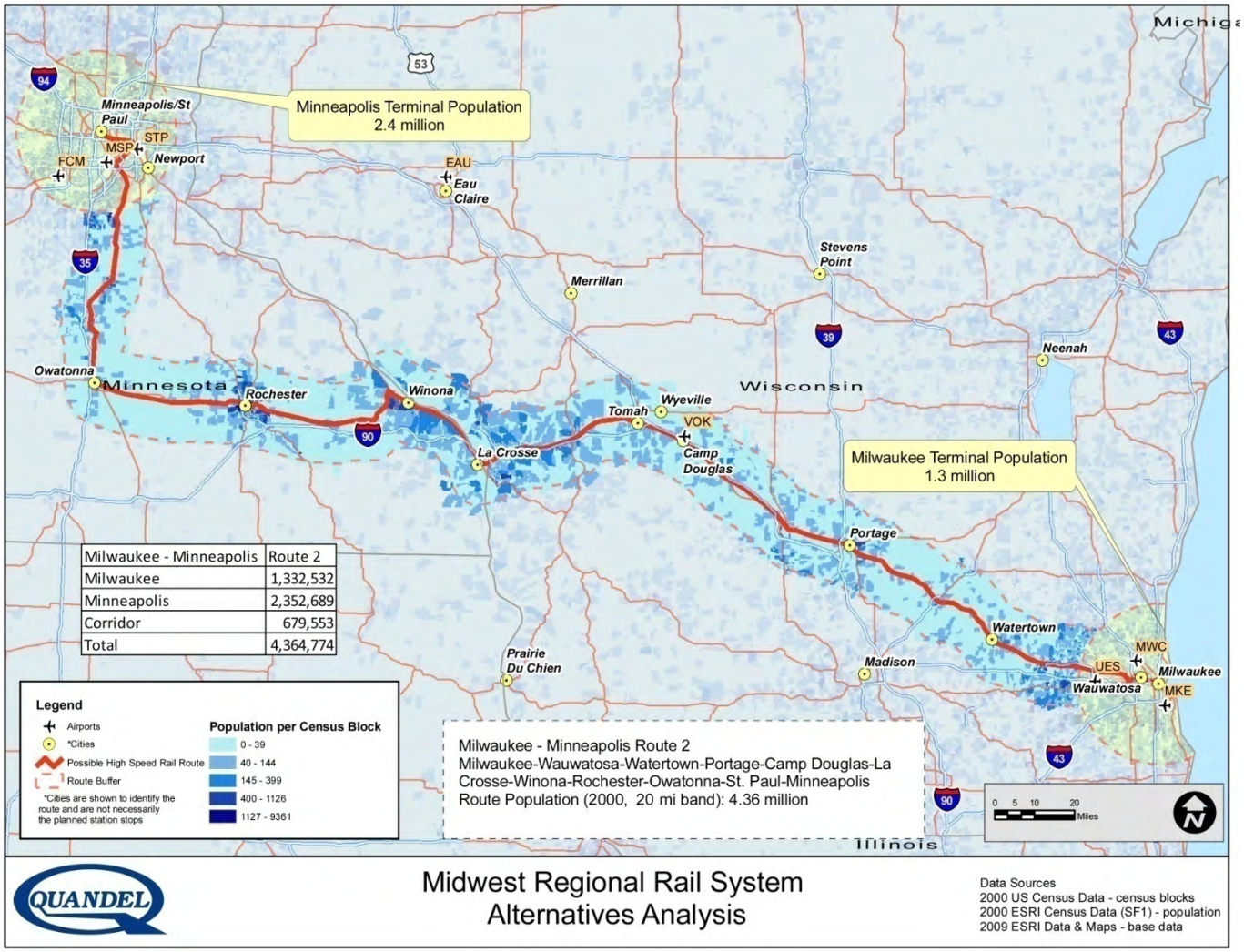
Figure 5-2. Route 1



Milwaukee - Minneapolis	Route 1
Milwaukee	1,332,532
Minneapolis	2,352,689
Corridor	503,887
Total	4,189,108

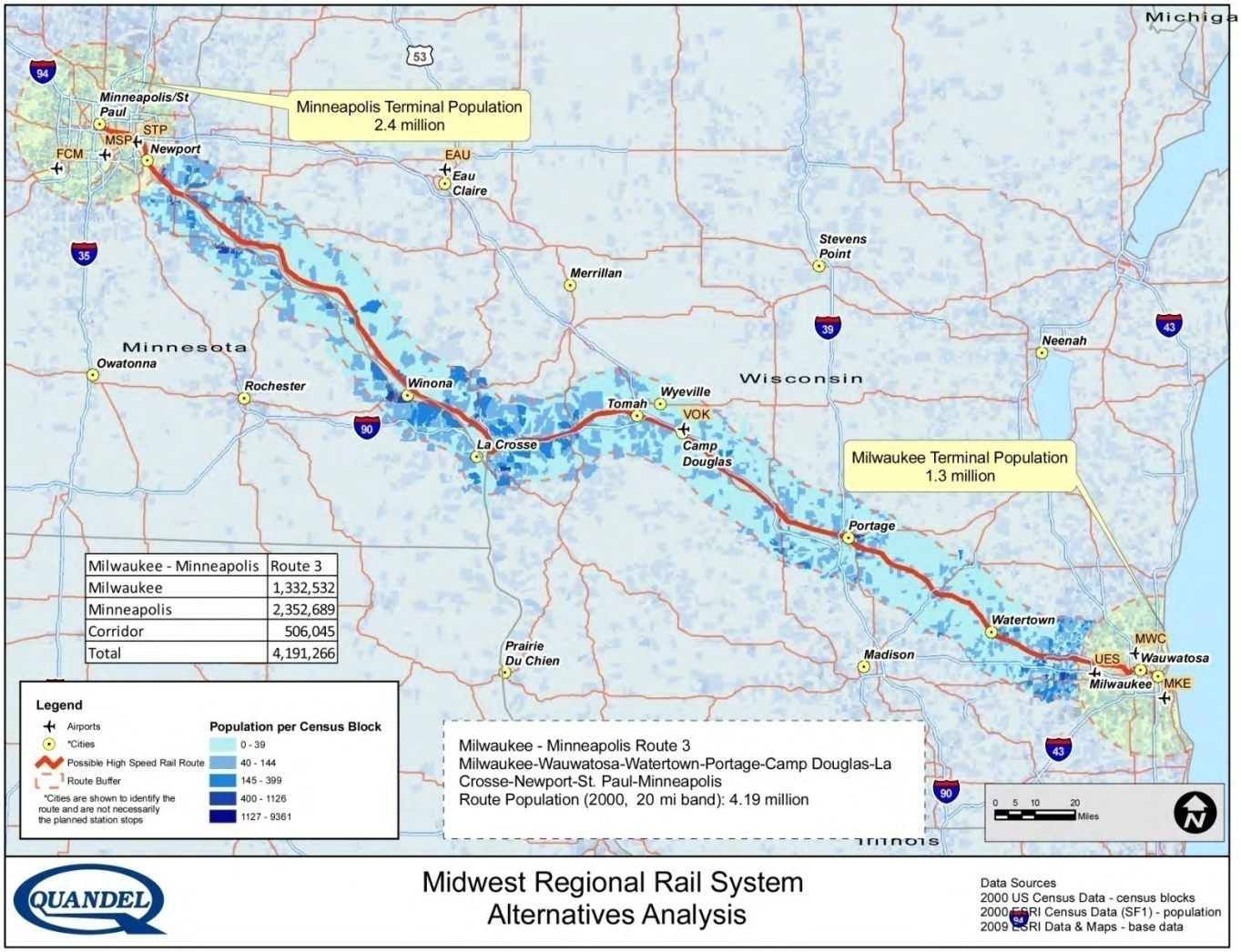
Route 1 has a route distance that is 6% shorter than the Baseline route. The route population is 8% lower than the Baseline route. There are no physical constraints along the route.

Figure 5-3. Route 2



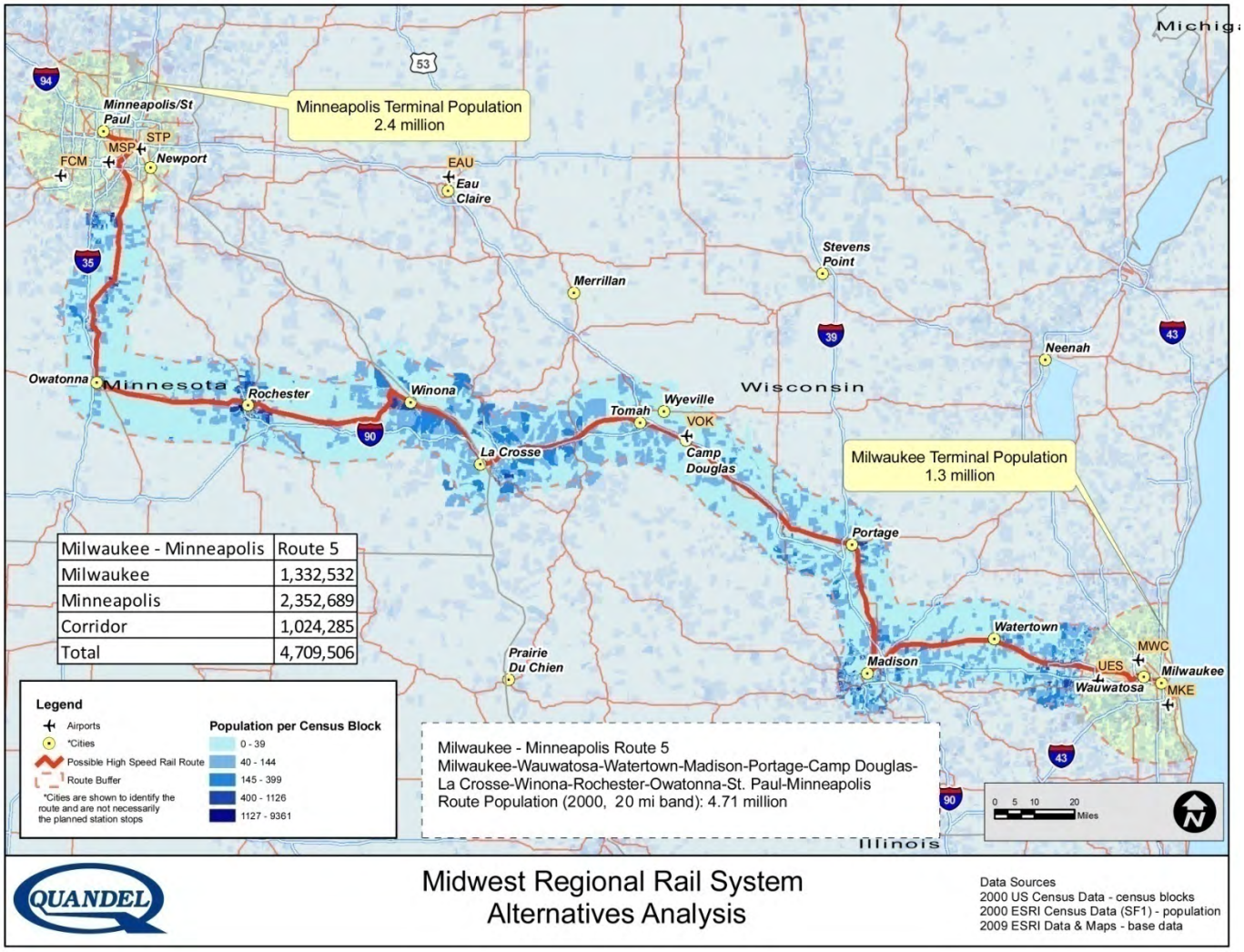
Route 2 has a route distance that is 9% greater than the Baseline route. In addition, the route population is 4% lower than the Baseline route. There are no physical constraints along the route.

Figure 5-4. Route 3



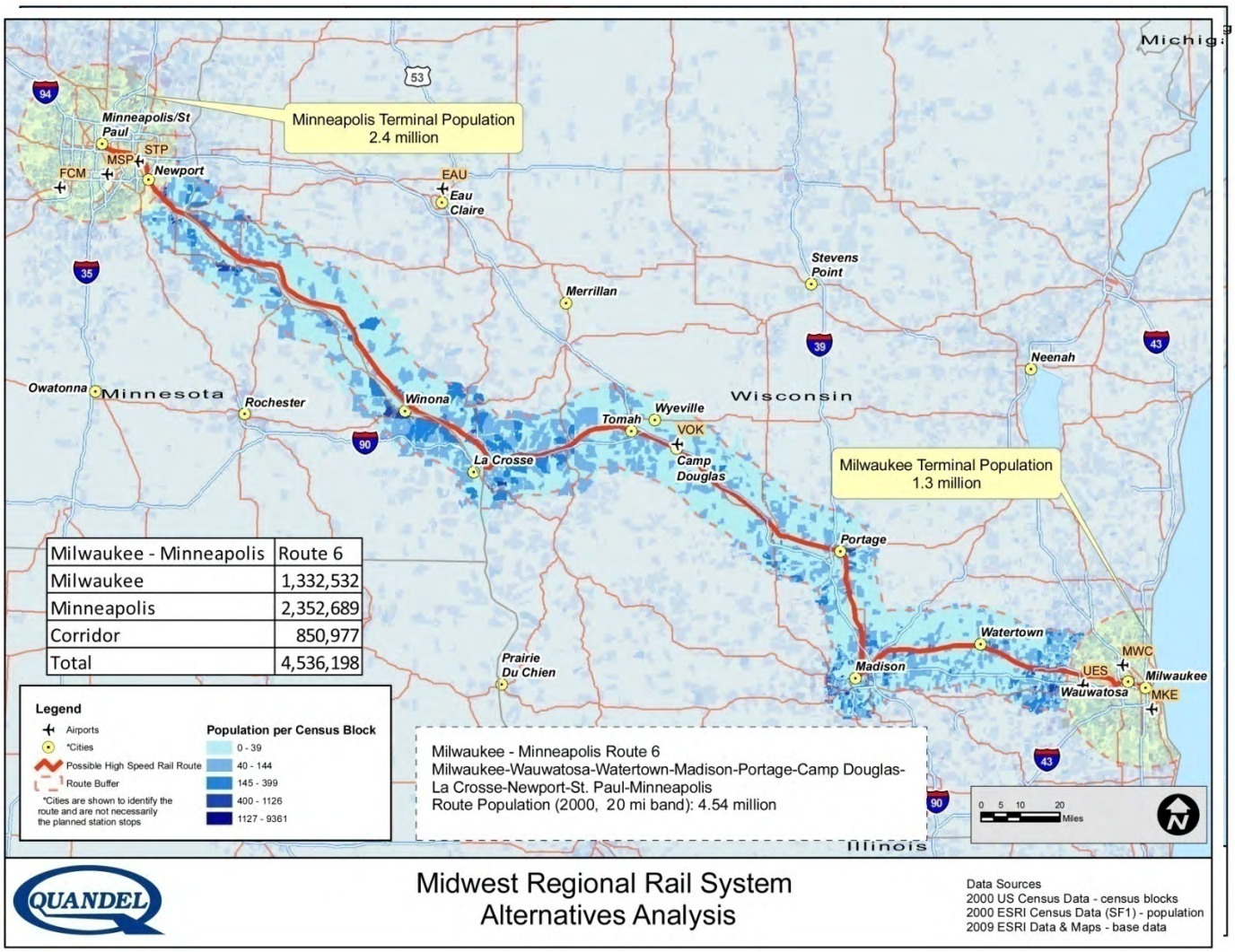
Route 3 has a route distance that is 6% shorter than the Baseline route. The route population is 8% lower than the Baseline route. There are no physical constraints along the route.

Figure 5-5. Route 5



Route 5 has a route distance that is 16% greater than the Baseline route. The route population is 4% greater than the Baseline route. There are no physical constraints along the route.

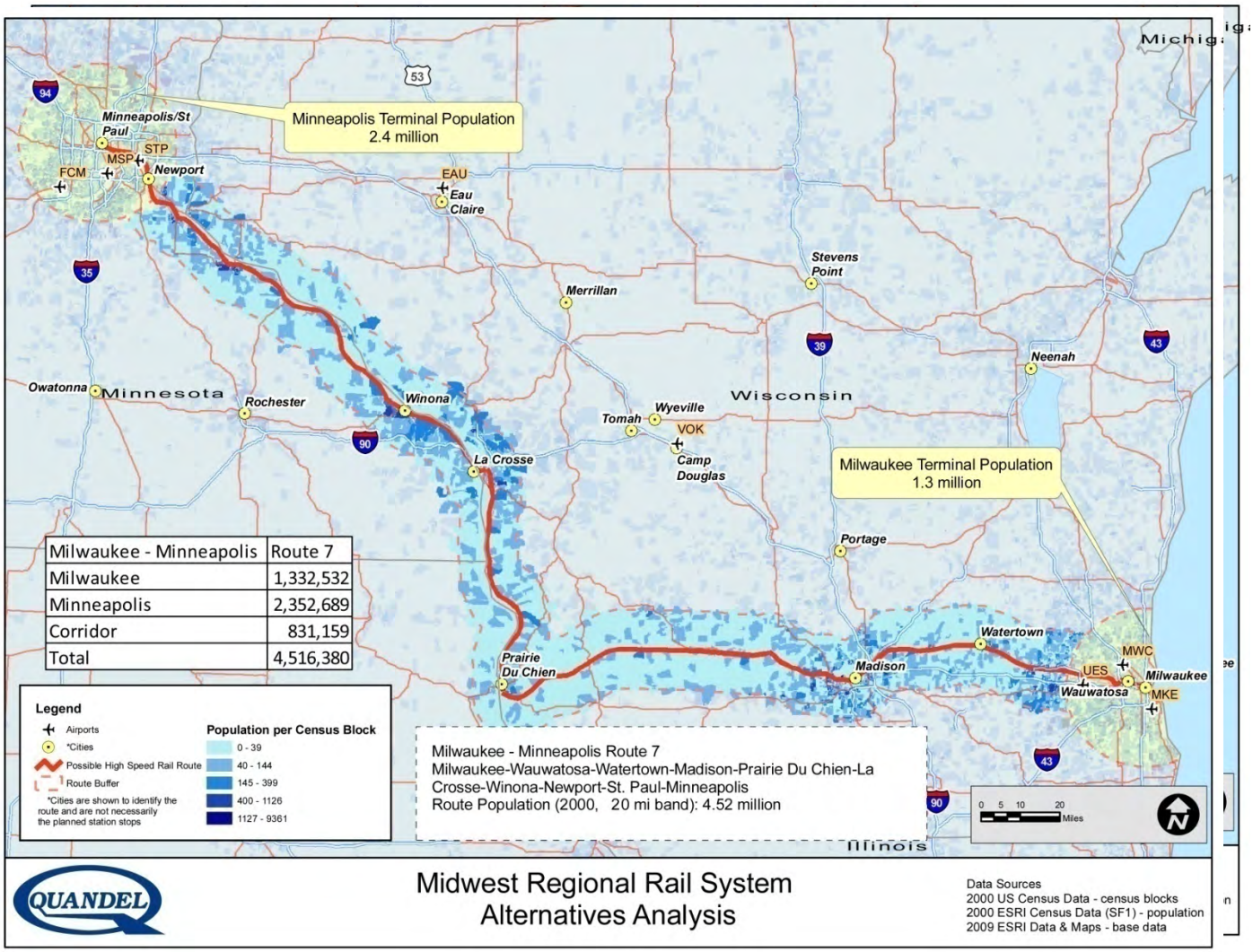
Figure 5-6. Route 6



Milwaukee - Minneapolis	Route 6
Milwaukee	1,332,532
Minneapolis	2,352,689
Corridor	850,977
Total	4,536,198

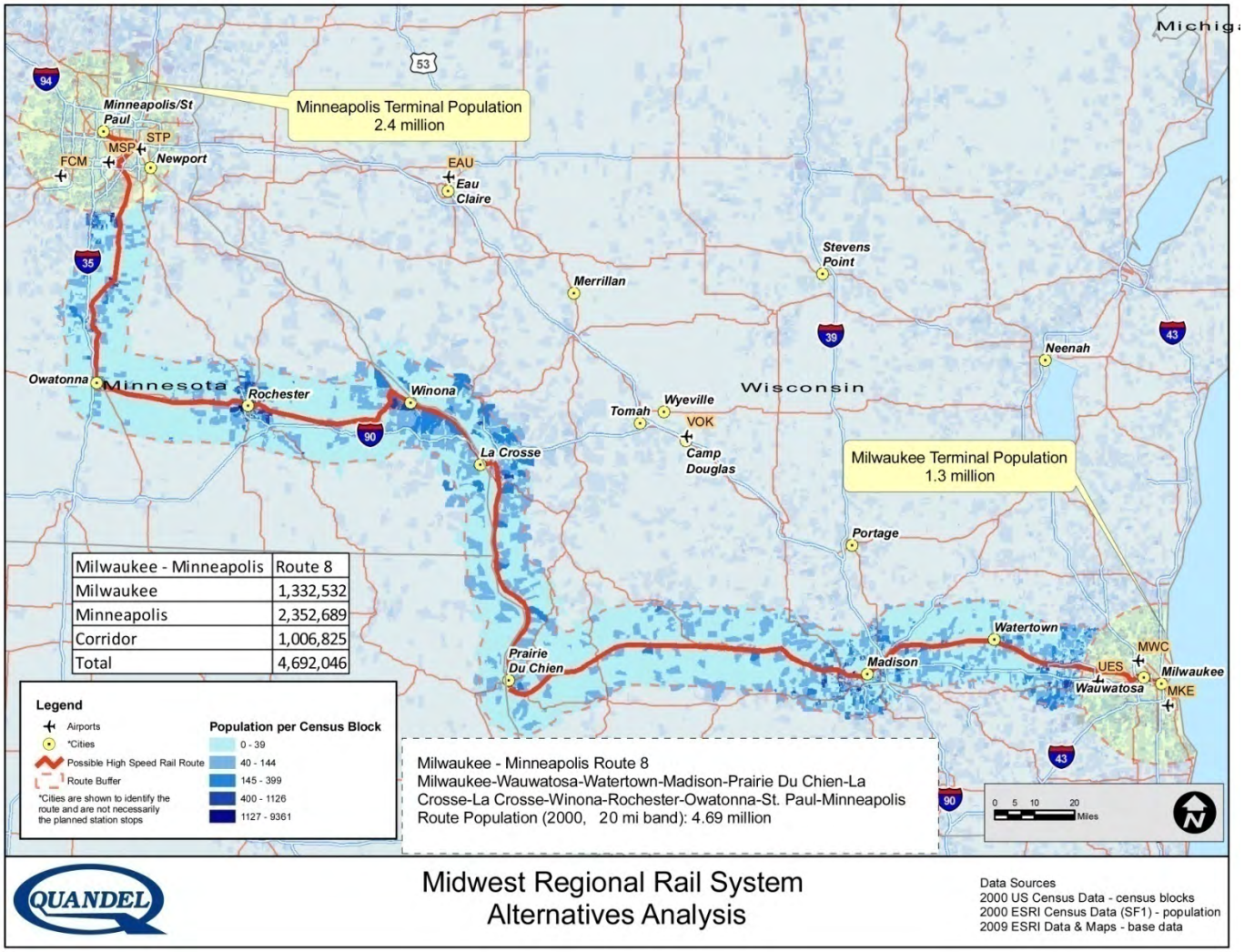
Route 6 has a route distance that is equal to the Baseline route. The route population is also equal to the Baseline. There are no physical constraints along the route.

Figure 5-7. Route 7



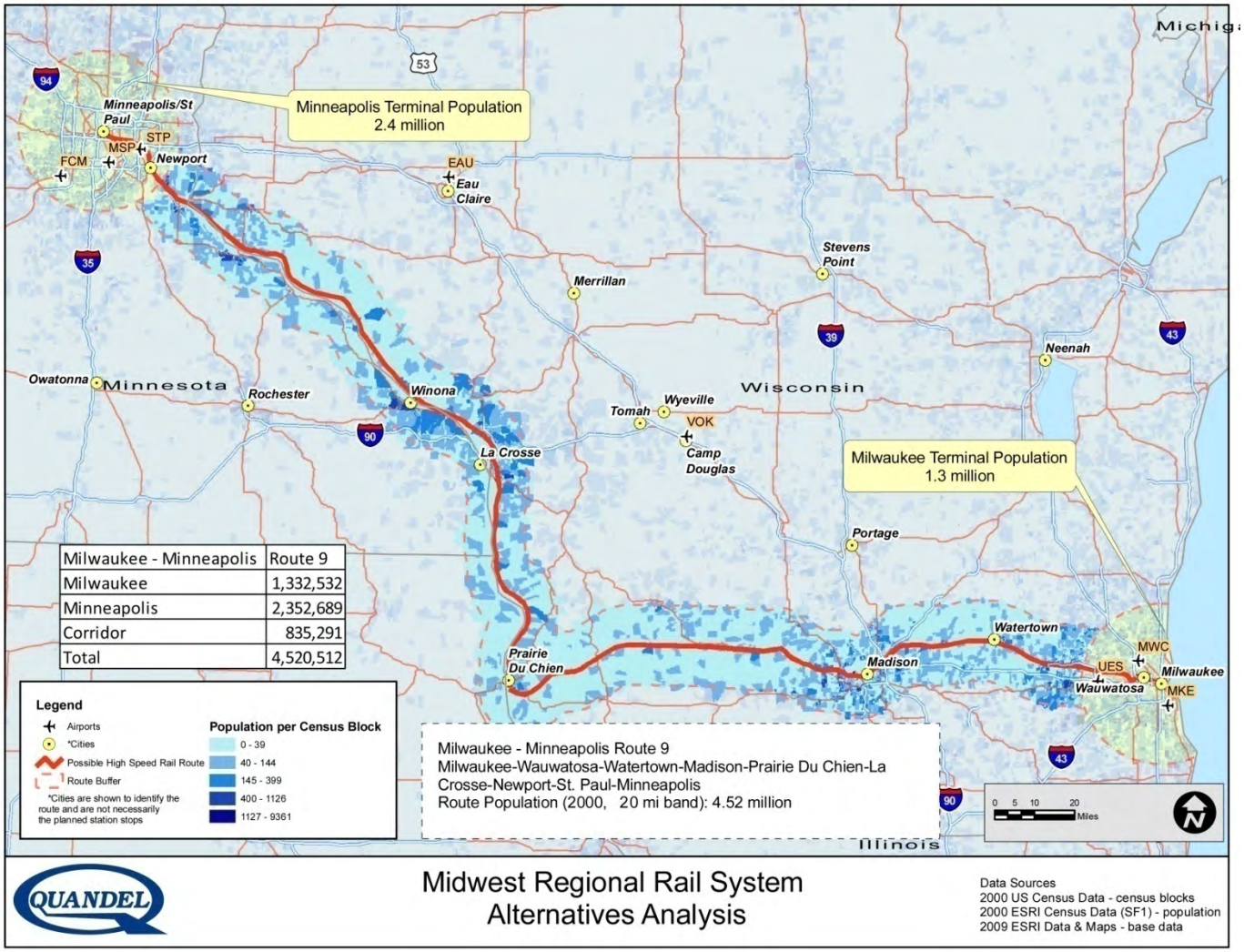
Route 7 has a route distance that is 5% greater than the Baseline route. The route population is equal to the Baseline. There are no physical constraints along the route.

Figure 5-8. Route 8



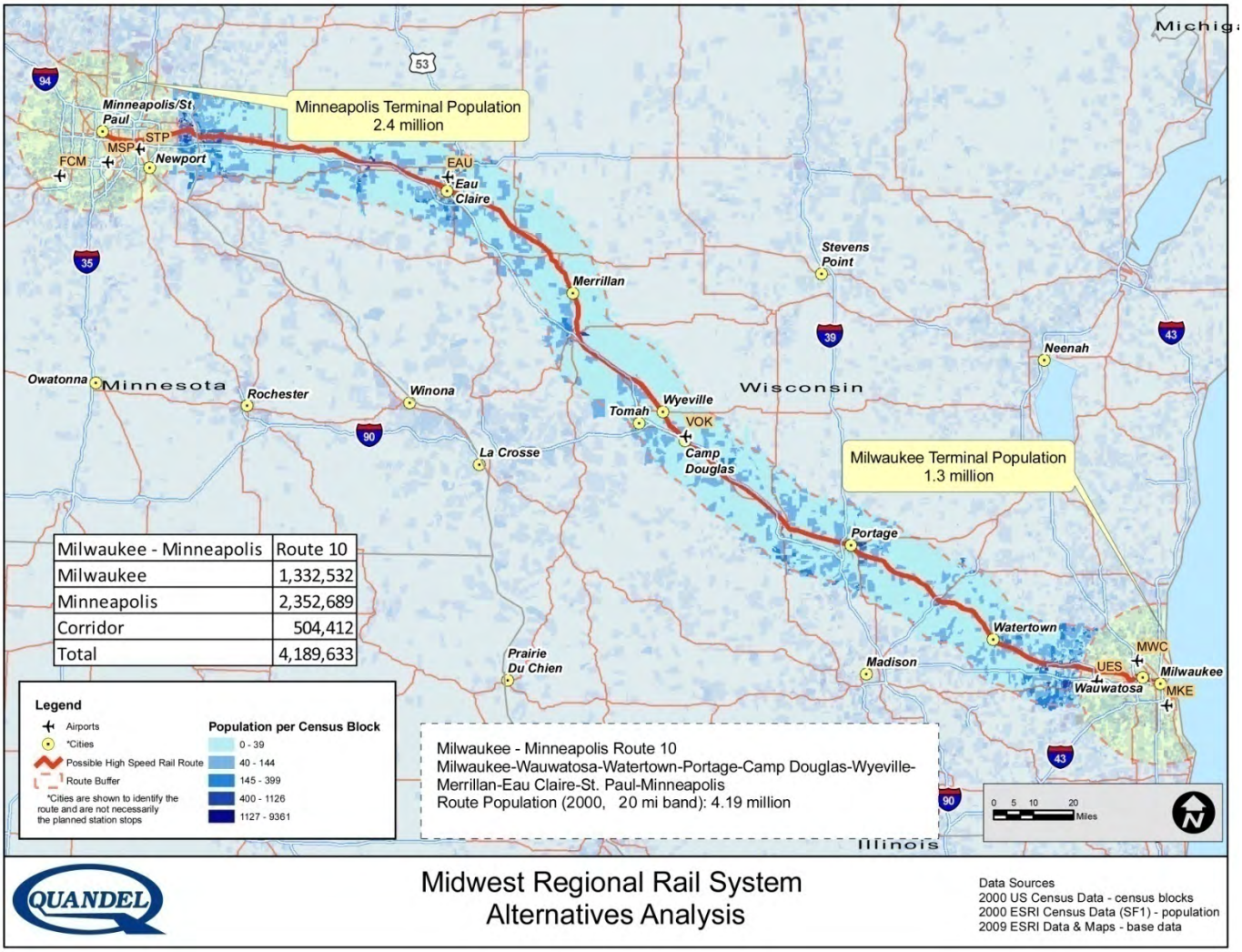
Route 8 has a route distance that is 21% greater than the Baseline route. The route has a route population that is 4% greater than the Baseline. There are no physical constraints along the route.

Figure 5-9. Route 9



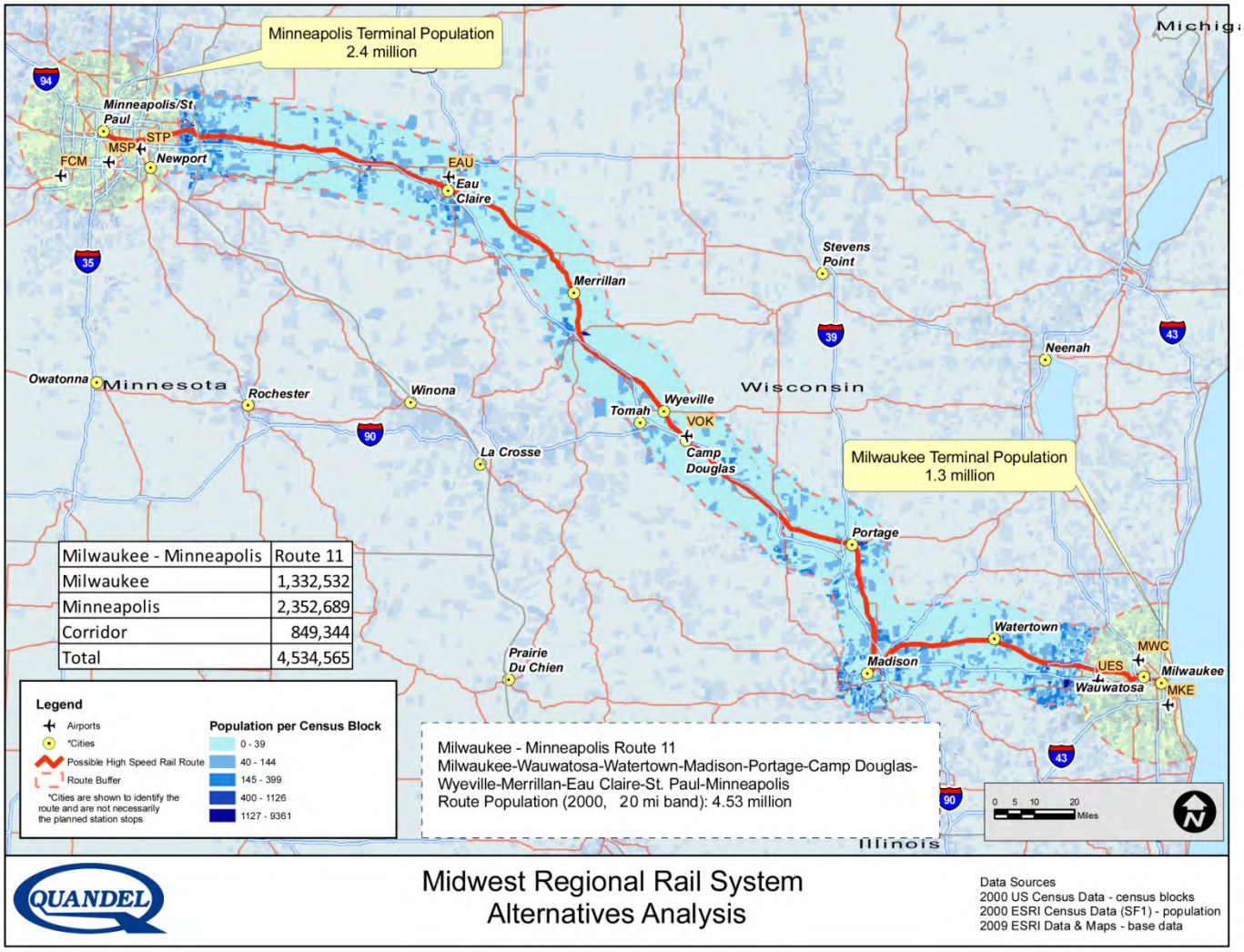
Route 9 has a route distance that is 5% greater than the Baseline route. The route population is equal to the Baseline. There are no physical constraints along the route.

Figure 5-10. Route 10



Route 10 has a route distance that is 8% shorter than the Baseline route. The route population is 8% lower than the Baseline route. There are no physical constraints along the route.

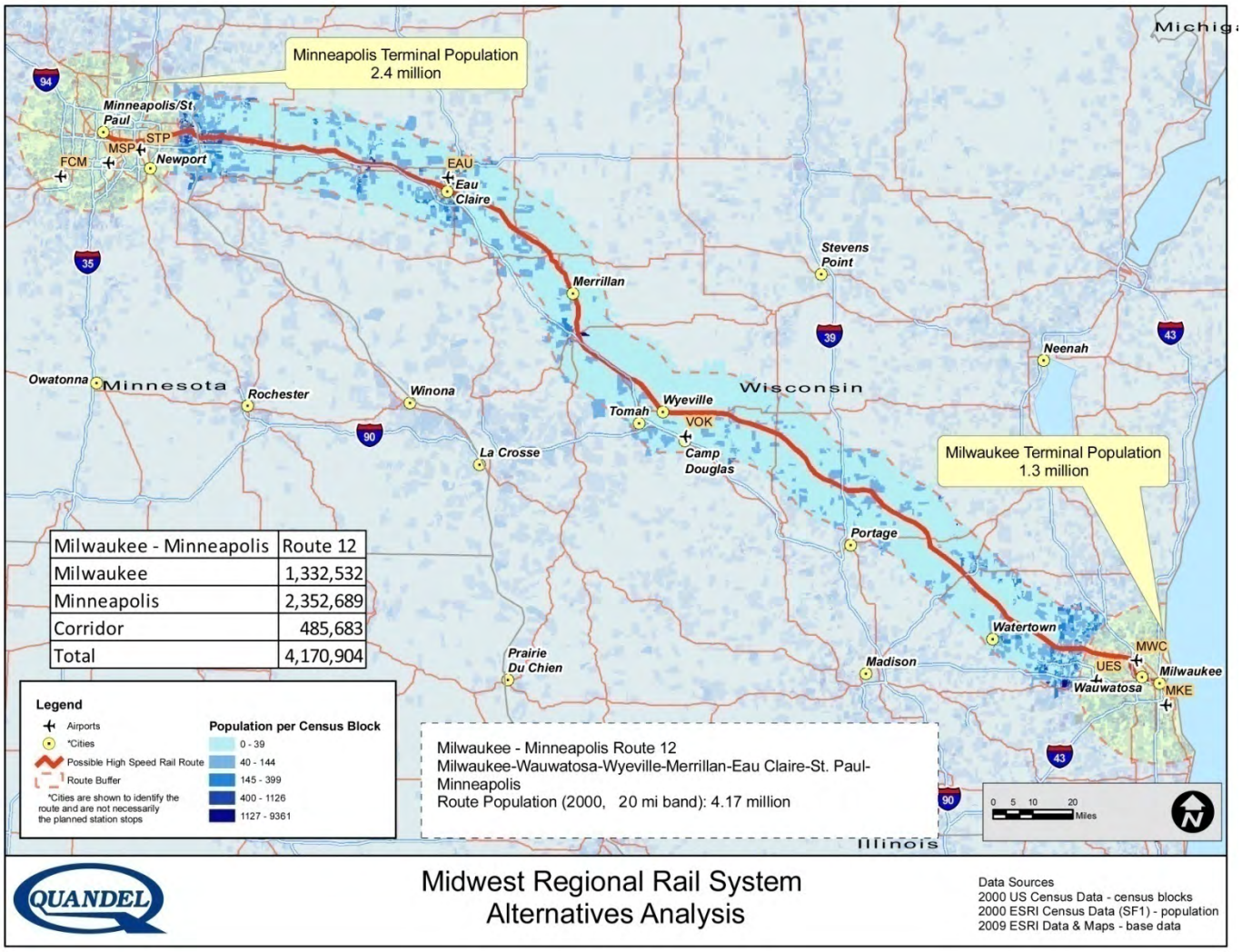
Figure 5-11. Route 11



Milwaukee - Minneapolis	Route 11
Milwaukee	1,332,532
Minneapolis	2,352,689
Corridor	849,344
Total	4,534,565

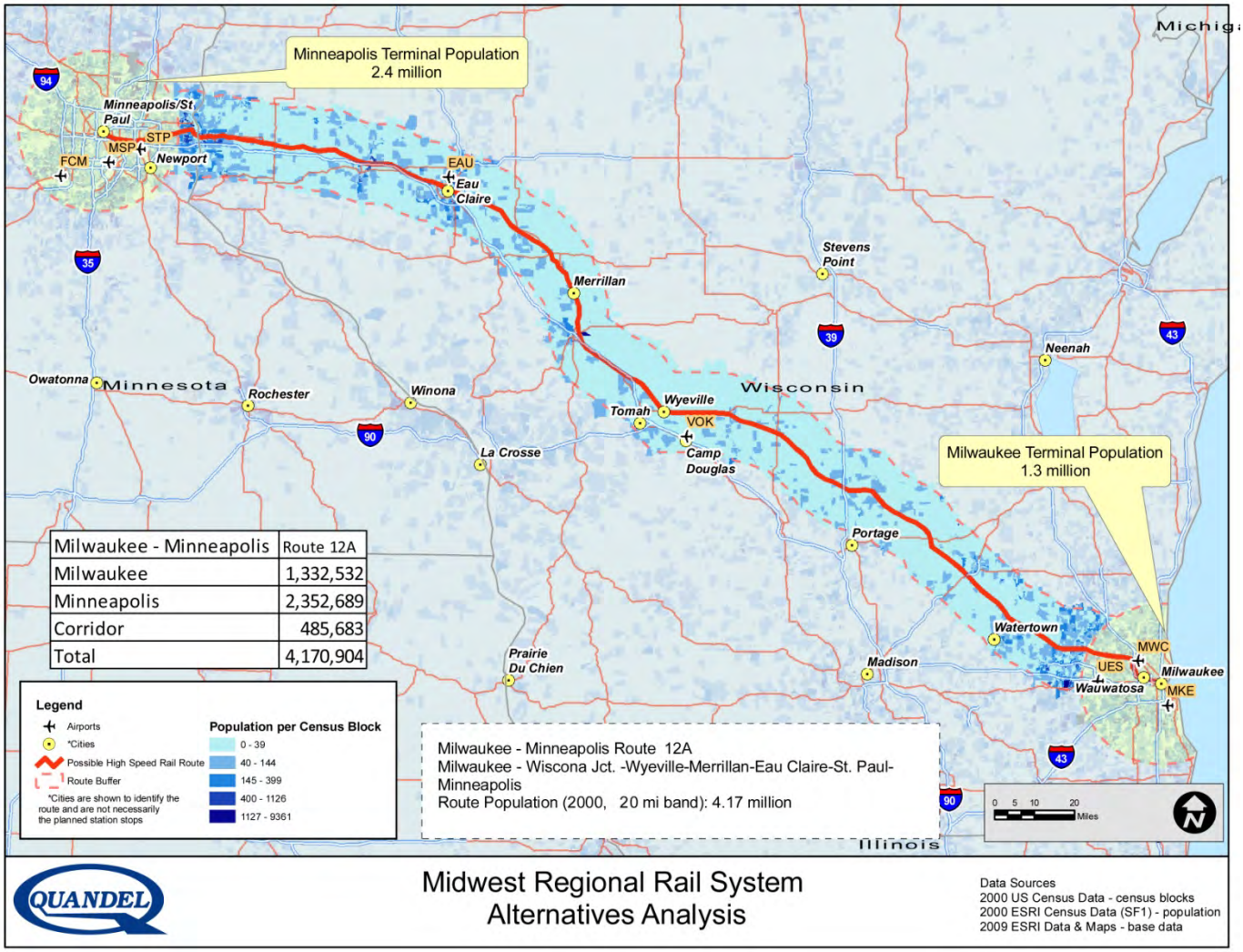
Route 11 has a route distance that is 1% shorter than the Baseline route. The route population is equal to the Baseline. There are no physical constraints along the route.

Figure 5-12. Route 12



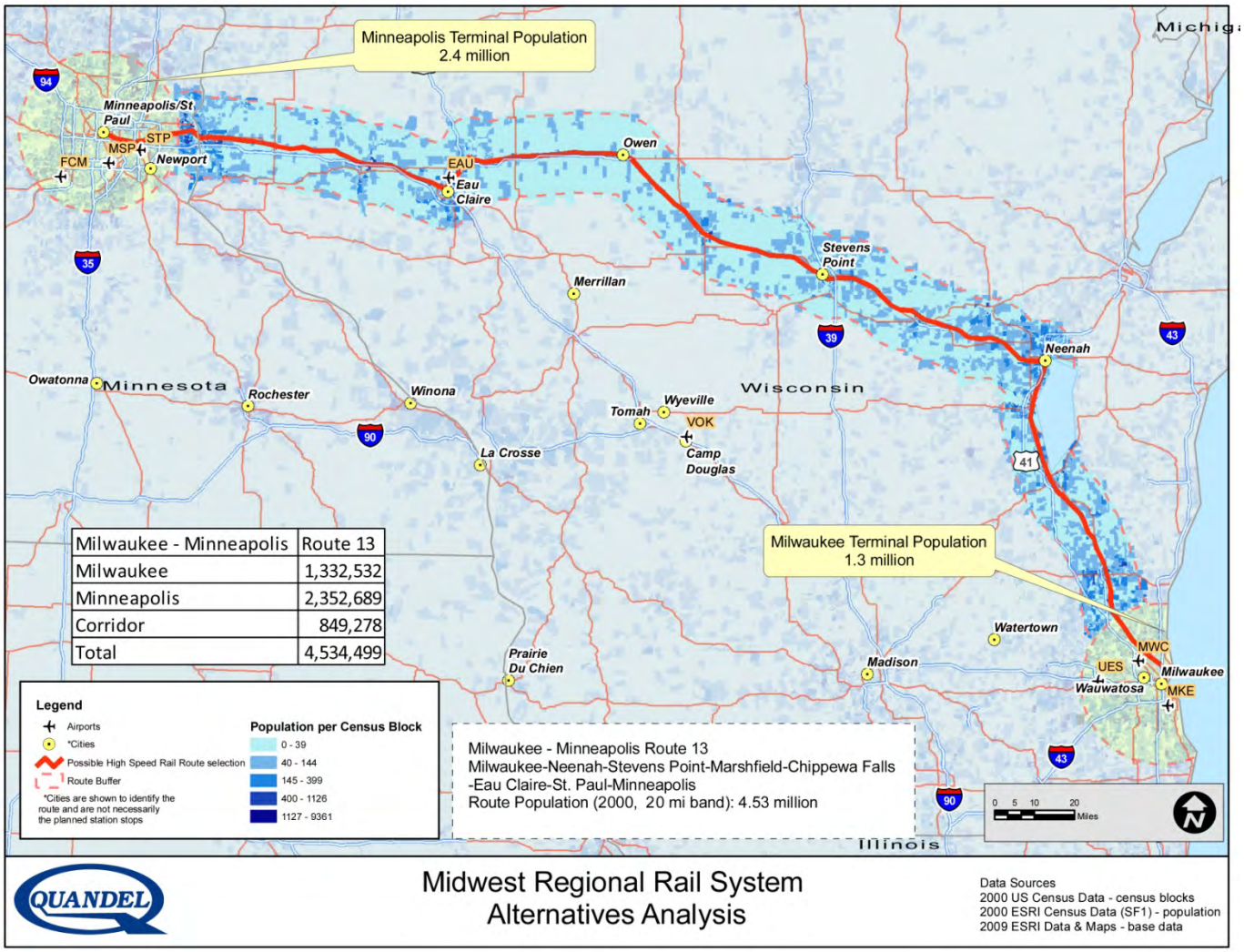
Route 12 has a route distance that is 7% shorter than the Baseline route. The route population is 8% lower than the Baseline route. Additionally, Route 12 has physical constraints in Segment I in the form of a shopping center and residential neighborhoods preventing the connection of Segment B to Segment I.

Figure 5-13. Route 12A



Route 12A has a route distance that is 5% shorter than the Baseline route. The route population is 8% lower than the Baseline route. There are no physical constraints along the route.

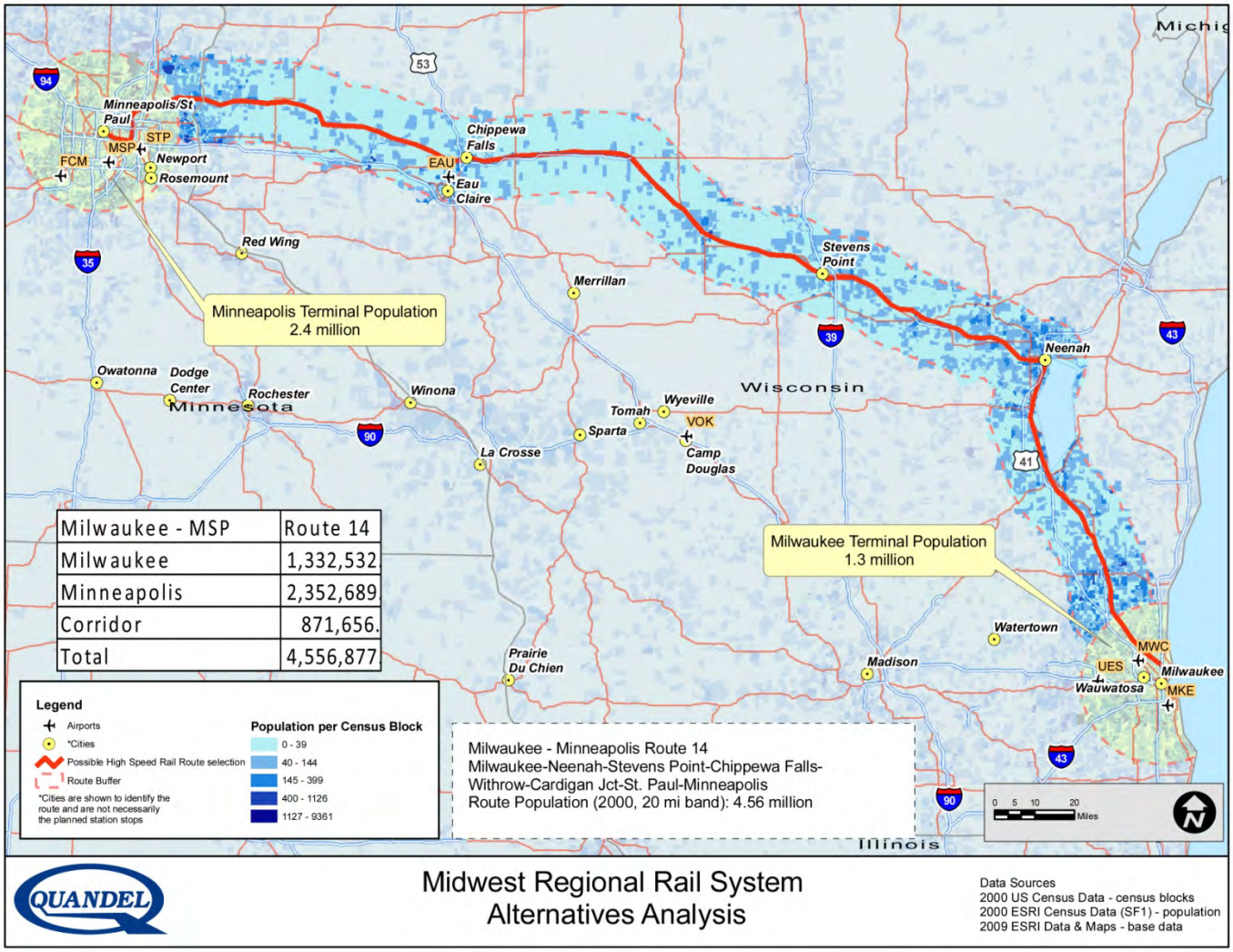
Figure 5-14. Route 13



Milwaukee - Minneapolis	Route 13
Milwaukee	1,332,532
Minneapolis	2,352,689
Corridor	849,278
Total	4,534,499

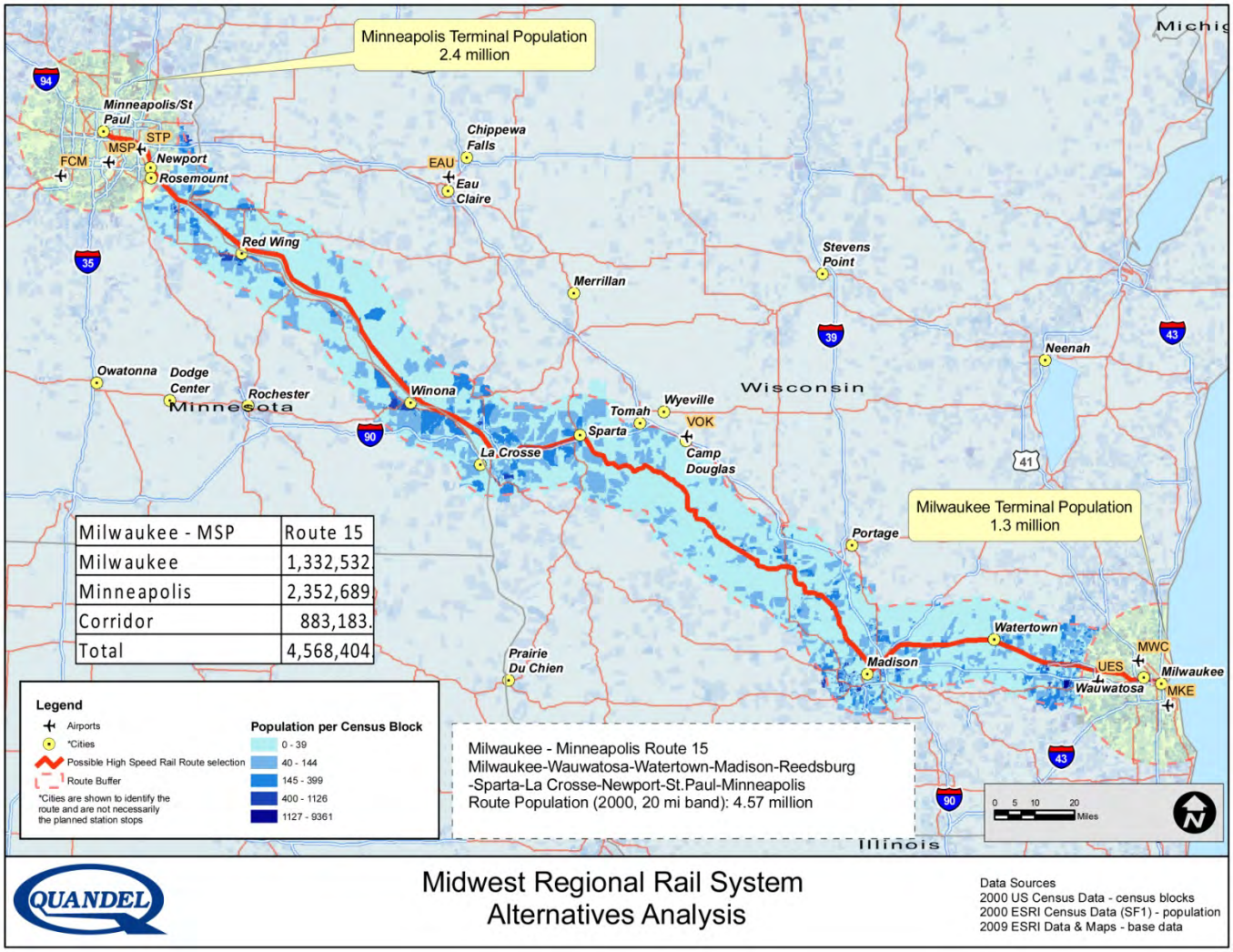
Route 13 has a route distance that is 2% greater than the Baseline route. The route population is equal to the Baseline. There are no physical constraints along the route.

Figure 5-15. Route 14



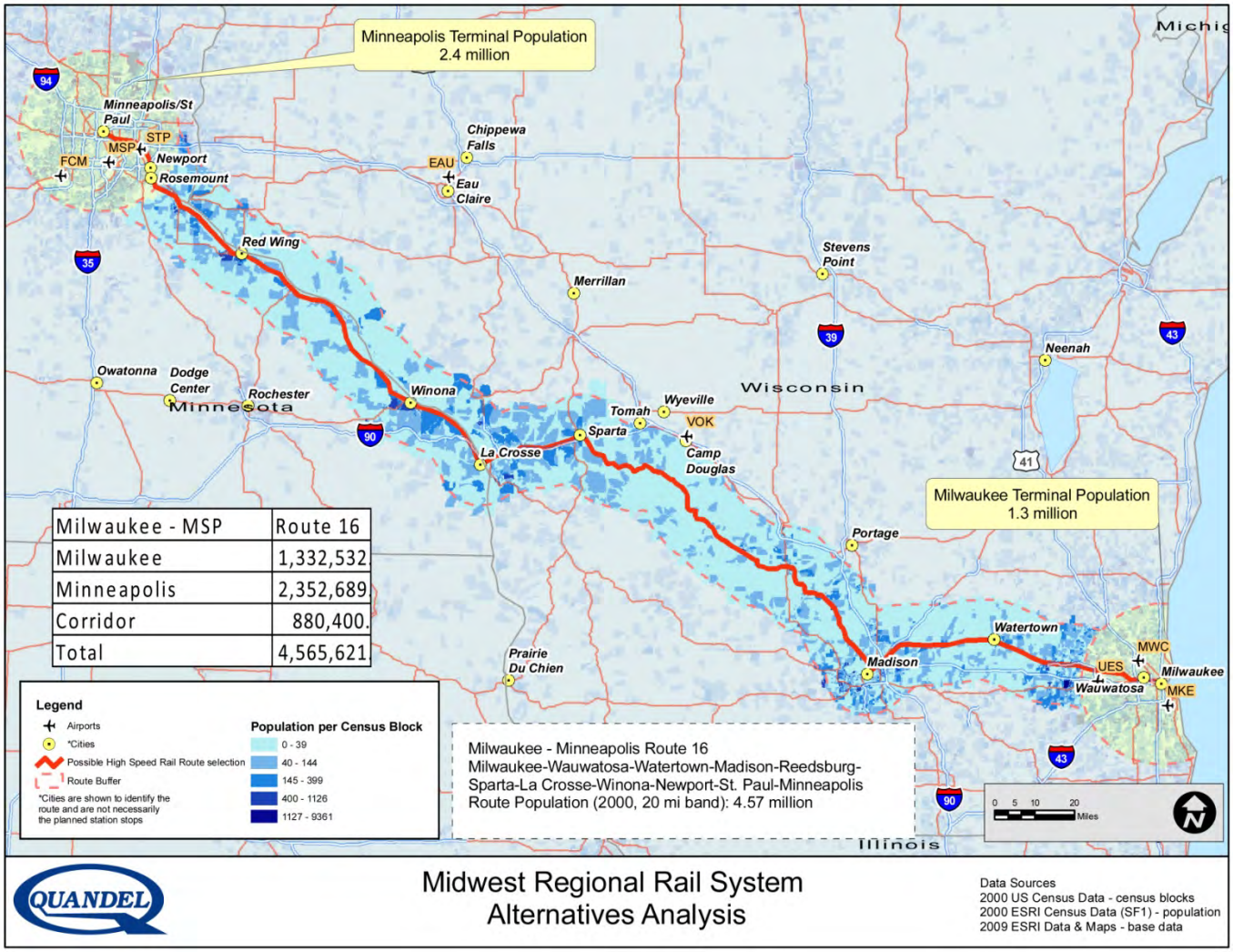
Route 14 has a route distance that is 3% greater than the Baseline route. The route population is 1% greater than the Baseline. There are no physical constraints along the route.

Figure 5-16. Route 15



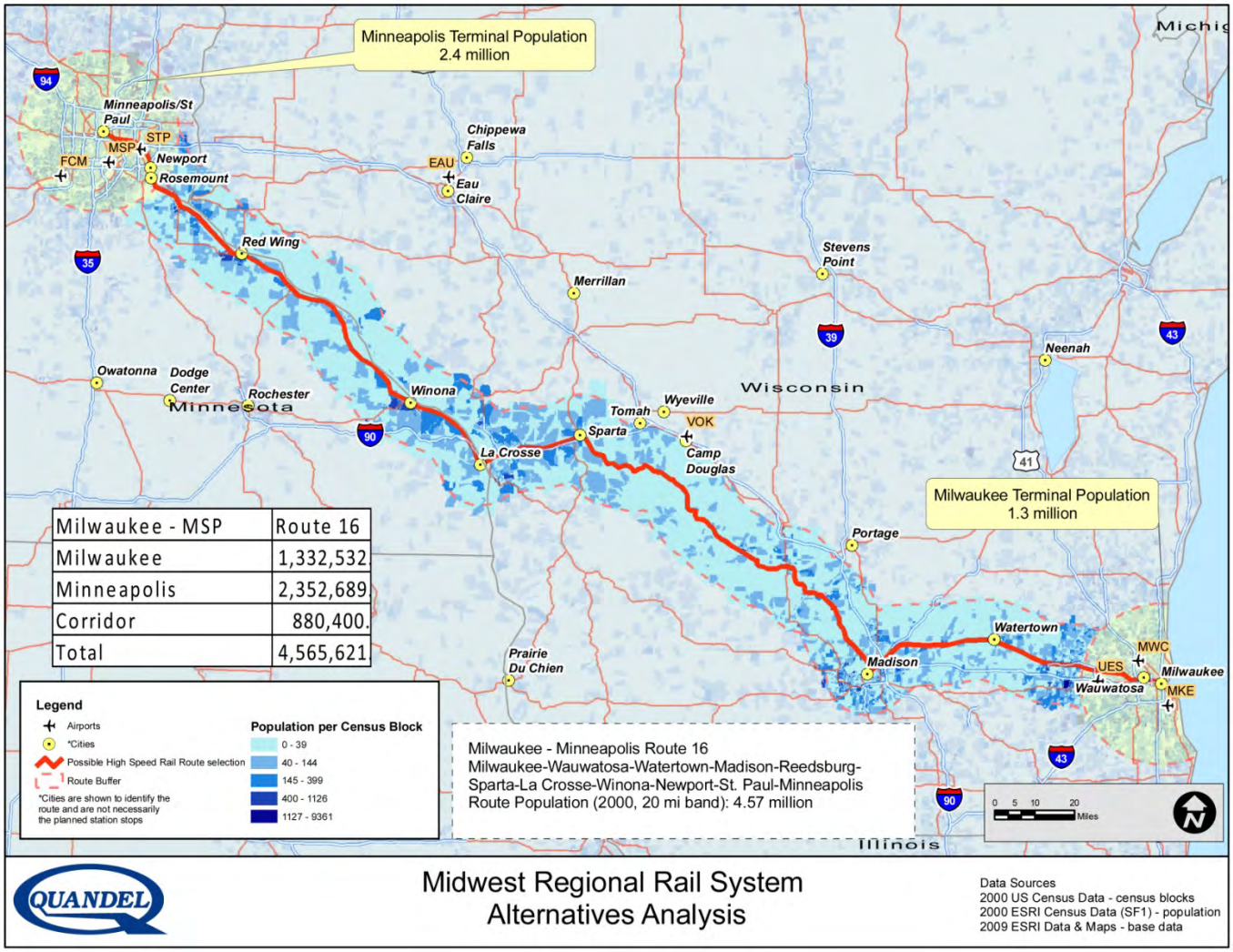
Route 15 has a route distance that is 3% shorter than the Baseline route. The route population is 1% greater than the Baseline. Additionally, Route 15 has a physical constraint in Segment H in the form of industrial facilities built on railroad right-of-way in Elroy, WI.

Figure 5-17. Route 16



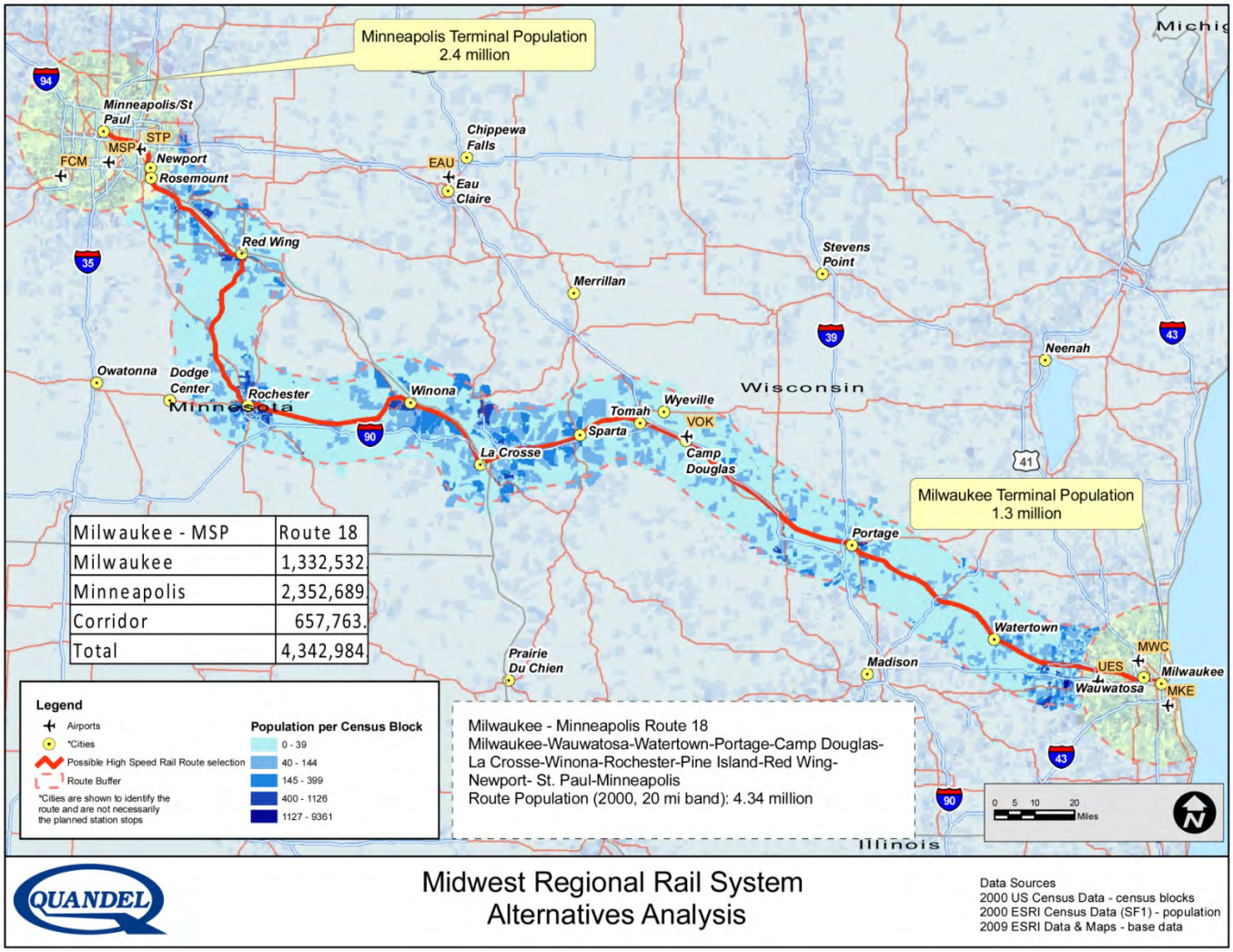
Route 16 has a route distance that is 5% shorter than the Baseline route. The route population is 1% greater than the Baseline. Additionally, Route 16 has a physical constraint in Segment H in the form of industrial facilities built on railroad right-of-way in Elroy, WI.

Figure 5-18. Route 17



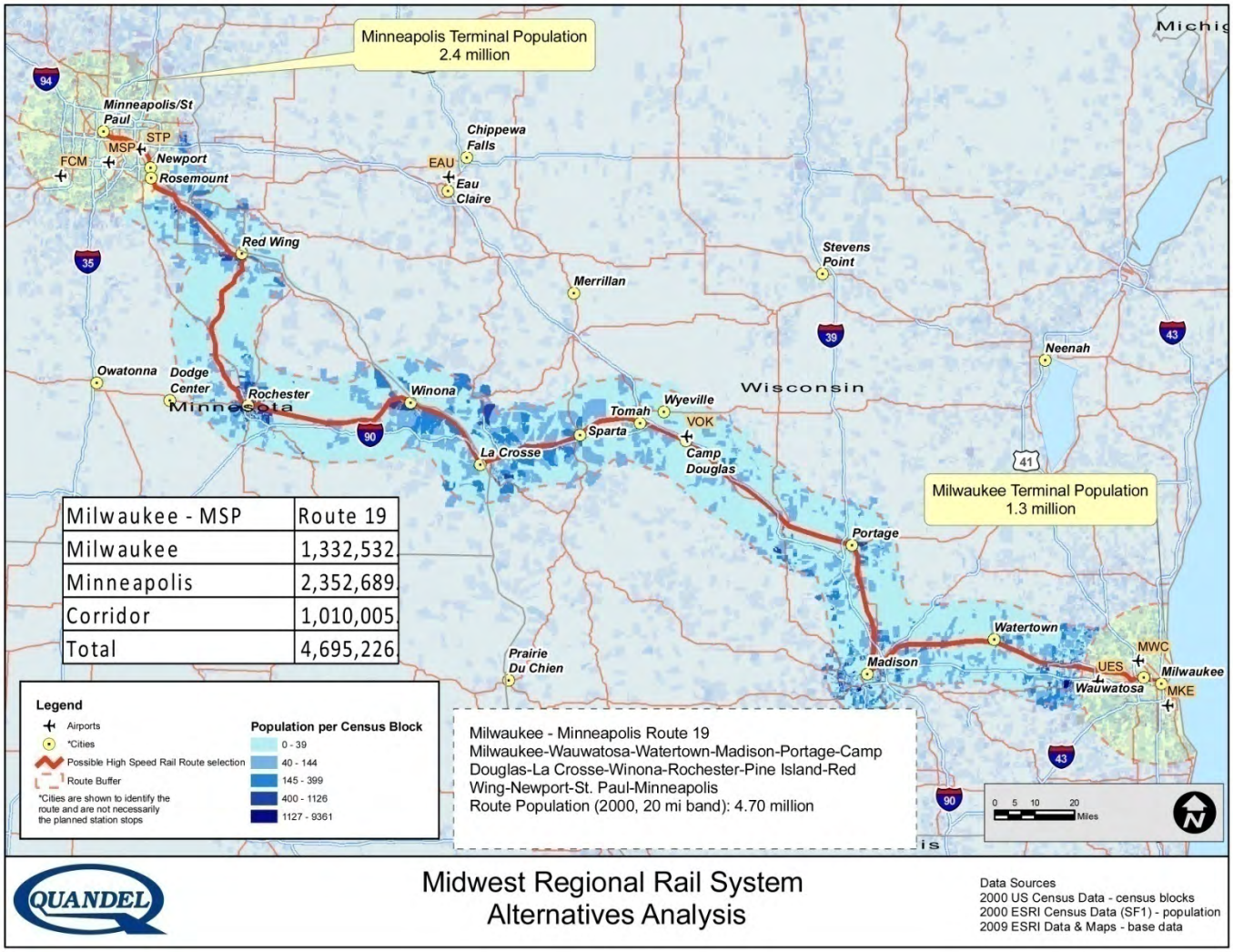
Route 17 has a route distance that is 12% greater than the Baseline. The route population is 5% greater than the Baseline route. Route 17 has multiple physical constraints in Segment H in the form of industrial facilities built on railroad right-of-way in Elroy, WI.

Figure 5-19. Route 18



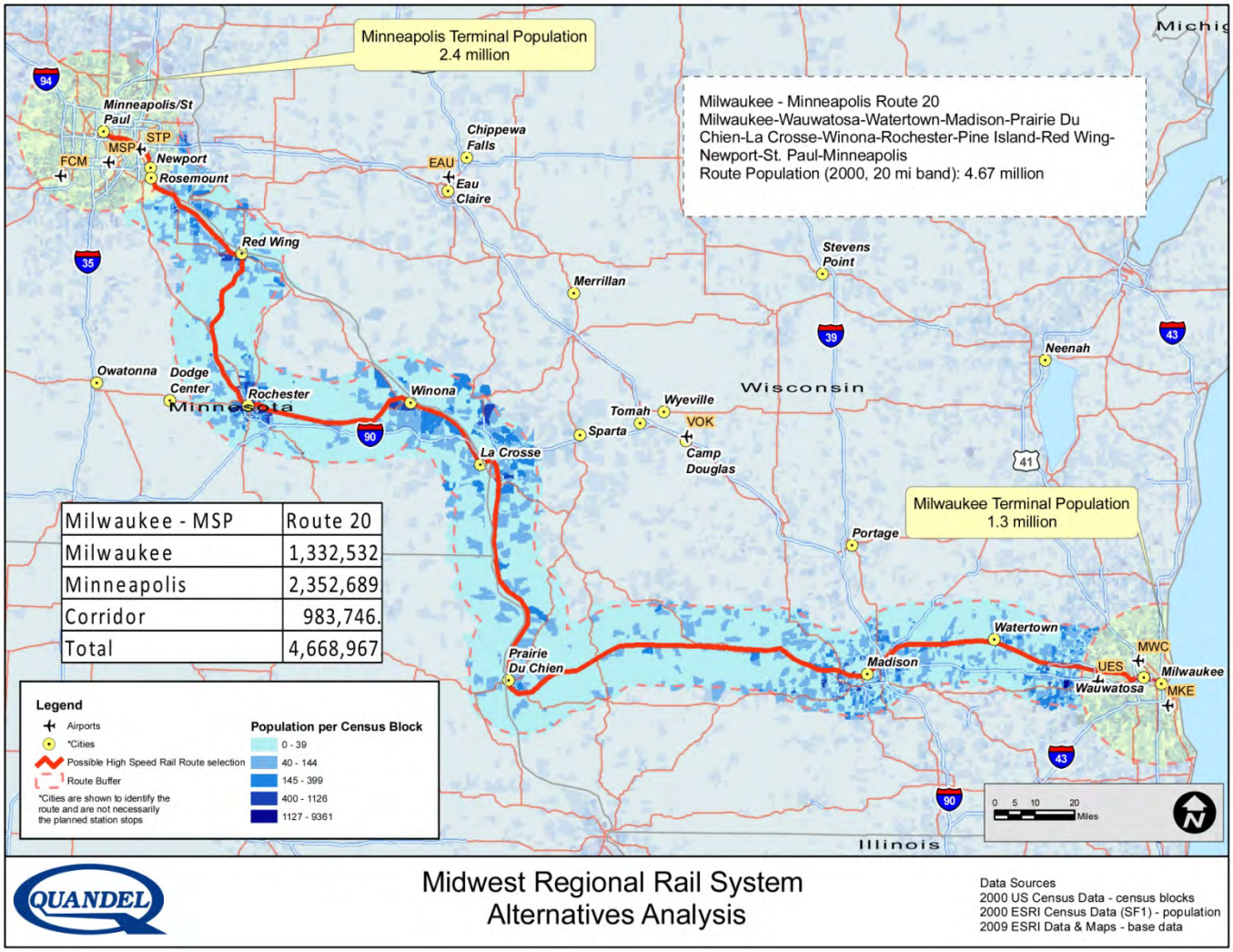
Route 18 has a route distance that is 3% greater than the Baseline route. The route population is 4% lower than the Baseline. Route 18 also has multiple physical constraints in Segment U. The towns of Pine Island, MN, Zumbrota, MN, and Goodhue, MN were built on railroad right-of-way.

Figure 5-20. Route 19



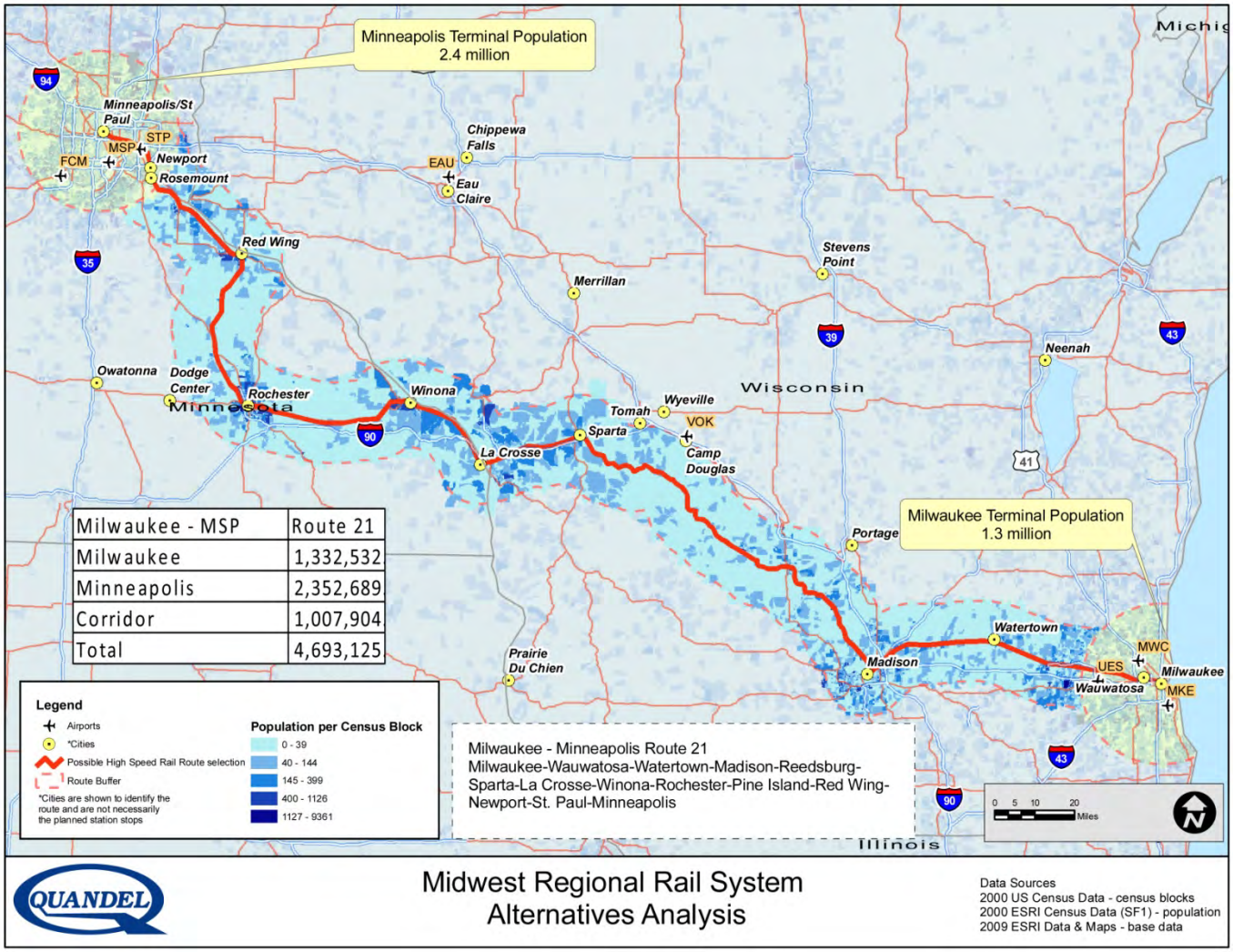
Route 19 has a route distance 9% greater than the Baseline route. The route population is 4% greater than the Baseline. However, Route 19 has multiple physical constraints in Segment U. The towns of Pine Island, MN, Zumbrota, MN, and Goodhue, MN were built on railroad right-of-way.

Figure 5-21. Route 20



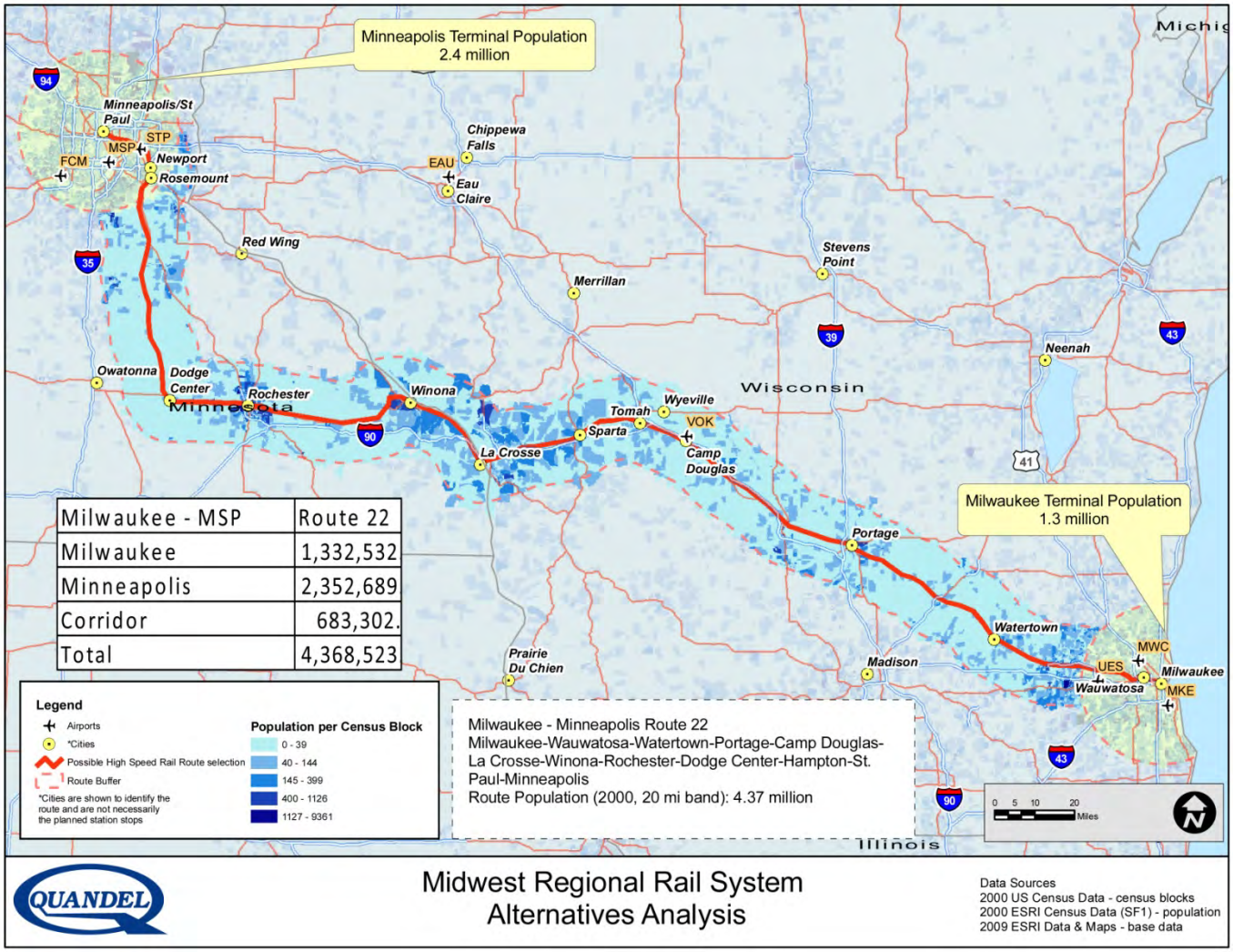
Route 20 has a route distance 14% greater than the Baseline route. The route population is 3% greater than the Baseline. However, Route 20 has multiple physical constraints in Segment U. The communities of Pine Island, MN, Zumbrota, MN, and Goodhue, MN were built on railroad right-of-way.

Figure 5-22. Route 21



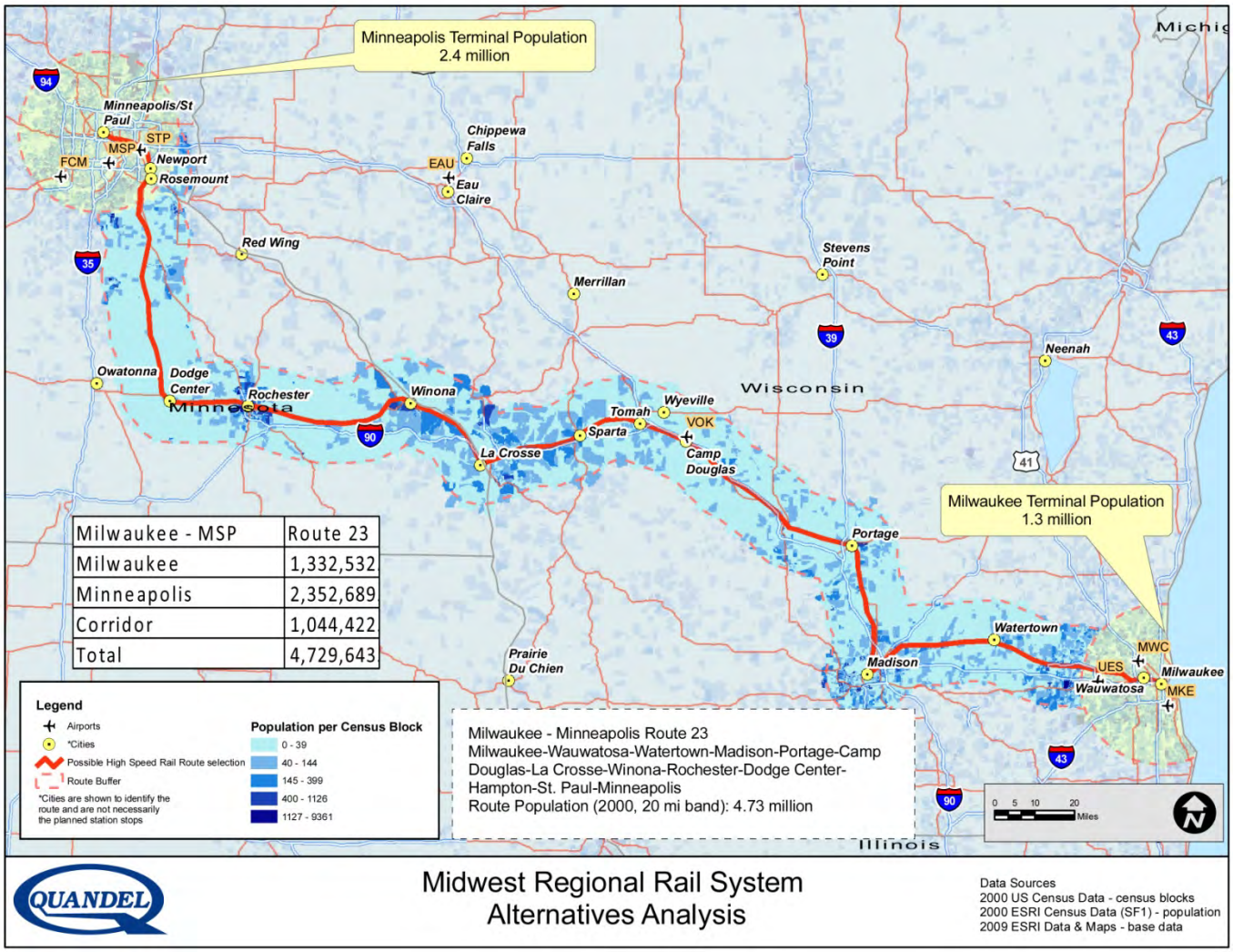
Route 21 has a route distance 6% greater than the Baseline route. The route population is 4% greater than the Baseline. However, Route 21 has multiple physical constraints in Segment H in the form of industrial facilities built on railroad right-of-way in Elroy, WI. Additionally, Route 21 has multiple physical constraints in Segment U. The towns of Pine Island, MN, Zumbrota, MN, and Goodhue, MN were built on railroad right-of-way.

Figure 5-23. Route 22



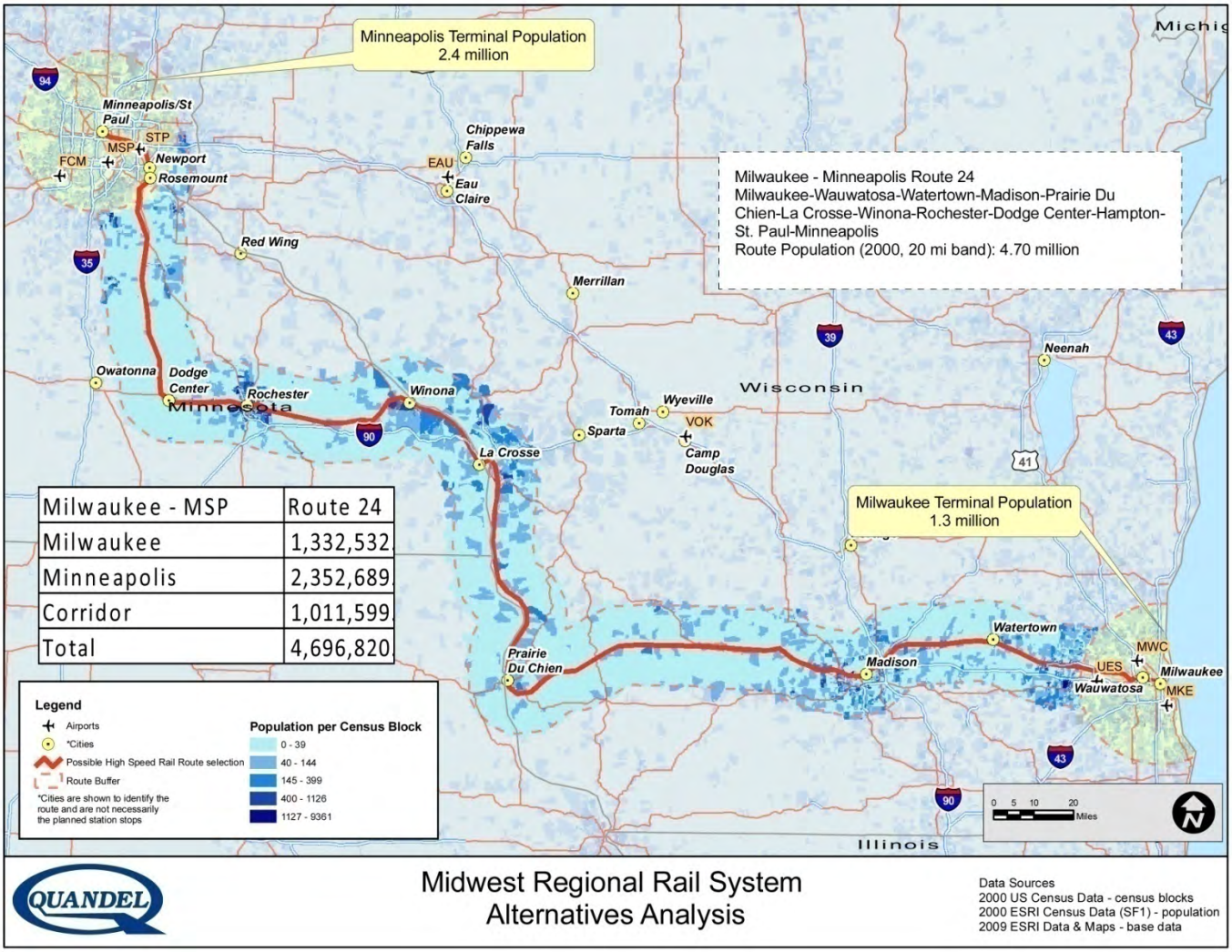
Route 22 has a route distance 5% greater than the Baseline route. The route population is 4% lower than the Baseline. However, Route 22 has multiple physical constraints in Segment Y in the form of industrial facilities built on railroad right-of-way in West Concord, MN, Kenyon, MN, Dennison, MN, and Coates, MN.

Figure 5-24. Route 23



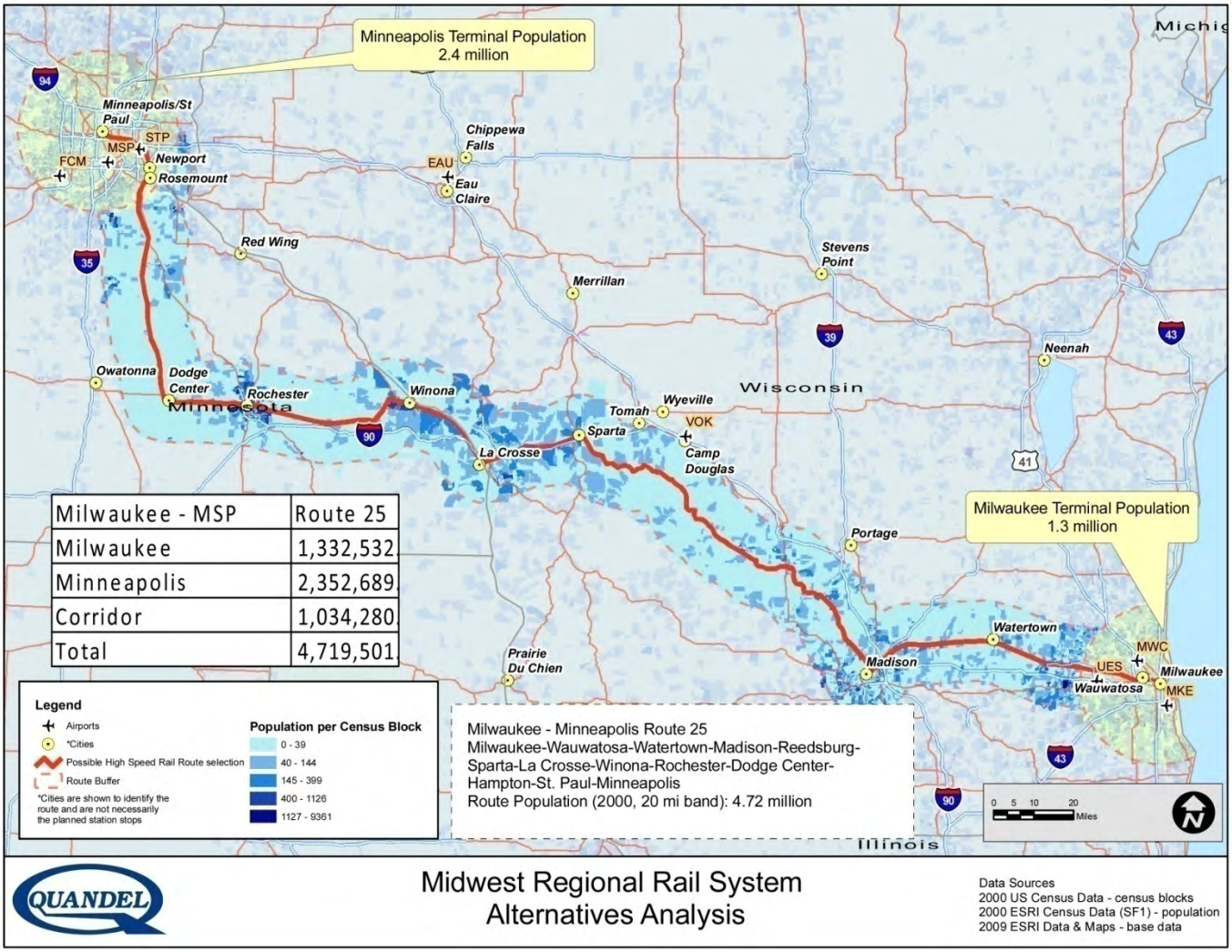
Route 23 has a route distance 11% greater than the Baseline route. The route population is 4% greater than the Baseline. However, Route 23 has multiple physical constraints in Segment Y in the form of industrial facilities built on railroad right-of-way in West Concord, MN, Kenyon, MN, Dennison, MN, and Coates, MN.

Figure 5-25. Route 24



Route 24 has a route distance 16% greater than the Baseline route. The route population is 4% greater than the Baseline. However, Route 24 has multiple physical constraints in Segment Y in the form of industrial facilities built on railroad right-of-way in West Concord, MN, Kenyon, MN, Dennison, MN, and Coates, MN.

Figure 5-26. Route 25



Route 25 has a route distance 8% greater than the Baseline route. The route population is 4% greater than the Baseline. However, Route 25 has multiple physical constraints in Segments H and Y in the form of industrial facilities built on railroad right-of-way in Elroy, WI, West Concord, MN, Kenyon, MN, Dennison, MN, and Coates, MN.

6.0 CONCLUSION

As documented in this Interim Alternatives Selection Report, the twenty-six (26) alternatives in the universe of routes between Milwaukee and Minneapolis/St. Paul were assessed using the normative statements for the three evaluation criteria – route distance, corridor population, and physical constraints. Through interactive analysis among the representatives of the Wisconsin and Minnesota Departments of Transportation and Quandel Consultants, fourteen (14) routes, Routes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12A, 13, and 14, as detailed in Table 6-1 and as shown in Figure 6-1, were identified as "potential passenger rail alternatives" . These routes will be subjected to a more detailed alternative analysis in order to identify the "reasonable and feasible passenger rail alternatives". This subsequent analysis will be documented in the *Alternatives Selection Report: Identification of Reasonable and Feasible Passenger Rail Alternatives*.

Table 6-1 provides a summary of the data and a qualitative rating of each alternative in the universe of routes using the normative statements for each criterion. An overall qualitative rating and a recommendation to retain or eliminate is given.

The descriptions of the "potential passenger rail alternatives" are as follows:

- Route 1 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Hastings-St. Paul-Minneapolis
- Route 2 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 3 - Milwaukee-Watertown-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis
- Route 4 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-St. Paul-Minneapolis
- Route 5 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 6 - Milwaukee-Watertown-Madison-Portage-Tomah-La Crosse-Hastings-St. Paul-Minneapolis
- Route 7 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-St. Paul-Minneapolis
- Route 8 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Winona-Rochester-Owatonna-Inver Grove Heights-St. Paul-Minneapolis
- Route 9 - Milwaukee-Watertown-Madison-Prairie du Chien-La Crosse-Hastings-St. Paul-Minneapolis
- Route 10 - Milwaukee-Watertown-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis

- Route 11 - Milwaukee-Watertown-Madison-Portage-Camp Douglas-Wyeville-Merrillan-Eau Claire-St. Paul-Minneapolis
- Route 12A- Milwaukee - Wiscona Jct.- Wyeville – Merrillan - Eau Claire - St. Paul - Minneapolis
- Route 13 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Eau Claire-St. Paul-Minneapolis
- Route 14 - Milwaukee-Neenah-Stevens Point-Marshfield-Chippewa Falls-Withrow-St. Paul-Minneapolis

Figure 6-1, Milwaukee – Twin Cities Identification of Potential Passenger Rail Routes, is a map of the corridor that depicts the fourteen (14) routes listed above.

Table 6-1. Milwaukee-Twin Cities Potential Passenger Rail Alternatives

Route	Route Description	Route Characteristics						Market Size				Recommendation (Retain/Eliminate)	
		Route Distances				Physical Constraints		Route Populations					
		Distance (Miles)	Change vs. Baseline (Miles)	Change vs. Baseline (%)	Rating vs. Baseline	Yes/No	Rating	Route Populations	Change vs. Baseline	Change vs. Baseline (%)	Rating vs. Baseline	Comments	Overall Rating vs. Baseline
1	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	332.3	(23.1)	(6%)	✓	No	✓	4,189,108	(342,859)	(8%)	✓	Route distance is shorter than the baseline with adequate ridership opportunities	✓
2	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	388.0	32.6	9%	✓	No	✓	4,364,774	(167,193)	(4%)	✓	Significantly increased route distance but good ridership opportunities	✓
3	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	333.8	(21.6)	(6%)	✓	No	✓	4,191,266	(340,701)	(8%)	✓	Route distance is shorter than the baseline with adequate ridership opportunities	✓
4	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	355.4	-	-	✓	No	✓	4,531,967	-	-	✓	Baseline Route	✓

Route	Route Description	Route Characteristics						Market Size				Recommendation (Retain/Eliminate)	
		Route Distances				Physical Constraints		Route Populations					
		Distance (Miles)	Change vs. Baseline (Miles)	Change vs. Baseline (%)	Rating vs. Baseline	Yes/No	Rating	Route Populations	Change vs. Baseline	Change vs. Baseline (%)	Rating vs. Baseline	Comments	Overall Rating vs. Baseline
5	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	411.1	55.7	16%	✓	No	✓	4,709,506	177,539	4%	✓	Significantly increased route distance but good ridership opportunities	✓
6	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	356.9	1.5	0%	✓	No	✓	4,536,198	4,231	0%	✓	Similar route distance and ridership opportunities as the baseline	✓
7	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	373.2	17.8	5%	✓	No	✓	4,516,380	(15,587)	0%	✓	Increased route distance but good ridership opportunities	✓
8	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	428.9	73.5	21%	✓	No	✓	4,692,046	160,079	4%	✓	Significantly increased route distance but more ridership opportunities	✓
9	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	374.7	19.3	5%	✓	No	✓	4,520,512	(11,455)	0%	✓	Significantly increased route distance but good ridership opportunities	✓

Route	Route Description	Route Characteristics						Market Size				Recommendation (Retain/Eliminate)	
		Route Distances				Physical Constraints		Route Populations					
		Distance (Miles)	Change vs. Baseline (Miles)	Change vs. Baseline (%)	Rating vs. Baseline	Yes/No	Rating	Route Populations	Change vs. Baseline	Change vs. Baseline (%)	Rating vs. Baseline	Comments	Overall Rating vs. Baseline
10	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	328.3	(27.1)	(8%)	✓	No	✓	4,189,633	(342,334)	(8%)	✓	Route distance is shorter than the baseline with adequate ridership opportunities	✓
11	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	351.4	(4.0)	(1%)	✓	No	✓	4,534,565	2,598	0%	✓	Similar route distance and ridership opportunities as the baseline	✓
12	Milwaukee, WI Wauwatosa, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	329.1	(26.3)	(7%)	✓	Yes	✗	4,170,904	(361,063)	(8%)	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
12A	Milwaukee, WI Wiscona Jct, WI Wyeville, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	338.2	(17.2)	(5%)	✓	No	✓	4,170,904	(361,063)	(8%)	✓	Route distance is shorter than the baseline with adequate ridership opportunities	✓
13	Milwaukee, WI Fond du Lac, WI Neenah, WI Stevens Point, WI Chippewa Falls, WI Eau Claire, WI St. Paul, MN Minneapolis, MN	360.8	5.4	2%	✓	No	✓	4,534,499	2,532	0%	✓	Similar route distance and ridership opportunities as the baseline	✓
14	Milwaukee, WI Fond du Lac, WI Neenah, WI Stevens Point, WI Chippewa Falls, WI Withrow, MN St. Paul, MN Minneapolis, MN	367.6	12.2	3%	✓	No	✓	4,556,877	24,910	1%	✓	Ridership opportunities similar to the baseline with slightly greater route distance	✓

Route	Route Description	Route Characteristics						Market Size				Recommendation (Retain/Eliminate)	
		Route Distances				Physical Constraints		Route Populations					
		Distance (Miles)	Change vs. Baseline (Miles)	Change vs. Baseline (%)	Rating vs. Baseline	Yes/No	Rating	Route Populations	Change vs. Baseline	Change vs. Baseline (%)	Rating vs. Baseline	Comments	Overall Rating vs. Baseline
15	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Hastings, MN St. Paul, MN Minneapolis, MN	345.0	(10.4)	(3%)	✓	Yes	✗	4,568,404	36,437	1%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
16	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Red Wing, MN St. Paul, MN Minneapolis, MN	338.8	(16.6)	(5%)	✓	Yes	✗	4,565,621	33,654	1%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
17	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Rochester, MN Owatonna, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	399.2	43.8	12%	✓	Yes	✗	4,758,421	226,454	5%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
18	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	365.9	10.5	3%	✓	Yes	✗	4,342,984	(188,983)	(4%)	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗

Route	Route Description	Route Characteristics						Market Size				Recommendation (Retain/Eliminate)	
		Route Distances				Physical Constraints		Route Populations					
		Distance (Miles)	Change vs. Baseline (Miles)	Change vs. Baseline (%)	Rating vs. Baseline	Yes/No	Rating	Route Populations	Change vs. Baseline	Change vs. Baseline (%)	Rating vs. Baseline	Comments	Overall Rating vs. Baseline
19	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	389.0	33.6	9%	✓	Yes	✗	4,695,226	163,259	4%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
20	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	406.8	51.4	14%	✓	Yes	✗	4,668,967	137,000	3%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
21	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Rochester, MN Red Wing, MN St. Paul, MN Minneapolis, MN	377.1	21.7	6%	✓	Yes	✗	4,693,125	161,158	4%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
22	Milwaukee, WI Watertown, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	372.6	17.2	5%	✓	Yes	✗	4,368,523	(163,444)	(4%)	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗

Route	Route Description	Route Characteristics						Market Size				Recommendation (Retain/Eliminate)	
		Route Distances				Physical Constraints		Route Populations					
		Distance (Miles)	Change vs. Baseline (Miles)	Change vs. Baseline (%)	Rating vs. Baseline	Yes/No	Rating	Route Populations	Change vs. Baseline	Change vs. Baseline (%)	Rating vs. Baseline	Comments	Overall Rating vs. Baseline
23	Milwaukee, WI Watertown, WI Madison, WI Portage, WI Camp Douglas, WI Tomah, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	395.7	40.3	11%	✓	Yes	✗	4,729,643	197,676	4%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
24	Milwaukee, WI Watertown, WI Madison, WI Prairie du Chien, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	413.5	58.1	16%	✓	Yes	✗	4,696,820	164,853	4%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗
25	Milwaukee, WI Watertown, WI Madison, WI Sparta, WI La Crosse, WI Winona, MN Rochester, MN Dodge Center, MN Inver Grove Heights, MN St. Paul, MN Minneapolis, MN	383.8	28.4	8%	✓	Yes	✗	4,719,501	187,534	4%	✓	Because this route has an physical constraint, the route is untenable and is eliminated	✗

✗	**Unfavorable Characteristic**	✓	**Favorable Characteristic**		**Indicates unfavorable characteristic**

Figure 6-1. Milwaukee-Twin Cities Identification of Potential Passenger Rail Alternatives