Technical Report
Environmental Justice

1.0 Introduction

1.1 Purpose of Report

This *Environmental Justice Technical Report* has been prepared in support of the Bottineau Transitway Project Draft Environmental Impact Statement (Draft EIS). The objective of this report is to evaluate the Project's potential environmental justice impacts within the study area. This includes the following:

- Evaluate whether environmental justice populations are present in the project area
- Identify and evaluate adverse and disproportionate project impacts on environmental justice populations
- Evaluate input received from stakeholders through public involvement which included input from underrepresented groups. The public engagement process included measures to accommodate engagement with and feedback from underrepresented groups throughout the process.
- Determine whether adverse effects may be avoided, minimized, or mitigated
- Determine whether there are off-setting benefits to environmental justice populations

2.0 Technical Analysis

2.1 Regulatory Context/Methodology

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, dated February 11, 1994, calls on federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations. In 1997, the U.S. Department of Transportation (DOT) published a final DOT order (DOT Order 5310.2) to establish procedures for use in complying with EO 12898 for its operating administrations including the Federal Transit Administration (FTA). This order stresses the importance of addressing environmental justice concerns early in the development of a program, policy, or activity. It requires, where relevant, appropriate, and practical, that information be obtained on the population served and/or affected, including information on race, color, or national origin and income level. It advises that steps be taken to guard against disproportionately high and adverse impacts on protected populations. FTA Circular 4703.*1 Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (August 15, 2012) provides guidance on incorporating environmental justice principles into plans, projects, and activities that receive funding from FTA.

Impacts and benefits of transportation projects result from the physical placement and operation of such transportation facilities relative to neighborhoods as well as employment and cultural activity centers and with respect to complementary regional transportation systems. Environmental justice analysis examines whether adverse effects across environmental resource areas are experienced disproportionately higher by areas with a concentration of minority and/or low-income populations.

The steps for defining environmental justice impacts are as follows:

- Identification of the location of low-income and/or minority population in the project area
- Identification of project impacts upon the identified low-income and/or minority population
- Determination of whether the impacts are disproportionately high or adverse

2.2 Study Area

A geographic information systems (GIS) platform was used to analyze project area populations within a half mile on either side of the alignments evaluated in the Draft EIS. A half-mile area is used to define the potential area affected by both direct and indirect adverse impacts. Year 2010 U.S. Census data was used to quantify minority and low-income populations at the census block group level. Additional analyses were conducted at the census block level, which is the smallest geographic unit for which race and ethnicity data is available. Additional information on the study area is described below.

2.3 Methodology

Identifying Low-Income and/or Minority Populations

For purposes of EO 12898, the DOT Order addresses persons identified with the following populations:

- Minority: People belonging to Black, Asian, American Indian and Alaskan Native, Native Hawaiian or Other Pacific Islander races and/or Hispanic ethnicity, as defined in the Census.
- Low-income: Households whose income is at, or below, the U.S. Department of Health and Human Services (HHS) poverty thresholds. As a reference, this threshold was $22,300 in 2010 for a family of four.

Methods for identifying each of these populations are discussed below.

Minority Populations

The existing guidance from CEQ, EPA and others suggest that a minority population may be present if the minority population percentage of the affected area is “meaningfully greater” than the minority percentage in the greater population or other appropriate unit of geographic comparison. FTA provides further guidance by stating that geographic areas with 50 percent or greater minority population will always be identified as a minority population. Specific guidance is not provided for areas with less than 50 percent minority populations.

To provide broader context, the minority population percentage was examined at the state, regional, county, and local levels, as shown in Table 1.

Table 1: Minority Population by State, Region, County, and City

	Total Population	Non-Minority Population	Minority Population	Percent Minority
Minnesota	**5,303,925**	**4,405,142**	**898,783**	**16.9%**
Seven-County Twin Cities Metropolitan Area	**2,846,567**	**2,173,221**	**673,346**	**23.7%**
Hennepin County	**1,152,425**	**826,670**	**325,755**	**28.3%**
Brooklyn Park	75,781	37,948	37,833	49.9%
Crystal	22,151	16,712	5,439	24.6%
Golden Valley	20,371	17,113	3,258	16.0%
Maple Grove	61,567	52,222	9,345	15.2%
Minneapolis	382,578	230,650	151,928	39.7%
Robbinsdale	13,953	10,395	3,558	25.5%

Source: 2010 U.S. Census

As the geographic focus of these areas narrows, the proportion of minority population increases. At the state level, only 16.9 percent of the population is defined as minority. The proportion climbs as the focus narrows on the seven-county metro area and Hennepin County.

A geographic information systems (GIS) platform was used to analyze project area populations within a half mile on either side of the alignments evaluated in the Draft EIS. A half-mile area is used to define the potential area affected by both direct and indirect adverse impacts. 2010 U.S. Census data was used to quantify minority populations at the census block level, which is the smallest geographic unit for which race and ethnicity data is available. Table 2 summarizes the minority populations within a half mile of the corridor by cities adjacent to the Bottineau Transitway.

Table 2: Minority Population in Cities Adjacent to the Bottineau Transitway

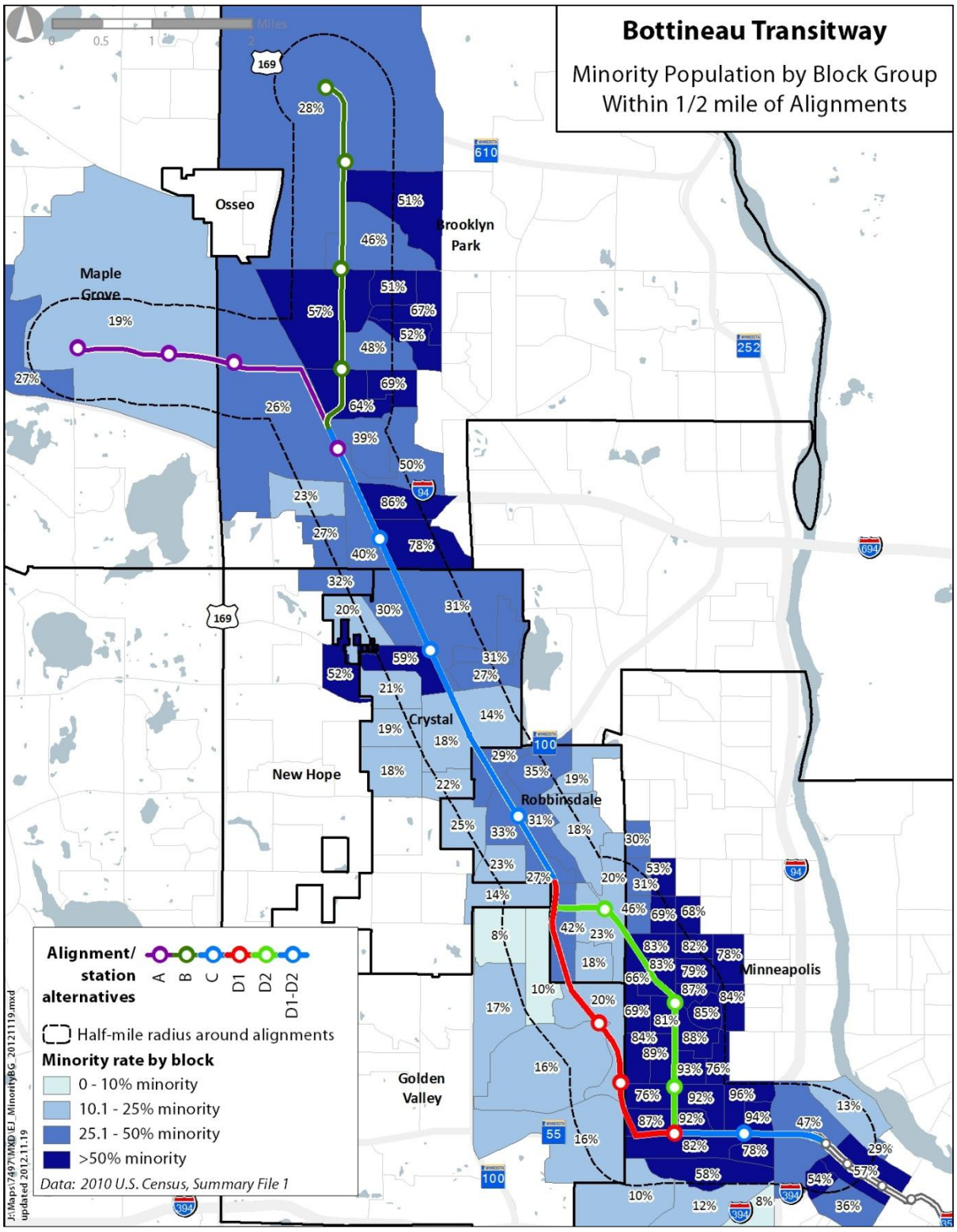
	Total Population	Non-Minority Population	Minority Population	Community: % Minority	Corridor: % Minority
Within Brooklyn Park	18,323	7,862	10,461	49.9%	57.1%
Within Crystal	8,850	6,459	2,391	24.6%	27.0%
Within Golden Valley	3,162	2,716	446	16.0%	14.1%
Within Maple Grove[1]	470	379	91	15.2%	19.4%
Within Minneapolis	32,109	9,783	22,326	39.7%	69.5%
Within Robbinsdale	11,185	8,067	3,118	25.5%	27.9%

Source: 2010 U.S. Census, block-level data

Figures 1 depicts the locations of minority populations within the project area. These figures illustrate, as in Table 2 above, that higher concentrations (than regional or county wide averages) of minority populations are frequently present throughout the corridor.

[1] The alignment location within Maple Grove currently traverses a gravel mining area. This alignment would serve a future redevelopment area.

Figure 1. Bottineau Transitway Minority Populations (Census Block Group-Level)



Low-Income Populations

As with minority populations, the existing guidance from CEQ, EPA and other agencies suggest that a low-income population may be present if the low-income population percentage of the affected area is "meaningfully greater" than the low-income percentage in the greater population or other appropriate unit of geographic comparison. FTA provides further guidance by stating that geographic areas with 50 percent or greater low-income population may be identified as a low-income population area. Specific guidance is not provided for areas with less than 50 percent low-income populations.

To provide broader context, the low-income population percentage was examined at the state, regional, county, and local levels, as shown in Table 3.

Table 3: Low-Income Population by State, Region, County, and City

	Total Population for whom Poverty is Determined	Population Above Poverty Line	Population Below Poverty Line	Percent in Poverty
Minnesota	**5,119,104**	**4,576,971**	**542,133**	**10.6%**
Seven-County Metropolitan Area	**2,762,370**	**2,486,274**	**276,096**	**10.0%**
Hennepin County	**1,114,933**	**980,570**	**134,363**	**12.1%**
Brooklyn Park	73,373	65,044	8,329	11.4%
Crystal	21,887	19,861	2,026	9.3%
Golden Valley	19,603	18,153	1,450	7.4%
Maple Grove	59,005	57,210	1,795	3.0%
Minneapolis	364,841	281,975	82,866	22.7%
Robbinsdale	13,810	12,918	892	6.5%

Source: 2006-2010 American Community Survey 5-Year Estimates, block group-level data

A geographic information systems (GIS) platform was used to analyze project area populations within a half mile on either side of the alignments evaluated in the Draft EIS. American Community Survey 2006-2010 Five-Year Estimates were used to quantify low-income populations at the block group level, which is the smallest geographic unit for which low-income population data is available.

Table 4 summarizes the low-income populations within a half mile of the corridor by subareas defined by municipal boundaries.

Table 4: Low-Income Population in Cities adjacent to the Bottineau Transitway

	Total Population for whom Poverty is Determined	Population Above Poverty Line	Population Below Poverty Line	Community: % in Poverty	Corridor: % in Poverty
Within Brooklyn Park	23,054	19,569	3,485	11.4%	15.1%
Within Crystal	13,591	12,023	1,568	9.3%	11.5%
Within Golden Valley	5,467	5,202	265	7.4%	4.8%
Within Maple Grove	3,757	3,658	99	3.0%	2.6%
Within Minneapolis	37,802	26,304	11,498	22.7%	30.4%
Within Robbinsdale	12,701	11,849	852	6.5%	6.7%
Hennepin County	**1,114,933**	**980,570**	**134,363**	–	**12.1%**

Source: 2006-2010 American Community Survey 5-Year Estimates, block group-level data

Figure 2. Bottineau Transitway Low-Income Populations

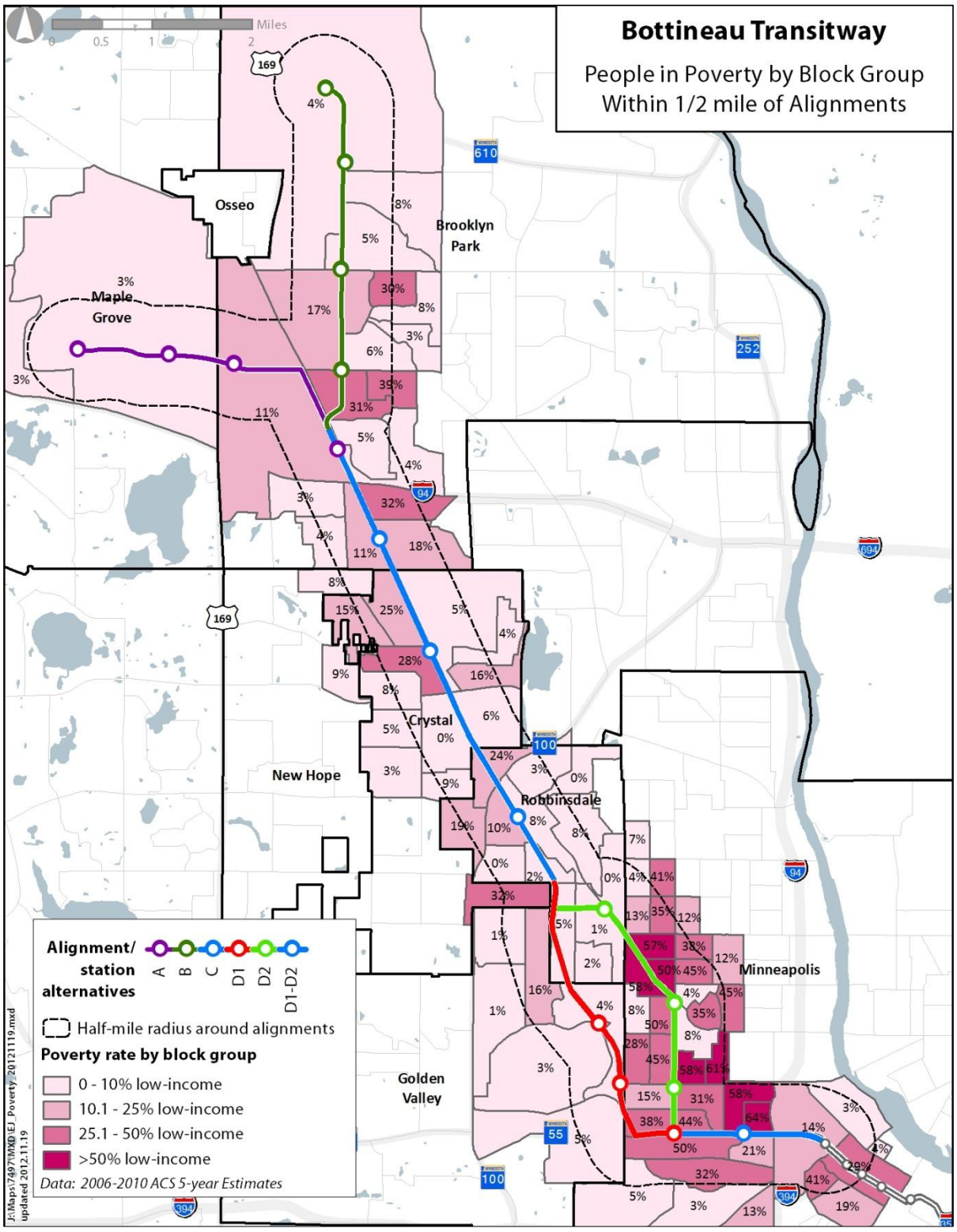


Figure 2 depicts the locations of low-income populations within the project area. This figure illustrates that low-income populations within the corridor are not nearly as extensive as minority populations. None of the cities as a whole or city land areas within one-half mile of the corridor approach the 50 percent low income threshold for consideration as low income areas based on the FTA guidance referenced earlier in this report. It should be noted that the areas within a half mile of the Bottineau Transitway within the cities of Minneapolis and Brooklyn Park have higher concentrations of low income populations than the other cities along the corridor.

Presence of Minority and Low-Income Populations in the Study Area

Identification of Environmental Justice Population Locations

Census data at the *block group* level were used to identify the presence of minority and low-income populations along the Bottineau Transitway alignment options. The block group data represented in Figure 1 clearly indicate the presence of minority populations along the alignment options in Brooklyn Park and Minneapolis.

The presence of minority populations within the remaining cities along the Bottineau Transitway is not as apparent. Additional analyses using *census block* data were conducted to assess the presence of minority populations along the alignment options in Maple Grove, Crystal, Robbinsdale, and Golden Valley. The number of minority individuals within each census block was used to identify the location of minority populations. Generally, census blocks with greater than 15 minority individuals were considered to have potential environmental justice populations. A discussion of minority populations within each city adjacent to the Bottineau Transitway is provided below.

Maple Grove

Based on census block data, no environmental justice populations were identified adjacent to the Bottineau Transitway in Maple Gove. The majority of the area is being used for gravel mining operations or has non-residential development.

Brooklyn Park

As shown in Figure 1, minority populations greater than 25 percent are present along alignments B and C in Brooklyn Park. In several locations, minority populations exceed 50 percent.

Crystal

As illustrated in Figure 2, one block group west of Alignment C between 36th Avenue and 34th Avenue has a low-income population (32 percent). A comparison of Figure 1 and Figure 2 identifies this block group as having a low-income population but not a minority population.

As shown in Figure 3, minority populations are present east and west of Alignment C. The distribution of minority populations is not uniform. In some locations, minority populations are concentrated whereas in other locations, the populations are dispersed.

Robbinsdale

As shown in Figure 4, minority populations are present along both sides of the alignment options in Robbinsdale. The distribution of minority populations is not uniform. In some locations, minority populations are concentrated whereas in other locations, the populations are dispersed. Minority populations were not identified in the downtown area of the city.

Figure 3. Crystal Minority Population Along Alignment C

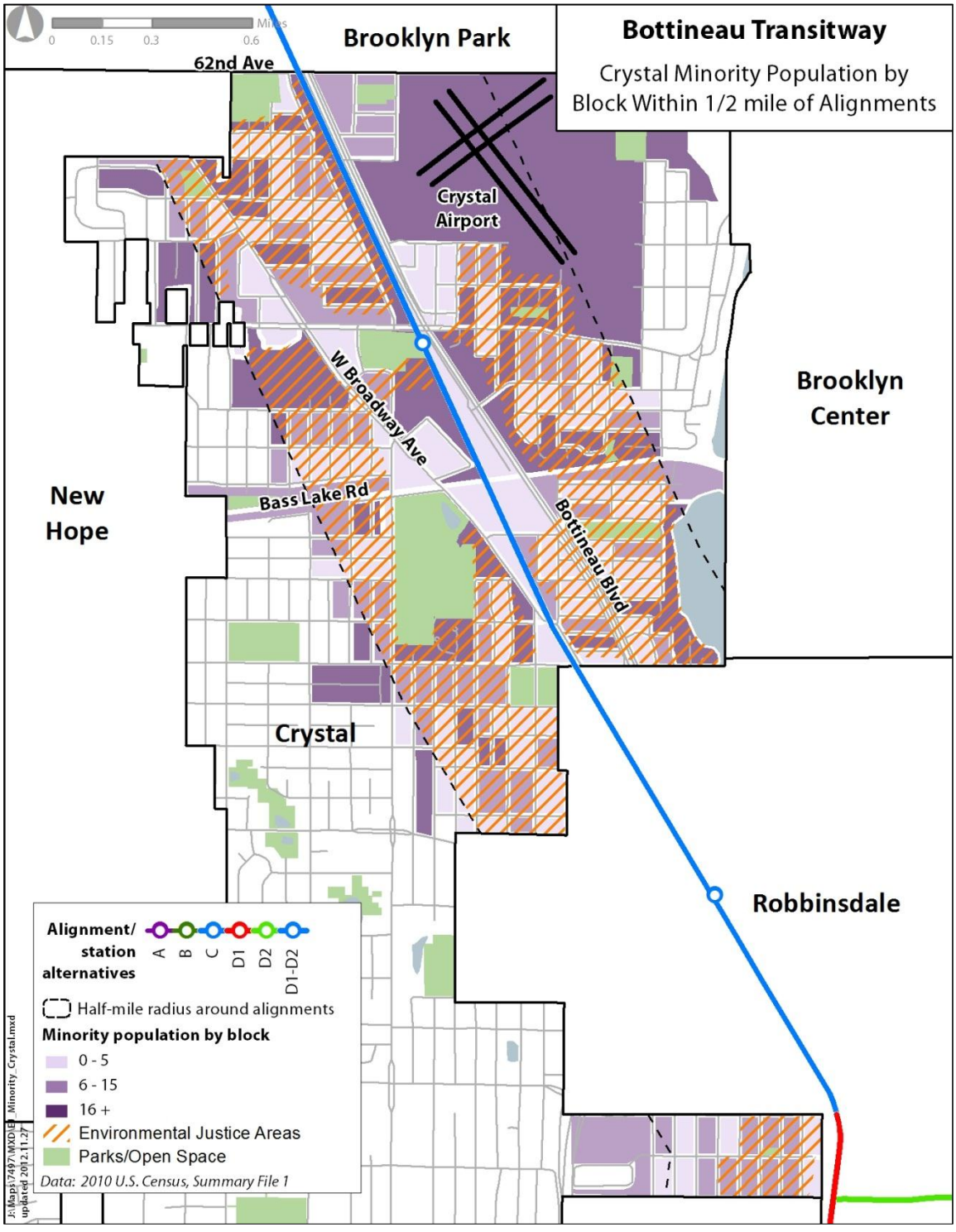
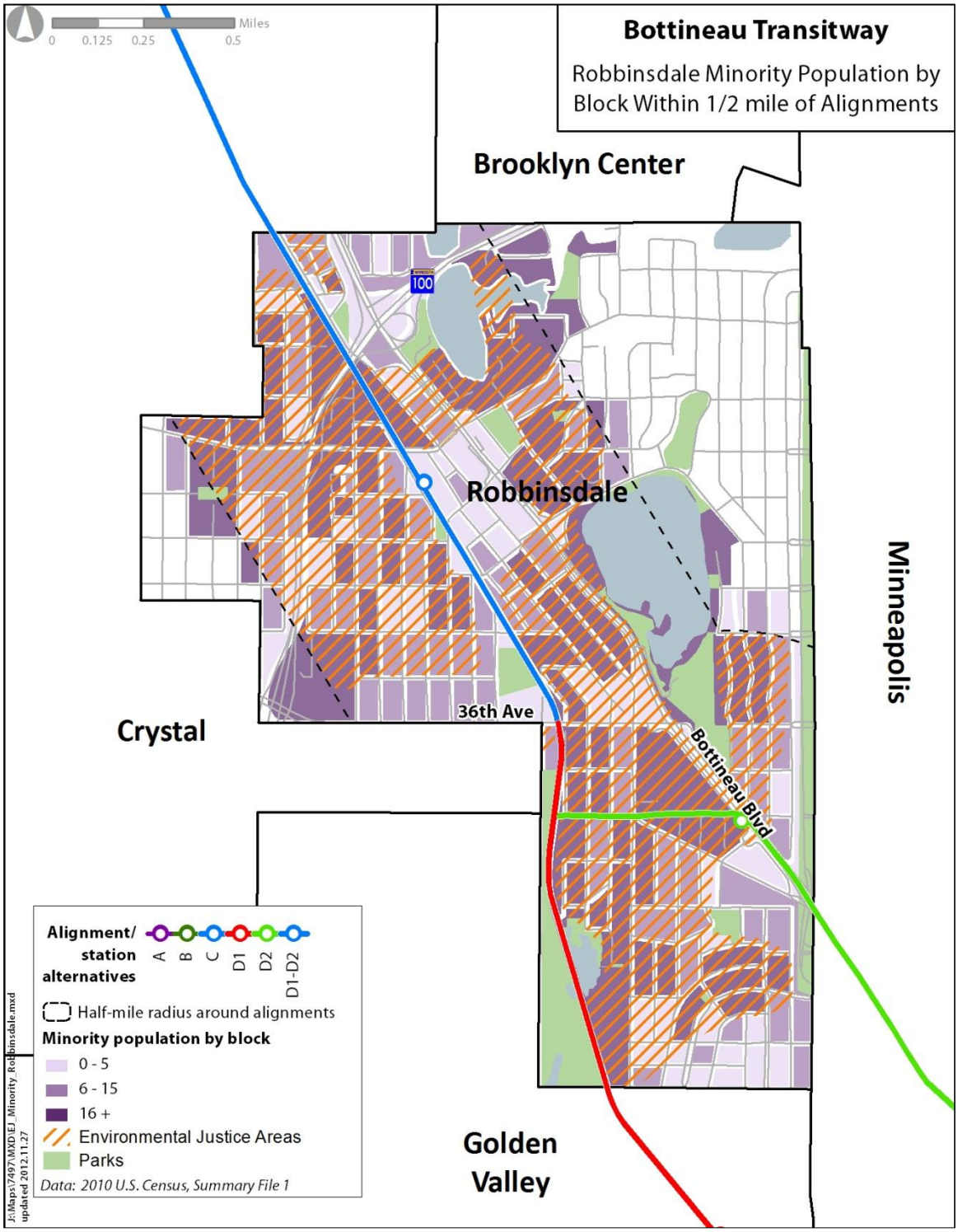


Figure 4. Robbinsdale Minority Population Along Alignment C



Golden Valley

As depicted in Figure 2, one block group west of Alignment D1 between 34th Avenue and Golden Valley Road is identified as a low-income population (16 percent). A comparison of Figure 1 and Figure 2 identifies this block group as having a low-income population but not a minority population.

As depicted in Figure 5, a minority population exists within an isolated census block west of Theodore Wirth Regional Park. The minority population surrounding this census block appears to be dispersed. No minority concentrations are present north of Golden Valley Road.

Another minority population is present between Alignment D1 and Xerxes Avenue. This population is situated west of the Xerxes Avenue and is likely an extension of the minority population identified immediately to the east in Minneapolis.

Minneapolis

As shown in Figure 1, environmental justice populations greater than 50 percent are present along the majority of Alignment D2, the Alignment D common section, and the southern portion of Alignment D1 in Minneapolis. In some locations, the minority populations exceed 90 percent.

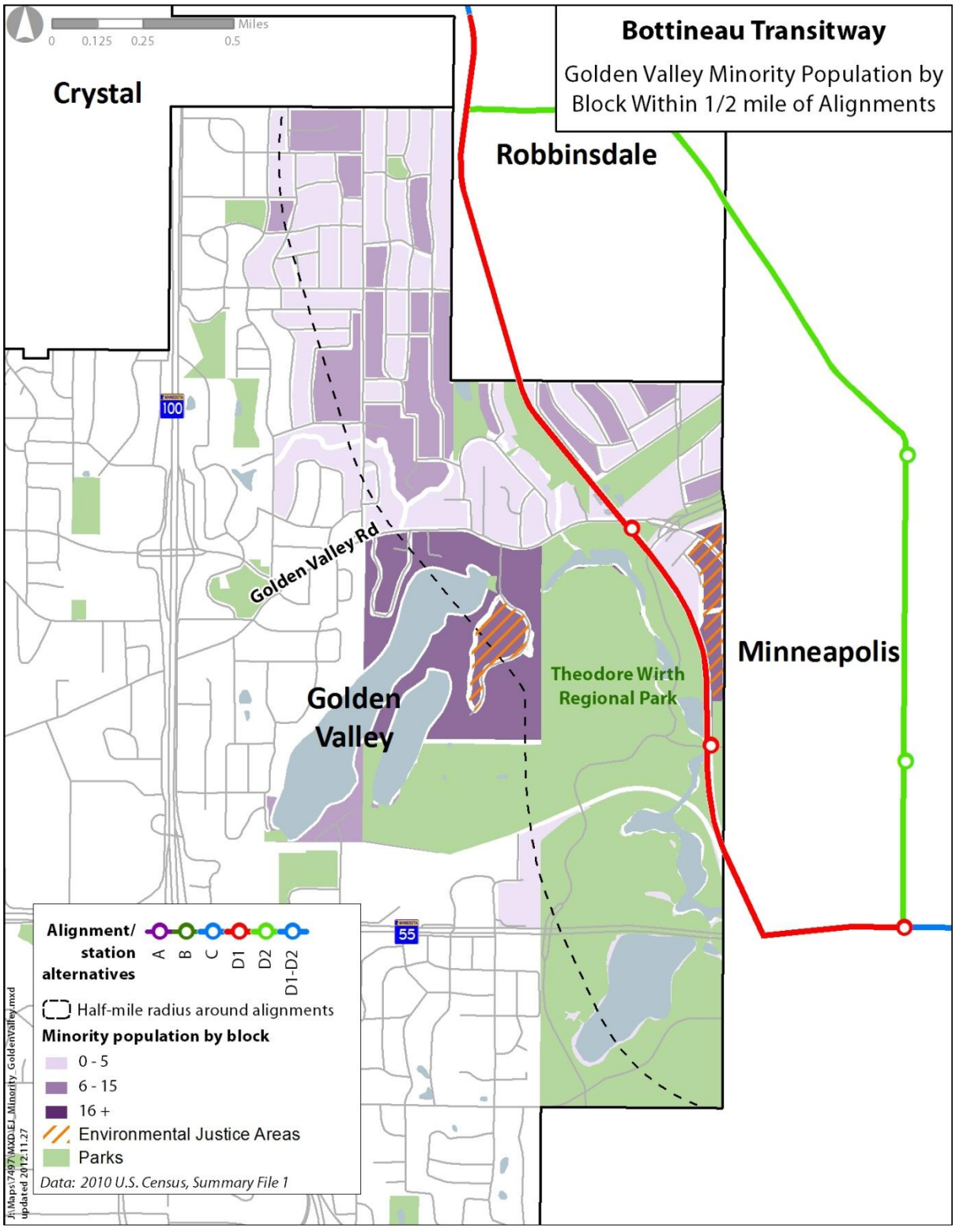
2.4 Engagement of Environmental Populations

A public involvement plan was developed and implemented for the Bottineau Transitway Project (see Draft EIS Chapter 7 *Consultation and Coordination*). The plan outlines strategies for encouraging public input and describes opportunities to be provided to the public to encourage early and ongoing involvement in the project development process.

The public engagement process included measures to accommodate underrepresented groups throughout the process. These efforts included:

- Holding meetings throughout the project corridor in transit-accessible locations
- Sending meeting notices through traditional (mailing to area residents, posting in newspapers) and non-traditional methods (email lists, social media, posting in community centers)
- Partnering with existing organizations that engage underrepresented groups through support at events, and providing Bottineau Transitway meeting materials including exhibits, handouts, and slide presentations. These efforts have included support of Corridors of Opportunity outreach grant recipients which engage under represented populations throughout the corridor.

Figure 5. Golden Valley Minority Population Along Alignment D1



2.5 Environmental Consequences

2.5.1 Operating Phase Impacts

Operating Phase impacts with potential for high or disproportionate impact to environmental justice populations include land use, traffic, parking, community character and facilities (including parks), right-of-way and relocations, visual quality, safety and security, noise, vibration, air quality, traction power substations (TPSS), and operations and maintenance facilities (OMFs). The potential for high or adverse impacts for each of these topics is addressed below. These impacts are compared to the impacts borne by non-environmental justice populations.

No-Build Alternative

The No-Build Alternative would not result in high or disproportionate adverse effects to environmental justice populations. However, the positive effects of the project on these populations would also not be realized.

Enhanced Bus/Transportation System Management Alternative

The Enhanced Bus/Transportation System Management (TSM) Alternative would include a transit center and park-and-ride facility near 97th Avenue and West Broadway Avenue, north of TH 610. The facility would be located in an area that is currently undeveloped and would not result in high or disproportionate adverse effects to environmental justice populations. The TSM Alternative would expand and enhance transportation opportunities for all populations along the Bottineau Corridor. Because all populations would accrue similar benefits, no high or adverse effects to environmental justice populations would occur.

Build Alternatives

Land Use

As determined in the Land Use Technical Report, all alignments are compatible with land use planning policy documents. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Vehicular Traffic

No adverse impact to traffic operations is anticipated as a result of the Bottineau Transitway. Analysis assumptions and results are documented in the Traffic Technical Report. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Pedestrian and Bicycle Facilities

As determined in the Transportation Technical Report, none of the alternatives would affect bicycle facilities. While the Bottineau Transitway would result in closure of pedestrian crossings for safety and operational reasons, impacts to pedestrian facilities are expected to be minor, generally requiring a diversion of 1/8 mile or less. Evaluation of access closures along TH 55 would continue during project design and development. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Parking

The net loss of 270 existing on-street parking spaces is anticipated along Alignment D2 to

accommodate the Bottineau Transitway. As shown in Table 5, no loss of on-street parking is anticipated for any other alignments. Further discussion of parking is provided in the Transportation Technical Report.

Table 5. Number of Parking Spaces Lost, by Alignment

Alignment	Net Number of Parking Spaces Lost
A	0
B	0
C	0
D1	0
D2	270 (34th Avenue, West Broadway Avenue, and Penn Avenue)
D common	0

Preliminary finding:

This impact is a high and disproportionate impact to the surrounding low-income and minority population along Alignment D2. The loss of 270 parking spaces is disproportionate to other alignment options, given that other alignments are would not lose any existing on-street parking. The loss of on-street parking spaces is a high and adverse impact for the neighborhood adjacent to the D2 alignment. Public comments provided during the scoping process indicated high level of concern regarding the loss of existing street parking. The public has expressed concerns that loss of nearby parking would be particularly detrimental to the elderly and people with disabilities.

Community Facilities / Community Character and Cohesion

No adverse effects to community facilities or community character and cohesion are anticipated for alignments A, B, C, D1, and the D common section. The effects of access changes, right-of-way acquisitions, increased noise, and changes in visual character are confined to limited areas and are not expected to affect the overall character nor do they present a substantial physical or social barrier affecting community cohesion. Therefore, there is no potential for any high or adverse impacts to be disproportionately borne by environmental justice populations.

Changes in community character are expected for neighborhoods surrounding Alignment D2. The Willard-Hay neighborhood would experience a change in community character due to the removal of residential properties, and loss of on-street parking, as well as visual changes to NorthPoint Health and Wellness Center, an athletic field, and Estes Funeral Chapel.

Changes in access across Penn Avenue, which would be necessary to maintain pedestrian safety, are expected to affect community cohesion. The closure of nine crossings along Penn Avenue, as well as the interruption to the street grid system in north Minneapolis, would collectively contribute to decreased walkability and accessibility to and within the neighborhoods surrounding this area of Alignment D2.

Preliminary finding:

Alignment D2 would result in a high and proportionate impact on the surrounding low-income minority community. Displacement resulting from the other alignments is notably less and is not considered high or disproportionate.

Displacement of Residents and Businesses

Table 6 summarizes residential and commercial displacements for each alignment.

Table 6. Number of Displaced Residential and Commercial Properties, by Alignment

Alignment	Residential	Commercial
A	8	0
B	8	1
C	0	3
D1	0	0
D2	105	3
D common section	0	0

The greatest number of residential displacements is anticipated along Alignment D2. Most of the residential displacements are anticipated on the west side of Penn Avenue between McNair Avenue and TH 55. As a significant percentage of the population in this area has been identified as low-income, it is assumed that much of the replacement housing would need to be affordable to low-income households and include both ownership as well as rental units. Investigation of currently available housing, using MLS (Mulitiple Listing Service), indicates that it may be challenging to find affordable properties for displaced homeowners and tenants along Alignment D2. Adequate housing is expected to be available for displaced residents along alignments A, B, and C.

A search of the MLS was conducted to assess the future potential for identifying suitable replacement properties for residents and businesses whose properties may be acquired for the Bottineau Transitway. The number of displaced properties was compared with the number of comparable properties available, assuming similar properties may be available at the time of construction. MLS search results were also used to assess the availability of suitable residential or commercial properties in or near the community where displacements are anticipated to occur.[2]

The greatest number of commercial displacements is anticipated for alignments C and D2, with each having three displacements. Adequate commercial properties are expected to be available for business relocations along Alignments B, C, and D2.

Preliminary finding:

Alignment D2 would result in a high and disproportionate impact on the surrounding low-income minority community. Displacement resulting from the other alignments is notably less and is not considered high or disproportionate.

Visual/Aesthetics

Each alignment was analyzed to assess the degree of effect to existing visual features. In many areas, construction of the transitway would occur within existing railroad and highway rights-of-way and would have minimal to moderate effects. In some instances, transitway design requires the taking of adjacent properties or significant structures that would have a higher degree of effect. Further discussion of visual/aesthetic resources is provided in the Visual Quality Technical Report.

Minimal effects are anticipated along Alignment A, as much of the gravel mining area in Maple Grove is undeveloped. Minimal to moderate effects are expected for alignments B, C, and D1. Removal of approximately 100 residential properties along Alignment D2 would result in high adverse visual effects.

[2] This MLS exercise was conducted only to assess the ability to relocate displaced residents and businesses. Should the Bottineau Transitway Project proceed to construction, displaced residents and businesses would receive individual relocation assistance in accordance with their needs and current market availability.

Preliminary finding:
Alignment D2 would result in a high and proportionate impact on the surrounding low-income minority community. Displacement resulting from the other alignments is notably less and is not considered or disproportionate.

Safety and Security

Safety and security measures would be implemented for all alignments and all stations within the Bottineau Corridor. A greater level of security may be provided at specific locations if an assessment of security threats to facilities or data showing higher levels of criminal activity at certain facilities determined that additional security measures were warranted.

No adverse effects to environmental justice populations are anticipated because a similar level of security would be provided for all alignments and stations. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Noise

No noise impacts are expected along Alignment A or the Alignment D common section. Of the three alignments with noise impacts (C, D1, and D2), the greatest number of severe noise impacts are anticipated along Alignment C and vary depending on whether Alignment option A or B is selected. Table 7 provides the number of moderate and severe impacts by alignment and Table 8 provides the number of severe impacts by alternative.

To mitigate noise impact from train operations, noise control can be considered at the source, along the sound path, or at the receiver. Noise mitigation is considered depending on the need, feasibility, reasonableness, and effectiveness of potential options. The FTA states that in considering potential noise impact, severe impacts should be mitigated if at all practical and effective. At the moderate level, more discretion should be used, and other project-specific factors should be included in considering the need for mitigation. These factors include the existing noise level, predicted increase over the existing noise levels, the types and number of noise-sensitive land uses affected, the noise sensitivity of the properties, the acoustic effectiveness of mitigation options, and the cost-effectiveness of mitigating the noise.

Potential noise mitigation measures include establishment of quiet zones, modified use of audible warning devices, special trackwork, wheel/rail lubrication, noise barriers, and building sound insulation. These potential mitigation strategies will be further evaluated during preliminary engineering to determine their feasibility and reasonableness, considering factors such as safety impacts, cost effectiveness, and acceptability to the community.

Table 7. Summary of Noise Impacts by Alignment Option

Alignment	Number of Receptors Impacted Without Mitigation	
	Moderate	Severe
A	75	None
B	151	8
C[1]	693 to 712	483 to 486
D1[2]	51 to 58	40
D2	322	40
D common section	18	None

[1]Impacts on C vary due to the use of horn at the 71st Avenue grade crossing with B and the bell with A. Assumption based on speed.

[2]Impacts on D1 vary depending on use of the Golden Valley Road or Plymouth Avenue/Wirth Park Station Options due to differences in speeds and noise sources at different locations on the corridor.

Table 8. Number of Noise Impacts by Alternative

Alternative	Number of Receptors With Moderate Noise Impact – Without Mitigation	Number of Receptors With Severe Noise Impact - Without Mitigation
A-C-D1	837 or 844 [1]	523
A-C-D2	1,108	523
B-C-D1	932 or 939 [1]	534
B-C-D2	1,203	534

[1] Range reflects difference with Golden Valley Road Station Option (844 and 939) and Plymouth Avenue/Theodore Wirth Park Station Option (837 and 932).

Preliminary finding:

With measures that will be evaluated further during preliminary engineering, potential severe noise impacts will be mitigated to the extent that is practical and effective. No high and adverse impacts are anticipated because severe noise impacts would be mitigated.

Vibration

Ground borne vibration (GBV) impacts associated with the operation of the transitway are predicted to occur at 51 residences along Alignment C, and would therefore occur for all alternatives. No residual impacts[3] are predicted to occur if the recommended mitigation measures are implemented.

Preliminary finding:

With recommended mitigation, no severe GBV impacts are anticipated for the Bottineau Transitway Project. No high and adverse impacts are anticipated because vibration impacts would be mitigated.

Air Quality

Under each of the proposed alternatives (No-Build, TSM and Build alternatives) emissions would likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual Mobile Source Air Toxics (MSATs) emissions by 72 percent between 1999 and 2050. On a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today. The magnitude of the EPA-projected reductions is so great (even after accounting for traffic growth) that MSAT emissions in the study area are likely to be lower in the under a wide variety of future conditions. Additional discussion of this analysis is provided in the Air Quality Technical Report.

No adverse air quality impacts are anticipated for the Bottineau Transitway Project. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

TPSS

There are 27 potential TPSS locations along the proposed alignments. The majority of the TPSS stations would be located on the east side of the proposed LRT track with some being associated with the LRT platforms and stations.

[3] Residual impacts refers to the number of impacts remaining after the recommended mitigation is implemented.

TPSS have the potential to cause noise impact when they are located close to noise-sensitive receptors. The primary noise sources associated with substations are magnetostriction of the transformer core, which causes low-frequency tonal noise (hum), and cooling fans, which typically generate broad-band noise. The potential for noise impact from substations would be evaluated in a later phase of the project when details relating to their design and specific locations become available. However, it should be noted that noise impact from substations can often be avoided by including noise limits in the procurement documents.

TPSS stations do not require a large area and could be constructed at locations that would avoid or minimize impacts to environmental justice populations. Siting of TPSS facilities would take into account potential visual impacts and ability to screen with appropriate landscaping, especially in residential areas. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

OMF

Three OMF locations have been identified, one along Alignment A in Maple Grove and two along Alignment B in Brooklyn Park. Only one OMF would be constructed as part of the Bottineau Transitway Project. Since no adverse impacts resulting from the operation of any of the OMFs were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Summary of Impacts by Alternative

Table 9. Operational Phase: Potentially High or Disproportionate Impacts, by Alignment

Impact Categories	Potentially High or Disproportionate Impacts[1]					
	A	B	C	D1	D2	D Common
Land Use	N	N	N	N	N	N
Vehicular Traffic	N	N	N	N	N	N
Pedestrian and Bicycle Facilities	N	N	N	N	N	N
Parking	N	N	N	N	Y	N
Community Facilities / Community Character and Cohesion	N	N	N	N	Y	N
Displacement of Residents and Businesses	N	N	N	N	Y	N
Visual/Aesthetics	N	N	N	N	Y	N
Safety and Security	N	N	N	N	N	N
Noise	N	N	N	N	N	N
Vibration	N	N	N	N	N	N
Air Quality	N	N	N	N	N	N
TPSS	N	N	N	N	N	N
OMF	N	N	N/A	N/A	N/A	N/A

[1] Y = Yes, N = No, tbd = to be determined, and N/A = not applicable

Table 10. Operational Phase: Potentially High or Disproportionate Impacts, by Alternative

Impact Categories	Potentially High or Disproportionate Impacts[1]			
	A-C-D1	A-C-D2	B-C-D1	B-C-D2
Land Use	N	N	N	N
Vehicular Traffic	N	N	N	N
Pedestrian and Bicycle Facilities	N	N	N	N
Parking	N	Y	N	Y
Community Facilities / Community Character and Cohesion	N	Y	N	Y
Displacement of Residents and Businesses	N	Y	N	Y
Visual/Aesthetics	N	Y	N	Y
Safety and Security	N	N	N	N
Noise	N	N	N	N
Vibration	N	N	N	N
Air Quality	N	N	N	N
TPSS	N	N	N	N
OMF	N/A	N/A	N	N

[1] Y = Yes, N = No, tbd = to be determined, and N/A = not applicable

2.5.2 Construction Phase Impacts

No-Build Alternative

The No-Build Alternative would not result in construction impacts and would not result in high or disproportionate adverse effects to environmental justice populations.

Enhanced Bus/Transportation System Management Alternative

Construction impacts would occur at the location of a transit center and park-and-ride facility near 97th Avenue and West Broadway Avenue, north of TH 610. The facility would be located in an area that is currently undeveloped and would not result in high or disproportionate adverse effects to environmental justice populations.

Build Alternatives

Land Use

No short-term impacts to conformance with Land Use policies have been identified. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Vehicular Traffic

Short-term impacts to traffic are anticipated during construction. Alignment D2 is expected to impact vehicular traffic to a greater degree as this is the only alignment where the Transitway would be substantially constructed within active street right-of-way and displacing vehicular traffic. Analysis assumptions and results are documented in the Traffic Technical report.

Preliminary finding:

Disproportionate effects to environmental justice populations proximate to Alignment D2 are anticipated due to the high level of disruptions to traffic flow and access anticipated during

construction of this alignment. No high adverse impacts are anticipated as a result of construction of the other alignments.

Non-Motorized Transportation

For all alignments, temporary closures or detours are anticipated to affect bike and pedestrian facilities. Safe access for non-motorized users, as a result of detours, closures, and other inconveniences during the construction phases, would be included in phasing plans. Depending on how construction activities would impact sidewalk areas, special facilities (such as handrails, fences, barriers, ramps, walkways, and bridges) may be required to maintain bicyclist and pedestrian safety.

If crosswalks are temporarily closed, pedestrians would be directed to use alternate crossings nearby. Every effort would be made not to close adjacent crosswalks at the same time to allow for continued pedestrian movement across streets. All sidewalks and crosswalks would be required to meet minimum standards for accessibility and be free of slipping and tripping hazards. Sidewalk closures would be discouraged but, if required, would be done in such a way as to minimize impacts.

Preliminary finding:

Given measures to mitigate construction impacts, no adverse effects are anticipated. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Parking

Similar to vehicular traffic, short term impacts to on-street parking are anticipated during construction and are anticipated to be high for Alignment D2 due to the level of street disruption.

Preliminary finding:

Disproportionate effects to environmental justice populations proximate to Alignment D2 are anticipated due to the high level of disruptions to traffic flow and access anticipated during construction of this alignment. No high adverse impacts are anticipated as a result of construction of the other alignments.

Community Facilities / Community Character and Cohesion

Construction of the Bottineau Transitway is expected to require traffic detours that would result in traffic increases through residential areas. Additional construction impacts would include noise, dust, and visual impacts.

Preliminary finding:

Disproportionate effects to environmental justice populations proximate to Alignment D2 are anticipated due to the high level of disruptions to traffic flow and access, as well as noise, dust, and visual impacts associated with construction of this alignment. No high adverse impacts are anticipated as a result of the other alignments.

Displacements of Residents and Businesses

Residential and business displacements are addressed under Operational Phase Impacts.

Visual/Aesthetics

Construction activities will occur along all alignments. Anticipated visual construction phase effects would be similar to the appearance of most typical roadway and infrastructure projects including the temporary presence of heavy equipment, traffic control measures, and construction activity. Travelers

on routes that intersect the transitway would encounter the construction of both grade-separated and at-grade crossings. Where the transitway passes along residential neighborhoods, the construction activity could be perceived as visually disruptive in areas such as parks and residential neighborhoods.

Preliminary finding:

As construction-related visual impacts anticipated are typical of any transportation construction projects, these short-term impacts are not expected to be disproportionately high or adverse.

Because these impacts would occur equally among all Bottineau Transitway alignments, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Safety and Security

Worker safety and public safety during construction would be implemented for all alignments. Public safety is particularly important in construction areas with pedestrians, bicyclists, area business staff, and curious spectators.

Preliminary finding:

Because safety and security would be addressed equally among all alignments, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Noise

Temporary noise impacts could result from activities associated with the construction of new tracks and stations, utility relocation, grading, excavation, track work, demolition, and installation of systems components. Such impacts may occur in residential areas and at other noise-sensitive land uses located within several hundred feet of the alignment. The potential for noise impact would be greatest at locations near pile-driving operations for bridges and other structures, pavement breaking, and at locations close to any nighttime construction work.

Estimates suggest that the potential for noise impacts related to track construction would be minimal for commercial and industrial land uses. For residential land use, the potential for temporary noise impact related to track construction would be limited to locations within about 125 feet of the corridor. However, the potential for noise impact from nighttime track construction could extend to residences as far as 400 feet from the tracks.

Preliminary finding:

Construction activities would be carried out in compliance with all applicable local noise regulations Noise control measures would be implemented for all alignments. No high and adverse are anticipated because noise impacts would be mitigated.

Vibration

Temporary vibration impacts could result from activities associated with the construction of new tracks and stations, utility relocation, grading, excavation, track work, demolition, and installation of systems components. Such impacts may occur in residential areas and at other vibration-sensitive land uses located within several hundred feet of the alignment. The potential for vibration impact would be greatest at locations near pile-driving for bridges and other structures, pavement breaking, and at locations close to vibratory compactor operations.

Preliminary finding:

With the incorporation of appropriate mitigation measures, impacts from construction-generated

vibration would be minimized and would be implemented for all alignments. No high and adverse are anticipated because vibration impacts would be mitigated.

Air Quality

The construction of each of the alignments under consideration would affect traffic volumes and operations along roadways in and around the project area. During construction, some intersections may need to temporarily operate with reduced capacities, or be temporarily closed. Under these conditions, traffic would be expected to detour to parallel roadway facilities near the project area. This increased traffic may result in increased emissions and higher concentrations of air pollutants near homes and businesses. These emissions levels would not be expected to result in localized concentrations that would exceed any state or federal air quality standards.

In addition to traffic-related emissions increases, construction activities can also result in higher concentrations of air pollutants. Construction equipment powered by fossil fuels emits the same air pollutants as highway vehicles. Exposed earthen materials can also produce increased particulate matter when they are moved or disturbed by wind. It is not expected that concentrations of these air pollutants would exceed any state or federal standards, in part due to the Best Management Practices that would be implemented.

Preliminary finding:

No adverse impacts are anticipated as traffic emissions levels and construction-related air pollutants are not expected to exceed state or federal air quality standards. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

TPSS

Installation of TPSS stations would result in temporary noise and vibration impacts associated with construction activities. The impacts would be localized and not of extended duration, and loud construction activities such as pile driving are not anticipated.

Impacts are expected to localized and minor. Since no adverse impacts resulting from the Bottineau Transitway alignments were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

OMF

Three OMF locations have been identified, one along Alignment A in Maple Grove and two along Alignment B in Brooklyn Park. Only one OMF would be constructed as part of the Bottineau Transitway Project. Since no adverse impacts resulting from the construction of any of the OMFs were identified, there is no potential for any high and adverse impacts to be disproportionately borne by environmental justice populations.

Summary of Construction Phase Impacts by Alternative

Table 11. Construction Phase: Potentially High or Disproportionate Impacts, by Alignment

Impact Categories	Potentially High or Disproportionate Impacts[1]					
	A	B	C	D1	D2	D Common
Land Use	N	N	N	N	N	N
Vehicular Traffic	N	N	N	N	**Y**	N
Pedestrian and Bicycle Facilities	N	N	N	N	N	N
Parking	N	N	N	N	**Y**	N
Community Facilities/Community Character and Cohesion	N	N	N	N	**Y**	N
Displacement of Residents and Businesses	N/A	N/A	N/A	N/A	N/A	N/A
Visual/Aesthetics	N	N	N	N	**Y**	N
Safety and Security	N	N	N	N	N	N
Noise	N	N	N	N	N	N
Vibration	N	N	N	N	N	N
Air Quality	N	N	N	N	N	N
TPSS	N	N	N	N	N	N
OMF	N	N	--	--	--	--

[1] Y = Yes, N = No, tbd = to be determined, and N/A = not applicable

Table 12. Construction Phase: Potentially High or Disproportionate Impacts, by Alignment

Impact Categories	Potentially High or Disproportionate Impacts[1]			
	A-C-D1	A-C-D2	B-C-D1	B-C-D2
Land Use	N	N	N	N
Vehicular Traffic	N	**Y**	N	**Y**
Pedestrian and Bicycle Facilities	N	**Y**	N	**Y**
Parking	N	**Y**	N	**Y**
Community Facilities/Community Character and Cohesion	N	**Y**	N	**Y**
Displacement of Residents and Businesses	N/A	N/A	N/A	N/A
Visual/Aesthetics	N	N	N	N
Safety and Security	N	N	N	N
Noise	N	N	N	N
Vibration	N	N	N	N

Impact Categories	Potentially High or Disproportionate Impacts[1]			
	A-C-D1	A-C-D2	B-C-D1	B-C-D2
Air Quality	N	N	N	N
TPSS	N	N	N	N
OMF	N	N	N	N

[1] Y = Yes, N = No, tbd = to be determined, and N/A = not applicable

2.4.3 Offsetting Project Benefits

Increased Transit Service

The Bottineau Transitway would provide significant increase in safe, reliable, and efficient transportation options for minority and low-income populations located along all proposed alignments. The table below summarizes the daily hours of user benefits that would accrue to new and existing (as accounted for in the TSM alternative) transit riders as a result of each alternative. See the Transportation Technical Report Section 3.0 for additional information.

Table 13. Daily (Weekday) Hours of User Benefits (2030)

	A-C-D1	A-C-D2	B-C-D1	B-C-D2
Daily User Benefit Hours	9,460	9,000	8,520	7,940

Research indicates that transit provides a positive role in promoting social equity. A recent study[4] by the University of Minnesota Center for Transportation Studies investigated the role of transitways in improving job accessibility for socio-economically disadvantaged workers. The study found that low-income workers use transit considerably more than their higher-wage counterparts and that their transit use patterns also differ. Analysis of the Hiawatha Line, which was completed in 2004, demonstrated positive changes in low-wage transit employment accessibility. Study results revealed that low-wage workers, as well as low-wage employers, relocated closer to light rail.

Increased transit service would provide minority and low-income populations along the Bottineau Transitway access to parks and recreational amenities and networks. It would also support public transit"trip chaining," a series of trips using one or several modes of transportation (e.g., Bottineau Transitway, to regional trail, to destination).

Operational Phase Economic Benefits

Each of the Bottineau Corridor alternatives is anticipated to create jobs and additional earnings as a result of Operations and Maintenance (O&M) expenditures. Although these O&M expenses would originate from local sources, they represent spending that would not take place except for the implementation of this service. The expansion of transit service associated with the alternatives creates an expansion of economic activity in the counties of the Minneapolis-St. Paul-Bloomington Metropolitan Statistical Area (MSA), thus generating recurring net economic impacts (long-term). Other potential sources of federal funding for maintenance exist as grants and could be applied to preventative maintenance in later years. If future federal funds are received and applied to

[4] *Impact of Twin Cities Transitways on Regional Labor Market* Accessibility*: A Transportation Equity Perspective.* Dr. Yingling Fan, Andrew Guthrie, and Rose Teng, Center for Transportation Studies, University of Minnesota, 2010.

maintenance activities, they could generate additional net economic effects to the local and state economies through increased employment and earnings.

For the Minneapolis-St. Paul-Bloomington MSA, the effect of local O&M spending for the alternatives will result in an estimated range of $24.4 million to $25.7 million in local annual wages and salaries (2011 dollars). Implementation of any of the four alternatives, and their associated increased earnings, is anticipated to result in positive economic impacts to the local economy, both through direct hiring to fill transit jobs and indirectly as these transit workers spend their earnings, thus creating additional consumer demand and jobs to meet that demand.

Construction Economic Benefits

It is estimated that construction of the alternatives would generate from $285 million to $323 million in additional employment earnings for households and payroll expansion and generate from 6,785 to 7,701 person-year jobs for all industries in the Minneapolis-St. Paul-Bloomington MSA. Thus, due to its higher anticipated capital expenditures, Alternative A-C-D2 would demonstrate the greatest economic impacts to the local economy during construction activities of all four alternatives, with Alternative A-C-D1 resulting in the least economic benefit.

2.6 Avoidance, Minimization, and/or Mitigation Measures

Given that all high and disproportionate effects to environmental justice populations are associated with the D2 alignment, impacts to these populations could be avoided by selection of alternatives that do not include the D2 alignment. However, potential project benefits would also be lost to the same populations.

The alternatives development process sought to minimize impacts to the greatest degree possible while preserving project benefits. Further minimization efforts are not expected to substantially reduce the high and disproportionate benefits of the D2 alignment.

Potential mitigation measures related to parking, community character/cohesion, displacements, and visual/aesthetics will be addressed under the respective sections of the Draft EIS.

3.0 Environmental Justice Analysis Conclusions

The findings resulting from the environmental justice analysis for environmental justice populations living within the study area of the Bottineau Transitway Project are summarized in Table 14.

Table 14. Environmental Resource Impacts to Environmental Justice Populations by Alternative

Alternative	Analysis Finding
No-Build Alternative	No disproportionately high or adverse effects anticipated
TSM Alternative	No disproportionately high or adverse effects anticipated
A-C-D1	No disproportionately high or adverse effects anticipated
A-C-D2	Disproportionately high or adverse effects anticipated: ■ Parking ■ Community Facilities/Community Character and Cohesion ■ Displacement of Residents and Businesses ■ Visual/Aesthetics
B-C-D1	No disproportionately high or adverse effects anticipated

Alternative	Analysis Finding
B-C-D2	Disproportionately high or adverse effects anticipated: ■ Parking ■ Community Facilities/Community Character and Cohesion ■ Displacement of Residents and Businesses ■ Visual/Aesthetics