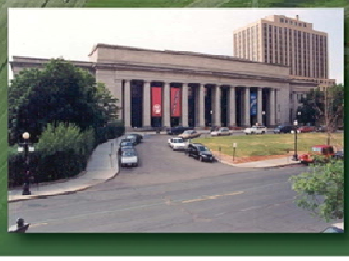
GATEWAY CORRIDOR

Alternatives Analysis



Environmental and Community Impact Assessment Methodology & Results Report

Prepared for:
Washington County
Regional Railroad Authority
on behalf of the
Gateway Corridor Commission

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Submitted by

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Contents

Tables

Executive Summary

The purpose of this technical memorandum is to document the methodology, assumptions, and results used to complete the Environmental and Natural Resource Impact Assessment for the Gateway Corridor Alternatives Analysis (AA). Although the NEPA process is not officially underway through the AA process, this assessment was conducted with consideration of NEPA requirements for inclusion into any future environmental documents.

Results

Factors to Improve Mobility

Key findings related to factors to improve mobility include:

- Alternatives 4 and 6 have the largest population and most jobs within ½ mile of the proposed stations. Alternatives 3 and 5 also have a relatively larger population and employment base around the proposed stations.
- Alternative 7 has the smallest population and fewest jobs within ½ mile of the proposed stations.
- Alternatives 4 and 6 have the largest number of zero car households within ½ mile of the proposed stations while Alternative 7 has the fewest. Alternative 7 also has the lowest zero car household user benefits per total passenger hour of all the alternatives.

Natural Environmental Features

Key findings related to the natural environmental features assessment are summarized below:

- Alternatives 4 and 6 have a higher potential to support sustainable land use patterns.
- Alternative 7 introduces the greatest potential impacts to wetlands, water bodies, floodplains, and parks given the substantial additional corridor length.

Community Quality of Life

The primary findings from the elements included within the community quality of life assessment are as follow:

- Alternatives 4 and 6 have much greater levels of full and partial acquisitions as compared to the other alternatives.
- Alternative 7 has the greatest potential noise and vibration impacts on sensitive (residential) land uses.
- Alternatives 4 and 6 have the largest number of community facilities within a 1/2 mile of the proposed stations while Alternative 7 has the fewest.

1. Introduction

This report documents the methodology, assumptions, and results used to complete the Environmental and Natural Resource Impact Assessment for the Gateway Corridor Alternatives Analysis (AA). Several technical methodology reports and other documents

have informed development of this methodology report. References to relevant documents are noted in this report where appropriate.

2. Background and Assumptions

This environmental and community impact assessment was conducted with consideration of National Environmental Policy Act (NEPA) requirements. Although the NEPA process is not officially underway through the AA process, this assessment was conducted with consideration of NEPA requirements for inclusion into any future environmental documents. Topics considered during this impact assessment included:

- Air quality (change in regional classification)
- Noise and vibration
- Water features, including: floodplains, wetlands, lakes, streams, and rivers
- Parks and other public lands
- Potential community effects, such as:
    - Service to population and employment centers
    - Service to low-income households
    - Environmental justice[1]

The environmental review for this AA relied on existing information to provide a screening level assessment of environmental issues using a GIS analysis. This information was supplemented with discussions with agency, city, and county staff; public input; as well as through high level field investigations as needed to identify potential issues.

3. Environmental and Community Impact Assessment Methodology

3.1 Fatal Flaw Alternatives Evaluation Criteria and Results

An initial screening on the universe of alternatives was completed using a “fatal flaw” approach. This process resulted in recommendations to eliminate some alignment and transit technology alternatives, which provided a more manageable group of alternatives that were carried forward for additional study.

The criterion used for the environmental and natural features issues during the fatal flaw analysis was: “Is implementation of this alternative possible through avoiding, minimizing or mitigating areas where impacts to environmentally sensitive areas are identified?” (see the Fatal Flaw Alternatives Evaluation Criteria for other measures used for this evaluation).

3.2 Gateway AA Goals and Objectives

The *Problem Statement/Goals and Objectives Technical Memorandum* (February 2011) documents the goals and objectives developed by the study team’s Technical Advisory Committee (TAC), Policy Advisory Committee (PAC), and ultimately adopted by the Gateway Corridor Commission. The goals are listed below:

- Goal 1: Improve Mobility

[1] The three fundamental environmental justice principles are to: 1) avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations; 2) ensure the full and fair participations by all potentially affected communities in the transportation decision-making process; and 3) prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

- Goal 2: Provide a Cost-Effective, Economically Viable Transit Option
- Goal 3: Support Economic Development
- Goal 4: Protect the Natural Environmental Features of the Corridor
- Goal 5: Preserve and Protect Individual Community Quality of Life
- Goal 6: Improve Safety

The objectives identified for the Gateway goals formed the basis of the evaluation criteria that were developed to compare the performance of alternatives against each other. A complete documentation of Gateway Corridor goals and objectives is included in the *Problem Statement/Goals and Objectives Technical Memorandum*.

3.3 Evaluation Criteria for Detailed Alternatives Analysis

Select objectives tied to Goals 1, 4, and 5 were used to develop evaluation measures for environmental and natural resources and community resources. Many of the Gateway Corridor goals and objectives mirror the criteria and measures used by FTA. Evaluation criteria recommended for the Gateway analysis combine both FTA and corridor-specific measures. In several cases, the evaluation criteria were the same; in other cases the local evaluation measures were more detailed and relevant to the goals established specifically for the Gateway Corridor. The local criteria were based on the approved project goals, and tier evaluation measures under each project goal to specific project objectives identified under each goal. Development of these and all other evaluation measures are documented in the *Evaluation Criteria Technical Memorandum* (May 2011). The evaluation criteria reflected in Table 1 incorporates both FTA requirements and Gateway objectives under each goal. Evaluation criteria required by FTA New Starts procedures are indicated with an asterisk (*).

TABLE 1
Environmental and Community Resource Goals, Objectives, and Measurement Categories

Provide a travel option that:	Evaluation Criteria	Notes	Rating Categories	
Goal 1: Improve Mobility				
Maximizes service to existing and planned corridor population and employment concentrations	2030 population within ½ mile of stations	Analysis completed based on methodology provided in *Reporting Instructions for the Section 5309 New Starts Criteria, Appendix A: Sample Methodology for Estimating Station Area Socio-Economic Statistics*	Strongly supports goal	> 25,000 people
			Supports goal =	10,000 to 25,000 people
			Does not support goal =	< 10,000 people
	2030 employment within ½ mile of stations		Strongly supports goal	> 15,000 jobs
			Supports goal =	5,000 to 15,000 jobs
			Does not support goal =	< 5,000 jobs
Serves people who depend on transit	Number of transit dependents *	Defined as the number of zero car households within ½ mile of stations based on US Census data and travel demand ridership mode.	Strongly supports goal	Provides service to >2,000 zero car households within ½ mile of all alternative stations
			Supports goal =	Provides service to 1,000 to 2,000 zero car households within ½ mile of all alternative stations
			Does not support goal =	Provides service to <1,000 zero car households within ½ mile of all alternative stations
	Transit dependent user benefits per passenger mile, an output of the travel demand model.	Defined as 2030 zero car household user benefits per passenger hour (total passenger hours, not just transit dependents) *Source*: Travel Demand Model output	Strongly supports goal	>0.10 transit dependent user benefits per total passenger hour
			Supports goal =	0.0 to 0.10 transit dependent user benefits per total passenger hour
			Does not support goal =	< 0.0 transit dependent user benefits per total passenger hour

TABLE 1
Environmental and Community Resource Goals, Objectives, and Measurement Categories

Provide a travel option that:	Evaluation Criteria	Notes	Rating Categories	
Goal 4: Protect the Natural Environmental Features of the Corridor				
Contributes to the sustainability of the corridor and adjacent communities	Reinforce more sustainable land use patterns through transit supportive development.	Neighborhood residents and workers can safety travel to the transit stations, as well as to nearby jobs, amenities and services by foot, bicycle, or transit, thereby contributing to the "location efficiency" of the station (LEED 2009 Rating, Neighborhood Development, pgs. xviii-xix). Measured by the number of stations per alternative that meets the above noted criteria.	Strongly supports goal Supports goal = Does not support goal =	≥ 12 stations 5-11 stations ≤ 4 stations
	Offer travel alternatives to single occupancy vehicle.	Does the alternative provide travelers an option to single occupancy vehicles?	All Gateway corridor alternatives provide travelers options to single occupancy vehicles, therefore no comparisons were made.	
Minimizes environmental impacts	Potentially affected: water bodies, 100 year floodplain, National Wetlands Inventory (NWI), and parklands within 125' of either side of the centerline.	Defined as the number of acres of wetlands, water bodies, floodplain and parklands within 125' of the centerline of each alternative.	Strongly supports goal= Supports goal = Does not support goal =	< 50 acres combined 50 to 100 acres combined > 100 acres combined
Is beneficial to the region's air quality	Environmental Protection Agency (EPA) air quality designation*	Defined as the change in the Environmental Protection Agency's (EPA) regional air quality, as measured by the change in vehicle miles traveled (VMT) over no build alternative.	Strongly supports goal= Supports goal = Does not support goal =	More than 1% reduction in VMT 0 to 1% savings in VMT Increased VMT
Avoids or minimizes alterations to environmentally sensitive areas	Potentially affected other environmentally sensitive areas within 125' of either side of the centerline.	Avoids or minimizes alternatives to known environmentally sensitive areas [Dayton's Bluff Historic District; St. Croix Wild and Scenic; Mississippi National River and Recreation Area (MNRRA)]	Strongly supports goal= Supports goal = Does not support goal =	Avoids all known environmentally sensitive areas Avoids some known environmentally sensitive areas Does not avoid known environmentally sensitive areas

TABLE 1
Environmental and Community Resource Goals, Objectives, and Measurement Categories

Provide a travel option that:	Evaluation Criteria	Notes	Rating Categories	
Goal 5: Preserve and Protect Individual Community Quality of Life				
Supports individual community development and redevelopment visions	Consistency with local comprehensive plans	Consistency with local comprehensive plans	Strongly supports goal=	Supports the individual community development and redevelopment visions in all corridor communities
			Supports goal =	Supports the individual community development and redevelopment visions in the majority (more than ½) of corridor communities
			Does not support goal =	Supports the individual community development and redevelopment visions in the minority (less than ½) of corridor communities
Accommodates future regional growth in locations consistent with local and regional plans	Defined as consistency with the Metropolitan Council's Regional Blueprint and 2030 Transit Plan.	Consistency with regional plans	Strongly supports goal=	Accommodates regional growth in locations consistent with local plans in all communities
			Supports goal =	Accommodates regional growth in locations consistent with local plans in the majority (more than ½) of communities
			Does not support goal =	Accommodates regional growth in locations consistent with local plans in the minority (less than ½) of communities

TABLE 1
Environmental and Community Resource Goals, Objectives, and Measurement Categories

Provide a travel option that:	Evaluation Criteria	Notes	Rating Categories	
Is sensitively designed with respect to existing neighborhoods and property values	Defined as potential number of full and partial acquisitions required to implement alternative	Impacts were identified by establishing estimated construction limits for each alternative.	Strongly supports goal =	<50 full acquisitions <50 partial acquisitions
			Supports goal =	50-100 full acquisitions 50-100 partial acquisitions
			Does not support goal =	>100 full acquisitions >100 partial acquisitions
	Defined as sensitive land uses (i.e., residential units) potentially affected by noise and/or vibration within 500' of the centerline of each alternative.	Sensitive land uses, as defined in FTA's *Transit Noise and Vibration Impact Assessment*, May 2006, within 500' of an alternative and proposed station, based on review of GIS aerial mapping and local community input.	Strongly supports goal=	Proximity to < 500 residences
			Supports goal =	Proximity to 500-1,000 residences
			Does not support goal =	Proximity to > 1,000 residences
Enhances access to community facilities	Impact on access to community facilities (libraries, schools, medical facilities, community centers) within ½ mile of station.	Facilities within ½ mile of proposed station locations and any impacts stations would have on these facilities.	Strongly supports goal=	> 25 community facilities within ½ mile of all stations
			Supports goal =	10-25 community facilities within ½ mile of all stations
			Does not support goal =	<10 community facilities within ½ mile of all stations
Enhances the image and use of transit service in the corridor by improving the rider experience	Improvement in transit rider experience over No Build condition (e.g., reliability, ride quality, quality of self-directed time spent on transit).	Identify enhancements for each alternative technology over the No Build Alternative (current express bus service).	Strongly supports goal=	Presence of fixed guideway and enhanced transit vehicles
			Supports goal =	Presence of enhanced transit vehicles only; no fixed guideway
			Does not support goal =	No fixed guideway; no enhanced transit vehicles

4. Results

This section documents the analysis results for the goals and objectives noted above in Section 3. Specific results for each category are provided along with the one of the following ratings:

+ = Strongly Supports Goal

O = Supports goal

- = Does not support goal

Complete results of the alternatives evaluation process are documented in Evaluation of Alternatives Process with Analysis Results Technical Methodology Report (June 2012).

4.1 Factors to Improve Mobility

Table 2 provides the year 2030 population and jobs that are estimated to be within ½ mile of all stations associated with each alternative. This table shows that Alternatives 4 and 6 would have the most population and jobs, followed by Alternatives 3 and 5.

TABLE 2
Service to Existing & Planned Corridor Population & Employment Concentrations

+ Strongly Supports goal ; O Supports goal; - Does not support goal				
Alternative	2030 Population within ½ of Stations	Rating	2030 Jobs within ½ of Stations	Rating
1	13,778	O	5,915	O
2	15,970	O	12,458	O
3	28,071	+	19,923	+
4	47,306	+	29,733	+
5	28,071	+	19,923	+
6	47,306	+	29,733	+
7	5,708	-	4,581	-
8	21,856	O	13,994	O

Table 3 shows that the ½ mile radius around stations associated with Alternatives 4 and 6 would have the highest number of individuals living in zero car households; this is due in part to Alternatives 4 and 6 also having more stations than other alternatives (15 stations compared to 11 stations for Alternatives 3 and 5).

This table also shows that Alternatives 2 through 6 would provide the highest level transit dependent user benefits per total passenger hours; Alternative 8 would provide moderate transit dependent user benefits while Alternative 7 would provide negative benefits.

TABLE 3
Service to Transit Dependent Individuals

+ Strongly Supports goal ; O Supports goal; - Does not support goal				
Alternative	Number of 0 Car Households within ½ Mile of Stations	Rating	0 Car Household User Benefits Per Total Passenger Hour	Rating
1	160	-	N/A	N/A
2	166	-	0.11	+
3	314	O	0.11	+
4	555	+	0.14	+
5	314	O	0.17	+
6	555	+	0.22	+
7	65	-	-0.17	-
8	236	O	0.08	O

4.2 Natural Environmental Features

Table 4 documents the number of stations associated for each alternative. This metric was used as a measure of corridor sustainability in that residents and workers could safety travel to the transit stations, as well as to jobs, amenities and services by foot, bicycle, or transit, thereby contributing to the "location efficiency" of the station. Alternatives 4 and 6 perform best in this category, due to these alternatives having the highest number of stations compared to other alternatives—15 stations, compared to 11 stations for Alternatives 3 and 5.

TABLE 4
Support of Sustainable Land Use Patterns as Measured by the Number of Stations per Alternative

+ Strongly Supports goal ; O Supports goal; - Does not support goal		
Alternative	Number of Stations per Alternative	Rating
1	N/A	-
2	6	-
3	11	O
4	15	+
5	11	O
6	15	+
7	7	O
8	8	O

As shown in Table 5, all alternatives, with the exception of Alternative 7, minimize the environmental impacts to the natural environment—specifically to wetlands, water bodies, floodplains, and park lands. Alternative 7 did not perform as well as other alternatives in this category due to a guideway length of nearly 100 miles, compared to well under 20 miles for other build alternatives. Also, all alternatives support the goal of providing benefit to the region's air quality by reducing the vehicle miles travelled (VMT) by 0 to 1% compared to the No Build Alternative.

TABLE 5
Minimizes Potential Environmental Impacts

+ Strongly Supports goal ; O Supports goal; - Does not support goal				
Alternative	Combined Potential Impacts to Wetlands, Water Bodies, Floodplain, and Parks, in Acres	Rating	Change in Region's Air Quality, Measured by Change in Vehicle Miles Travelled Compared to No Build	Rating
1	0	+	N/A	N/A
2	0	+	-0.3%	O
3	25	+	-0.3%	O
4	30	+	-0.3%	O
5	25	+	-0.3%	O
6	30	+	-0.3%	O
7	75	O	-0.3%	O
8	10	+	-0.6%	O

Additionally, all alternatives were found to avoid some or all environmentally sensitive areas, including the Dayton's Bluff Historic District in St. Paul, the St. Croix River Wild and Scenic River, and the Mississippi National River and Recreation Area. The City of Lakeland also documented the presence of the Lakeland Water Well #1, included in Wellhead Protection Area and Drinking Water Supply Management Area. While this issue does not fit within the evaluation of alternatives process for the AA, it will be considered during the environmental phase of study.

4.3 Community Quality of Life

4.3.1 Consistency with Local and Regional Plans

With the exception of the No Build Alternative, all alternatives strongly support the development and redevelopment visions of communities located within the Gateway Corridor. Additionally, with the exception of the No Build Alternative, all alternatives would accommodate the future regional growth in locations that are consistent with local plans in the majority of Gateway Corridor communities.

4.3.2 Sensitive Land Uses—Potential Property Acquisitions and Noise/Vibration Issues

Table 6 presents the estimated number of full and partial property acquisitions associated with each alternative.

TABLE 6
Potential Full and Partial Property Acquisitions

+ Strongly Supports goal ; O Supports goal; - Does not support goal		
Alternative	Potential Number of Full and Partial Acquisitions Required	Rating
1	N/A	+

TABLE 6
Potential Full and Partial Property Acquisitions

+ Strongly Supports goal ; O Supports goal; - Does not support goal		
Alternative	**Potential Number of Full and Partial Acquisitions Required**	**Rating**
2	0	+
3	Full=3 and Partial=54	+/0
4	Full=84 and Partial=331	-
5	Full=8 and Partial=51	+/0
6	Full=92 and Partial=349	-
7	Full=16 and Partial=46	+
8	Full=5 and Partial=8	+

Table 7 below documents the estimated number of residential parcels located within a 500 foot buffer of the centerline of each alternative. Alternative 7 would potentially impact the highest number of residential parcels, partially due to the much longer length of the commuter rail corridor (99 miles) and partially due to proposed improvements through heavily urbanized areas of St. Paul and Minneapolis.

TABLE 7
Potential Noise/Vibration Impact to Residential Parcels Located in Close Proximity to Alternatives

+ Strongly Supports goal ; O Supports goal; - Does not support goal		
Alternative	**Sensitive Land Uses (Residential) Potentially Affected by Noise and/or Vibration within 500' of Alternative's Centerline**	**Rating**
1	N/A	+
2	N/A	+
3	400	+
4	750	O
5	400	+
6	750	O
7	2,500	-
8	460	+

In addition to documenting potential noise and vibration impacts to residential land uses, TAC representatives from local communities identified other sensitive land uses that may also be impacted by noise and vibration. Specifically, TAC representatives identified

potentially sensitive land uses within 500' of the centerlines for alternatives that pass through their communities. These land uses are listed below.

- St. Paul:
  - Dayton's Bluff Historic District in St. Paul—This local historic district includes several individually eligible historic structures
  - Historic resources in portions of the Payne-Phalen, Thomas-Dale, and West 7th Street Neighborhoods (references: July 2011 report by Mead and Hunt; City of St. Paul Comprehensive Plan, Historic Preservation Chapter)
  - Woodbury: Existing data center at 501 Bielenberg Drive; potential future data center at 401 Bielenberg Dr.
- Lakeland:
  - Lakeland City Beach, along St. Croix River just north of I-94 bridge
  - CSAH 18 hike/bike trail passes beneath I-94 bridge; connects north and south sides of Lakeland; connects to the Metropolitan Council's search area for the planned Middle St. Croix Valley Regional Trails
  - Aggregate Industries mining operations on NE side of interchange
  - Bluff along St. Croix River
- Hudson, WI:
  - Hudson Hospital, located in the southeast quadrant of Carmichael Road and Stageline Road
  - Birkmose Park, located east of STH 35 and north of I-94, this park contains Native American burial mounds
- Baldwin, WI:
  - Schools, parks and historic structures located on Main Street
  - Planned walking path between Woodville Road and Hwy. 12
  - Phone and internet companies on Maple Street and Hwy. 63
- Menomonie, WI:
  - Lake Menomin County Park, located adjacent to the south side of I-94, just east of the Red Cedar River
  - Menomonie Lions Game Park, located adjacent to the south side of I-94 between Game Park Road and Shore Haven.
  - Eau Claire, WI: Gemini Drive-in Theater located along US 12

4.3.3 Access to Community Facilities

Table 8 summarizes the number of community facilities—including community centers, colleges, kindergarten through grade 12 schools, medical facilities, libraries, city halls, and post offices—located within ½ mile of the stations proposed for each alternative. The table reflects that Alternatives 4 and 6 would provide access to the highest number of community facilities; this is due in part to the higher number of stations associated with these alternatives. While Alternatives 4 and 6 performed best in this category, the remaining alternatives were found to support the goal of providing access to community facilities.

TABLE 8
Enhances Access to Community Facilities

+ Strongly Supports goal ; O Supports goal; - Does not support goal		
Alternative	**Community Facilities within ½ Mile of Stations**	**Rating**
1	17	O
2	22	O
3	21	O
4	43	+
5	21	O
6	43	+
7	16	O
8	22	O

4.3.4 Enhancing Image and Use of Transit Service

The No Build and TSM alternatives were found not to be supportive of the objective of enhancing transit use in the corridor by improving rider experience. The reason for this rating is the lack of a fixed guideway as well as the lack of enhanced transit vehicles. Alternatives 3-7 would strongly support the goal of enhancing the image of transit, due to the presence of both fixed guideway and transit vehicles. Alternative 8, the BRT/Managed Lane Alternative would support this goal by providing enhanced transit vehicles, but no dedicated fixed guideway for transit.