Technical Memorandum

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To: Brent Rusco, P.E., Joe Gladke, P.E.
Hennepin County Regional Railroad Authority

From: Paul Danielson, P.E.
Kimley-Horn and Associates, Inc.

Subject: Bottineau Transitway Draft Environmental Impact Statement
Alignment A-B Comparison

Introduction

Purpose of Memorandum

This technical memorandum has been prepared as part of the Scoping analysis for the Bottineau Transitway Draft Environmental Impact Statement (Draft EIS). The purpose of the memorandum is to describe the major differences between the A and B alignments being considered and to document the efforts undertaken to identify these issues.

This memorandum identifies the differences between alternatives based on the goals and objectives and evaluation measures identified to date through the Bottineau study process, emphasizing those evaluation criteria that demonstrate the most contrast between the alternatives.

A summary evaluation against the goals and objectives is included in Appendix A. Figures illustrating the A and B alignments are provided in Appendix B.

Project Background

The Bottineau Transitway project area extends approximately 13 miles northwest from downtown Minneapolis through the neighborhoods of north Minneapolis, and into the communities of Golden Valley, Robbinsdale, Crystal, Brooklyn Park, and Maple Grove in Hennepin County, Minnesota.

The Bottineau Transitway Alternatives Analysis (AA) study, which was completed by the Hennepin County Regional Railroad Authority (HCRRA) in 2010, evaluated a No-Build, an Enhanced Bus/Transportation System Management (TSM) alternative, and a wide range of commuter rail, BRT, and LRT alternatives. The study progressively narrowed the transitway Build alternatives from a wide range of options for each of the initial modes to a recommended set of 21 alternatives (9 LRT and 12 BRT) which underwent detailed evaluation.

The three most promising alternatives that came out of the AA study are:

- LRT alternative A-C-D1 (Maple Grove to Minneapolis via BNSF/Olson Memorial Highway)
- LRT alternative B-C-D1 (Brooklyn Park to Minneapolis via BNSF/Olson Memorial Highway)
- LRT alternative A-C-D2 (Maple Grove to Minneapolis via Penn Avenue/Olson Memorial Highway)

While the BRT alternatives as described in the AA were not among the most promising, a refined BRT alternative was subsequently developed to address some of the shortcomings of the initial BRT alternatives. This alternative is described as follows:

- BRT alternative B-C-D1 (Brooklyn Park to Minneapolis via BNSF/Olson Memorial Highway) with branched peak-hour service to and from Maple Grove on Route 732

It should be noted that none of the most promising alternatives identified BRT on the A alignment. As a result, this memorandum compares alignments A and B assuming the LRT mode only. Analysis of BRT on Alignment B is provided in a separate memorandum that compares LRT and BRT modes.

Alignment A

Alignment A is located in Maple Grove and Brooklyn Park, extending from the terminal near the Arbor Lakes commercial area at the intersection of Hemlock Lane and a future Arbor Lakes Parkway. The alignment traverses the existing gravel mining area within the median of the future Arbor Lakes Parkway. This area is designated for future mixed-use development, but currently is being used for gravel mining and related activities. The alignment then crosses over U.S. 169 on an aerial structure, above both the mainline roadway and the north ramps of the interchange. After crossing U.S. 169, the alignment enters the median of Elm Creek Boulevard (Brooklyn Boulevard) at Northland Drive. At Bottineau Boulevard (C.R. 81), the guideway crosses over the BNSF railroad (which would have the existing freight tracks realigned to the western half of the existing railroad corridor) on structure and enters into the east side of the existing railroad right-of-way (ROW). The alignment continues within the BNSF railroad corridor into Alignment C. Alignment A provides an additional station at 71st Avenue, which is not included as part of Alignment B.

Alignment B

Alignment B is located in Brooklyn Park and extends from the terminal north of T.H. 610 at the intersection of West Broadway Avenue (C.R. 103) and Winnetka Avenue. The guideway crosses T.H. 610 on a separate bridge structure that would be located on the west side of West Broadway Avenue (CSAH 103) in order to minimize impacts to the interchange bridge. After the alignment crosses T.H. 610, it enters the median of West Broadway Avenue at 94th Avenue. The alignment continues within the median until it leaves West Broadway Avenue at 75th Avenue. The alignment travels southwest through private property and crosses through the C.R. 81 at 73rd Avenue intersection on a diagonal in order to enter the east side of the BNSF railroad corridor. The alignment continues within the BNSF railroad corridor into Alignment C.

Memorandum Organization

The following sections identify key differentiators between the Alignment A and Alignment B alternatives, focusing on the following primary and secondary goals, which were developed as part of the Bottineau Transitway Purpose and Need:

Primary Goals

- Goal 1: Enhance Regional Access to Activity Centers
- Goal 2: Enhance the Effectiveness of Transit Service within the Corridor
- Goal 3: Provide a Cost Effective and Financially Feasible Transit System

Secondary Goals

- Goal 4: Promote Sustainable Development Patterns
- Goal 5: Support Healthy Communities and Sound Environmental Practices

Primary Goals and Objectives

Goal 1: Enhance Regional Access to Activity Centers

Overall, the Alignment A and Alignment B alternatives appear to provide similar value with respect to providing regional access to activity centers. Two key differentiators between Alignment A and B with respect to Goal 1 include pedestrian connections and access to parks.

Maximize total transit riders: Transit ridership has been modeled as part of the Scoping and Draft EIS process. As shown in the table below, the weekday ridership forecasts for the LRT transitway alternatives are similar, with alternative A-C-D1 having the highest forecast ridership (27,600) and B-C-D2 having the lowest (26,000).

	Alignment A alternatives	Alignment B alternatives
Total weekday transit trips	A-C-D1: 27,600 A-C-D2: 27,200	B-C-D1: 27,000 B-C-D2: 26,000

Improve service to people who depend on transit: As part of the Scoping process, data on people who depend on transit who live within a half-mile radius of stations was collected from the 2006-2010 American Community Survey 5-year estimates.

Data were analyzed at the block group level using four different indicators of transit dependency: population under 18, population age 65 and over, population in households below the poverty level, and population with zero vehicles available. These data show relatively similar numbers of people who depend on transit served for the two alignments. Data are reported in the summary evaluation in Appendix A.

Increase transit system linkages, access to regional destinations, and multimodal transportation opportunities: Based on curent networks and planned improvements, Alignment B has greater local transit and pedestrian connectivity than Alignment A.

Goal 2: Enhance the Effectiveness of Transit Service within the Corridor

Maximize new transit riders: Using the Twin Cities Metropolitan Area Regional Travel Demand Model developed by the Metropolitan Council, new transit riders for the Bottineau Corridor were forecasted. New transit riders are the estimated net change in transit users between the baseline (no project) and Build (project) alternatives. These riders represent people who would change their mode of travel as a result of the project, as forecast by the travel demand model used for the project. As shown in the table below, the Alignment A alternatives are forecast to have greater new transit ridership than the Alignment B alternatives.

	Alignment A alternatives	Alignment B alternatives
New transit riders	A-C-D1: 8,400 A-C-D2: 7,800	B-C-D1: 7,150 B-C-D2: 6,500

Maximize passengers per hour of revenue service: Passengers per hour of revenue service is a measure of the efficiency of the transit investment. Passengers per hour of revenue service were calculated by dividing the forecast year (2030) number of total transit riders by annual transitway (operator) vehicle hours. As shown in the table below, the Alignment A alternatives have somewhat greater numbers of passengers per revenue hour than the Alignment B alternatives.

	Alignment A alternatives	Alignment B alternatives
Passengers per revenue hour	A-C-D1: 217 A-C-D2: 182	B-C-D1: 181 B-C-D2: 157

Maximize travel time savings: The following table shows the updated station-to-station travel times for Alignments A and B. The 63rd Avenue station, which is located within Alignment C, is included in the table to represent a common endpoint for Alignments A and B and comparable travel times. As shown in the table, Alignment A has a shorter travel time and a higher speed between the terminus at the Hemlock Lane station to the 63rd Avenue station. This is primarily due to fewer signalized intersections on Alignment A, a shorter overall distance, and a longer portion of the alignment being located within the BNSF railroad corridor, as opposed to on surface streets.

	Alignment A	Alignment B
From–to	Hemlock Lane–63rd Avenue	97th Avenue–63rd Avenue
Distance	4.1 miles	4.8 miles
Travel Time	8 minutes 33 seconds	12 minutes
Average Speed	28.8 miles per hour	23.8 miles per hour

Source: Bottineau Transitway DRAFT Operations Report (November 2011)

The difference in travel time between alignments is an important factor contributing to the Alignment A alternatives' slightly higher user benefits. User benefits are a measure of mobility improvement and represent the aggregate perceived travel time difference for transit users between each Build alternative and the TSM alternative.[1] They are used in the estimation of the FTA cost effectiveness index (CEI). CEI is a measure of the annualized capital and operating incremental cost divided by incremental annual hours of transportation system user benefits. The increment referenced is between the transitway build and baseline conditions. User benefits for the Alignment A and B alternatives are shown in the table below.

	Alignment A Alternatives	Alignment B Alternatives
Daily hours of user benefits	A-C-D1: 9,460 A-C-D2: 9,000	B-C-D1: 8,520 B-C-D2: 7,940

Goal 3: Provide a Cost Effective and Financially Feasible Transit System

A comparison of the cost effectiveness index, capital costs, operating costs, and operating costs per ride are provided in the summary evaluation in Appendix A.

[1] The word "perceived" represent the difference between a person's perceived travel time and the actual travel time. Perceived travel time is used to account for mode and access bias. For example, if the actual travel time is the same for a bus and an LRT trip, the perceived travel time for a typical rider will be lower for the LRT since it is considered a more enjoyable ride, among other factors. Thus, the user benefit is calculated based on perceived travel time. Actual travel time is considered in other performance measures (for example, accessibility analysis).

Secondary Goals and Objectives

Goal 4: Promote Sustainable Development Patterns

An assessment of the potential sustainable development benefits of the A and B alignments can be made by comparing the potential for each alignment to generate new transit-oriented development (TOD) at station areas.

Successful TOD relies on many factors, including a strong local real estate market. Transit investments can capitalize on untapped demand for new development and can organize development but cannot create demand. Locations with land use regimes favorable to dense, multifamily and mixed use development are most likely to attract new investment. Moreover, significant TOD is not likely at every station along a given corridor. Instead, it will occur at key nodes that already have established development markets or large-scale sites with favorable land use conditions.

While a quantitative, parcel-level analysis or specific conclusions regarding development potential are beyond the scope of this memorandum, the discussion below identifies important known factors that could influence TOD along the different alignments.

Alignment A

Two transit stations are proposed for the Maple Grove portion of Alignment A. One station would be at Hemlock Lane, the suburban terminus of the line. The station is located just northeast of the Shoppes at Arbor Lakes, a regional retail mall. The second station in Maple Grove, at Revere Lane, would be located approximately one-half mile west of U.S. 169. Although the current gravel mining uses that are in proximity to the stations serve to limit immediate economic development potential at the Revere Lane station in the short term, long-term economic development, following the retirement of mining operations and environmental cleanup and reclamation, is feasible. The city's future land use plan envisions high density residential, medium density residential and expanded industrial (office/warehouse) land uses within one-half mile (10-minute walking distance) of both station locations. Because the alignment runs through an area that is largely without any structures, the land needed for future development would not require displacement of existing uses, assuming gravel mining activities are complete.

Two Alignment A stations would be located in Brooklyn Park, one at Boone Avenue/Hennepin Technical College and the other at 71st Avenue. The Boone Avenue/Hennepin Tech station would serve the college and the redeveloped business park in the southeast quadrant of the U.S. 169/Brooklyn Boulevard interchange. As of 2012, Hennepin Technical College had 1,393 full-time students and 2,691 part-time students.

The 71st Avenue station would serve an area that exists today with a mix of residential, commercial, and industrial uses. The Brooklyn Park Comprehensive Plan calls for commercial land use in the immediate station area with a mixture of industrial, and residential, as well as limited office. Shingle Creek and related wetlands to the west limit to some extent the potential for large-scale redevelopment in this area.

In summary, Alignment A has substantial long-term development potential around the two northern stations due to the possibility of future large-scale mixed use development on land that is currently in use for gravel mining. The availability of large parcels of undeveloped land has cost and other advantages over scattered, smaller properties associated with already developed areas. However, the timing and extent of such redevelopment is unknown at this time.

Alignment B

Four stations are proposed for Alignment B. Approximately 1/3-mile east of the 97th Avenue station is the Target North Campus. As of late 2011, Target had about 1,300 employees in four office buildings totaling 561,000 square feet on the 150-acre campus. The company has announced plans to construct an additional 245,000 square feet of office space in 2012. A previous master plan has called for up to 7,000 jobs in total. The company has indicated they are currently updating the master plan. Target also owns 180 acres of vacant land on the west side of West Broadway Avenue that could be used for potential future development. While the ultimate size and timing of the campus build-out is unknown, the Target North Campus is a significant development that will serve as a major anchor for future development in the vicinity of the 97th Avenue station. According to the Brooklyn Park Comprehensive Plan, land in the vicinity of the station is guided for mixed use development.

The 93rd Avenue station, proposed at the intersection of West Broadway Avenue and 93rd Avenue, is also located in an area where vacant land is available for development. Land on the north side of 93rd Avenue and east of West Broadway Avenue is vacant and is guided for business park development in the comprehensive plan. Land in the southwest quadrant of the West Broadway Avenue/93rd Avenue intersection, which is currently in industrial use, is guided for redevelopment to business park use.

The 85th Avenue station will directly serve the new Hennepin County Library in the northeast quadrant of the West Broadway Avenue/85th Avenue intersection as well as North Hennepin Community College (NHCC). As of 2012, NHCC had 3,530 full-time students and 7,171 part-time students. The Brooklyn Boulevard station area is in primarily commercial use today and has redevelopment potential as a commercial or mixed use node in the future. At the south end of Alignment B, as the transitway alignment transitions between C.R. 81 (Bottineau Boulevard) and West Broadway Avenue, several larger parcels would be crossed laterally by the new alignment. While this is not a station area, this change could prompt redevelopment in this area.

Together, the four stations located within Alignment B (97th Avenue, 93rd Avenue, 85th Avenue, and Brooklyn Boulevard) could have a positive impact on development and redevelopment. The highest probability of positively influencing development lies with the northern two stations at 97th and 93rd Avenues. Significantly sized vacant parcels (the Target North Campus at 97th Avenue) and guidance toward redevelopment in the comprehensive plan help position the two northern stations as locations for development to occur.

In summary, both Alignment A and B have potential for substantial new mixed use development over the long term, given the large supply of undeveloped land in both areas and planning directions identified in local comprehensive plans. However, the alignments have different levels of short-term development potential. Much of the land in the Alignment A (Maple Grove) station areas is used for gravel mining today; some needed transportation infrastructure (future Arbor Lakes Parkway) is not present or currently funded. Land in Alignment B (Brooklyn Park) station areas does not have such constraints. For these reasons, Alignment B has greater short-term development potential than Alignment A.

Goal 5: Support Healthy Communities and Sound Environmental Practices

The summary evaluation in Appendix A provides information on the many objectives for Goal 5. The The text below presents information on selected areas of the natural and built environment for which notable differences between alignments A and B have been identified:

- Impacts on historic and cultural resources
- Impacts to properties
- Traffic impacts

A discussion of differences with respect to economic development is incorporated into the discussion under Goal 4 above.

Historic and Cultural Resource Impacts

Results from preliminary reviews of cultural resources within the Area of Potential Effect (APE) for Alignments A and B are as follows.

On Alignment A, there were 70 surveyed properties, one on which is recommended for a Phase II analysis, which will determine if they are eligible for listing in the National Register of Historic Places. On Alignment B, there were 61 surveyed properties, three of which were recommended for a Phase II analysis.

Property Impacts

Property impacts associated with Alignment A and Alignment B vary greatly due to the proposed corridor locations.

The portion of Alignment A that is located west of U.S. 169, is located within an existing gravel mining area and is completely undeveloped. East of U.S. 169, the guideway is located within the median of Brooklyn Boulevard, and would impact a number of properties due to the expanded roadway section. In addition, the curve and related structure over US 169 is anticipated to impact the existing bituminous plant at this location. In contrast, the Alignment B guideway is located within the median of West Broadway Avenue, which passes through a fully developed portion of Brooklyn Park. Estimated property impacts of each alignment are provided below.

	Alignment A	Alignment B
Full takes (parcels (acres))	9 (4.4)	12 (27.1)
Partial takes (parcels (acres))	29 (66.0)	49 (19.0)

Traffic Impacts

As noted previously within this memorandum, the majority of Alignment B is located within a fully developed portion of Brooklyn Park, whereas a large portion of the Alignment A corridor is located within an undeveloped portion of Maple Grove. Alignments A and B are both located within the median of a roadway with travel lanes on both sides of the guideway. While the types of traffic impacts for both alignments are similar, the traffic impacts associated with Alignment B are somewhat greater. Comparative data are provided in the summary evaluation in Appendix A.

Appendix A:
Alignment A-B Summary Evaluation

Appendix B:
Alignment A-B Aerial Exhibits

Bottineau Transitway Summary Evaluation

Better ... Worse

			Alignment A (LRT) (Maple Grove)		Alignment B (LRT) (Brooklyn Park)	
Differentiating Physical/Operating Characteristics						
	Station locations		4 stations: Hemlock Lane Revere Lane Boone Avenue/Hennepin Tech 71st Avenue		4 stations: 97th Avenue 93rd Avenue 85th Avenue Brooklyn Boulevard	
	Alignment length		4.1 miles (Hemlock Lane to 63rd Avenue)		4.8 miles (97th Avenue to 63rd Avenue)	
	Running time	Minutes	08:33		12:00	
	Average speed		28.8 miles per hour (average)		23.8 miles per hour (average)	
	Existing and proposed signalized grade crossings		6		10	
	Net number of pedestrian and bicycle crossings		10 crossings remain open		18 crossings remain open	
	Number of curves		14 (0 under 500' radius)		7 (4 under 500' radius)	
	Number of bridge structures (modify existing)		0		0	
	Number of bridge structures (new)		2 (820' long structure over U.S. 169, 970' long structure over BNSF)		1 (300' long structure over T.H. 610)	
Primary Goals and Objectives that Directly Address the Primary Project Needs						
Goal 1: Enhance Regional Access to Activity Centers						
1	Maximize total transit riders	Total weekday transitway trips	A-C-D1: 27,600 A-C-D2: 27,200		B-C-D1: 27,000 B-C-D2: 26,000	
2	Improve service to people who depend on transit (Source: 2006-2010 American Community Survey 5-Year Estimates; Census Block Groups within 1/2 mile of stations)	Total population within 1/2 mile of stations	12,087 (4 station areas)	N/A	14,726 (4 station areas)	N/A
		Population under 18	3,145		4,742	
		Population age 65 and over	1,298		1,104	
		Population in households below the poverty level	1,518		2,178	
		Population with zero vehicles available	1,509		1,450	
		Daily transit riders from zero-car households (2030 ridership forecast)	A-C-D1: 9,700 A-C-D2: 9,950		B-C-D1: 9,200 B-C-D2: 9,200	
3	Expand reverse commute and off-peak transit service	**Reverse commute** (Ridership model output: Corridor AM peak period work trips in off-peak (northbound) direction)	A-C-D1: 4,120 A-C-D2: 4,130		B-C-D1: 3,600 B-C-D2: 3,560	
		Off-peak (Ridership model output: Corridor off-peak period trips (both directions, all trip purposes))	A-C-D1: 12,100 A-C-D2: 12,100		B-C-D1: 12,000 B-C-D2: 11,800	
4	Increase transit system linkages, access to regional destinations, and multimodal transportation opportunities	Bicycle connections	Good local and regional bike connections; Cedar Lake Regional Trail connects at Hemlock Lane Station		Good local and regional bike connections; CSAH 103 trail and sidewalk planned along segment	
		Pedestrian connections	Long block lengths for pedestrian connections to stations; gravel mining area limits pedestrian access; potential to integrate with development, access to node at Hennepin Technical College		Long block lengths for pedestrian connections to stations; sidewalks in place and planned; access to North Hennepin Community College; access to Target North Campus	
		Local bus connections	No existing suburban local bus network in place; dial-a-ride only. DEIS assumes existing Maple Grove Transit express bus network restructured to provide neighborhood and commercial area circulation.		Existing suburban local bus network in place (Route 723, 724). DEIS assumes existing suburban local network modified to connect stations; segment anchored by transit connections at Starlite Transit Center.	
		Park-and-rides	Hemlock Lane and Revere Lane stations		97th Avenue station	
5	Maximize transit access to housing, employment, schools, community services, health care facilities, and activity centers (within 1/2 mile of stations)	Retail centers	Shoppes at Arbor Lakes Fountains at Arbor Lakes Total existing retail square footage within 1/2-mile of station areas: 996,469		The Commons Park Square Shopping Center Starlite Shopping Center Northwind Plaza Park Commons Total existing retail square footage within 1/2-mile of station areas: 877,813	
		Employment	6,219		4,744	
		Population (Source: 2010 Census; Total population in Census Blocks within 1/2 mile of stations)	3,970		8,724	
		Occupied housing units	1,536		3,035	
		Libraries and schools	Osseo Area Learning Center Hennepin Technical College		Brooklyn Park Library North Hennepin Community College	
		Community centers	Hennepin Technical College (Brklyn Park campus) Current Students: 1,393 FT / 2,621 PT Staff and projected enrollment not available		North Hennepin Community College Current Students: 3,530 FT / 7,172 PT Current staff: 130 FT / 326 PT Projected students (2031): 4,663 FT / 9,467 PT Projected staff (2031): 150 FT / 377 PT	
		Parks	None		Three parks - College Park, the North Hennepin Community College ball fields, and Crestview Park	
		Health centers	None		None	
Goal 2: Enhance the Effectiveness of Transit Service within the Corridor						
6	Maximize new transit riders	New transit riders	A-C-D1: 8,400 A-C-D2: 7,800		B-C-D1: 7,150 B-C-D2: 6,500	
7	Maximize passengers per hour of revenue service	Passengers per revenue hour	A-C-D1: 217 A-C-D2: 182		B-C-D1: 181 B-C-D2: 157	
8	Maximize travel time savings	Transportation system user benefits	Daily user benefit hours: 9,000-9,460		Daily user benefit hours: 7,940-8,520	
Goal 3: Provide a Cost-Effective and Financially Feasible Transit System						
9	Balance project costs and benefits (minimize CEI)	Cost effectiveness index	ACD1: 23 ACD2: 26		BCD1: 26 BCD2: 31	
		Project capital cost ($2017)	ACD1: $960 million ACD2: $1,050 million		BCD1: $1,000 million BCD2: $1,090 million	

Bottineau Transitway Summary Evaluation

Better ... Worse

			Alignment A (LRT) (Maple Grove)		Alignment B (LRT) (Brooklyn Park)	
10	Minimize project capital and operating cost	Project operating cost ($2011)	Annual passenger trips: 9.0 million–9.1 million Annual operating cost: $22.4 million-$23.7 million Operating cost/passenger: $2.46-$2.64	○	Annual passenger trips: 8.6 million–8.9 million Annual operating cost: $24.1 million-$25.1 million Operating cost/passenger: $2.70-$2.92	○
11	Maximize long-term investment in the regional transit system	Qualitative assessment of connectivity with existing and planned transitway system (LRT and BRT)	Does not preclude construction of other regional transit system investments	○	Does not preclude construction of other regional transit system investments	○
12	Maximize flexibility to efficiently expand the transit investment to accommodate transitway demand beyond 2030 weekday travel demand forecasts	Transitway capacity and forecast demand	No major positive or negative issues	○	No major positive or negative issues	○
Goals and Objectives that Reflect Secondary or Additional Opportunities						
Goal 4: Promote Sustainable Development Patterns						
13	Promote land development and redevelopment that supports sustainable transportation policies	Qualitative assessment	Relatively less support for sustainable transportation policies due to relatively less transit oriented development potential.	◒	Relatively greater support for sustainable transportation policies due to greater transit oriented development potential.	◒
14	Ensure compatibility with local and regional comprehensive plans	Qualitative assessment of comprehensive plans	Maple Grove comprehensive plans contain substantial transit-supportive language.	◒	Brooklyn Park comprehensive plan contains substantial transit-supportive language.	◒
Goal 5: Support Healthy Communities and Sound Environmental Practices						
15	Support economic development and redevelopment efforts	**Short-term (year of opening):** Qualitative assessment	For the project to proceed along Segment A, two major land uses would need to change: a portion of the gravel mining operation and the asphalt plant. Acquiring the necessary portions of these two operations could have very large potential costs related to property acquisition and compensation for loss of economic activity. As a result, the short-term economic development potential in the Revere Lane station area is relatively low.	◓	For Segment B, the highest potential for future economic development is near the two northerly stations, 97th Avenue and 93rd Avenue. The active expansion of the Target Northern Office Campus near the 97th Avenue Station will serve as a major anchor to future development. There is also potential for redevelopment in area of transitway transition between 75th and 73rd. Segment B has greater near-term development potential than Segment A.	◉
		Long-term: Qualitative assessment	In the long term, there is potential for significant redevelopment in the northern two station areas and an opportunity to incentivize transit oriented development in these locations. The southern two stations have some redevelopment potential but are more limited.	◒	Long-term development potential on Segment B is greatest at the northern most station near the Target Northern Office Campus and other currently undeveloped land. While the timing of such development is unknown, the availability of undeveloped land provides opportunity for new transit oriented development in the future. Planned library at 85th Avenue station will help anchor future development at this location.	◒
16	Minimize impacts to the natural and built environment	Impacts on wetlands, water, and floodplains	1 ac of wetland, moderately high potential impact on floodplains.	○	3 ac of wetland, slight risk of impacting the existing floodplain.	○
		Impacts on parks	No parks present	○	No impact to College Park, North Hennepin Community College ball fields or Crestview Park	○
		Noise and vibration impacts	Noise and vibration analysis was not completed as part of scoping. Initial review identified the Hennepin Technical College and single/multiple family residences as noise sensitive land uses adjacent to Segment A.	○	Noise and vibration analysis was not completed as part of scoping. Initial review identified the North Hennepin Community College, Step by Step Montessori School and single/multiple family residences as noise sensitive land uses adjacent to Segment B.	○
		Impacts on visual resources	Includes two major structures - guideway crossing over Hwy 169 and over BNSF railroad - that will have adverse impact on visual character.	●	Includes one structure - guideway crossing of TH 610 adjacent to existing West Broadway bridge structure. Low incremental impact only.	◓
		Impacts on historic and cultural resources	70 surveyed properties; 1 recommended for a Phase II analysis, which will determine if they are eligible for listing in the National Register of Historic Places	◒	61 surveyed properties; 3 recommended for a Phase II analysis, which will determine if they are eligible for listing in the National Register of Historic Places	●
17	Minimize short- and long-term impacts to property, property access, and on-street parking	Loss of property access	0	○	0	○
		Impacts on boulevards	0	○	0	○
		Loss of on-street parking	0	○	0	○
		Businesses/residences lost through full takes (parcels (acres))	9 (4.4)	◒	12 (27.1)	◒
		Right-of-way acquisition through partial takes (parcels (acres))	29 (66.0)	●	49 (19.0)	●
18	Maximize cohesion and preservation of Bottineau Transitway communities	Qualitative assessment	Large section of this alignment currently undeveloped land.	◒	Alignment would be located in existing roadway corridor. Proposed stations would provide improved access to surrounding activity centers.	◉
19	Maximize pedestrian and bicycle connections to the Bottineau Transitway	Bike/pedestrian crossings closed	1: Xylon Ave & Brooklyn Boulevard	◒	4: West Broadway & Commercial Access/76th West Broadway & 78th West Broadway & 92nd West Broadway & 84th	◒
20	Maximize health and environmental benefits to the Bottineau Transitway communities	Assessment based on ridership projections at each station, along with multimodal connection opportunities/design at stations	Not available at Scoping	TBD	Not available at Scoping	TBD
21	Minimize disproportionately high and adverse impacts on the region's minority and/or low-income communities		Not available at Scoping	TBD	Not available at Scoping	TBD
22	Minimize area traffic impacts	Impacts from traffic diversion	No adverse traffic impacts.	○	No adverse traffic impacts.	○
		Impacts on local street network	Through street access at signalized intersections only.	◒	Through street access at signalized intersections only. Travel speeds on West Broadway are 45 mph and will require gates adjacent to the center-running guideway at signalized intersections.	●
		Intersection closures	0	○	0	○
		Intersections converted to right-in/right-out	3	◒	10	●