Midtown Corridor Alternatives Analysis

Environmental and Community Impact Assessment

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for

Metro Transit

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1.0 Introduction

1.1 Purpose of the Environmental and Community Impacts Assessment

The purpose of *the Environmental and Community Impacts Assessment* for the Midtown Corridor Alternatives Analysis (AA) is to inform decision makers about the potential environmental and community impacts and benefits that may result from the construction and implementation of improved transit service in the Midtown Corridor.

1.2 Process for Assessing Environmental and Community Impacts

This review is a high-level preliminary evaluation of environmental and community impacts to identify potential areas of concerns based on the no-build alternative and the three build alternatives described in the project's *Detailed Definition of Alternatives* report (under separate cover). The no-build alternative is included in every AA to establish a starting point for evaluating the benefits and costs of other alternatives, as well as to identify the consequences of doing nothing. The no-build alternative has no construction impacts and very minimal to no operating impacts (i.e. a maximum increase of four bus trips in the peak period). The no-build alternative will be retained as an alternative throughout the AA study process and as part of future NEPA environmental documentation as a baseline comparison to build alternatives. Figure 1 through Figure 3 show the alignments and station locations for the three build alternatives.

The potential impacts identified in this assessment serve as the foundation during potential future (post-AA study) consultation with the Federal Transit Administration (FTA) in determining the appropriate level of environmental review under the National Environmental Policy Act (NEPA).

This review focuses on both the potential impacts of each alternative on sensitive resources, and the comparative potential impacts between alternatives. Since the review focuses on identifying the "differentiating" issues that exist between alternatives, not all of the issue areas specifically addressed within a NEPA environmental document are covered in this review. Since no impacts are anticipated under the no-build alternative, it is not analyzed in the discussion below but is provided as a baseline comparison when necessary.

1.3 Definition of Impact Area to be Evaluated and Report Format

The high-level analysis is limited to the overall alignments, station area footprints, and potential vehicle operations and maintenance facility (OMF) site(s). The comparative analysis is primarily qualitative in nature. Where appropriate, quantitative analyses were completed to emphasize an order of magnitude impact differential. Each issue section within the *Environmental and Community Impact Assessment* report includes the following areas:

- A reference to specific federal, state, regional, and local requirements associated with each issue area, if applicable.
- A comparative summary of alternative similarities and differences.
- General conclusions on what the assessment means to decision makers, and what would be studied in greater detail in a potential subsequent phase of the project.

A summary matrix of issue areas, by alternative, is provided at the end of this document.

Figure 1: Enhanced Bus on Lake Street Alternative

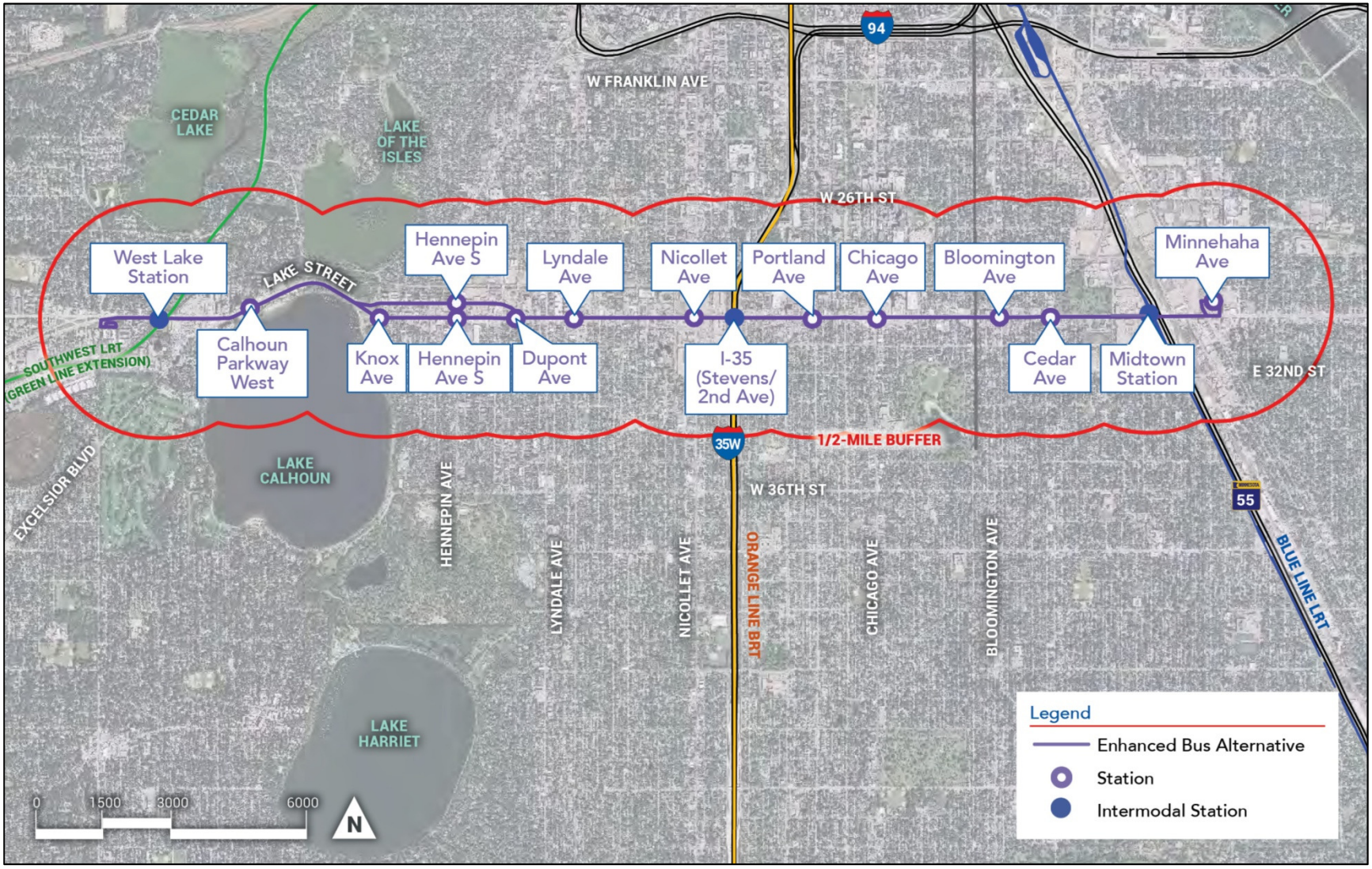


Figure 2: Double/Single-Track Rail in the Greenway

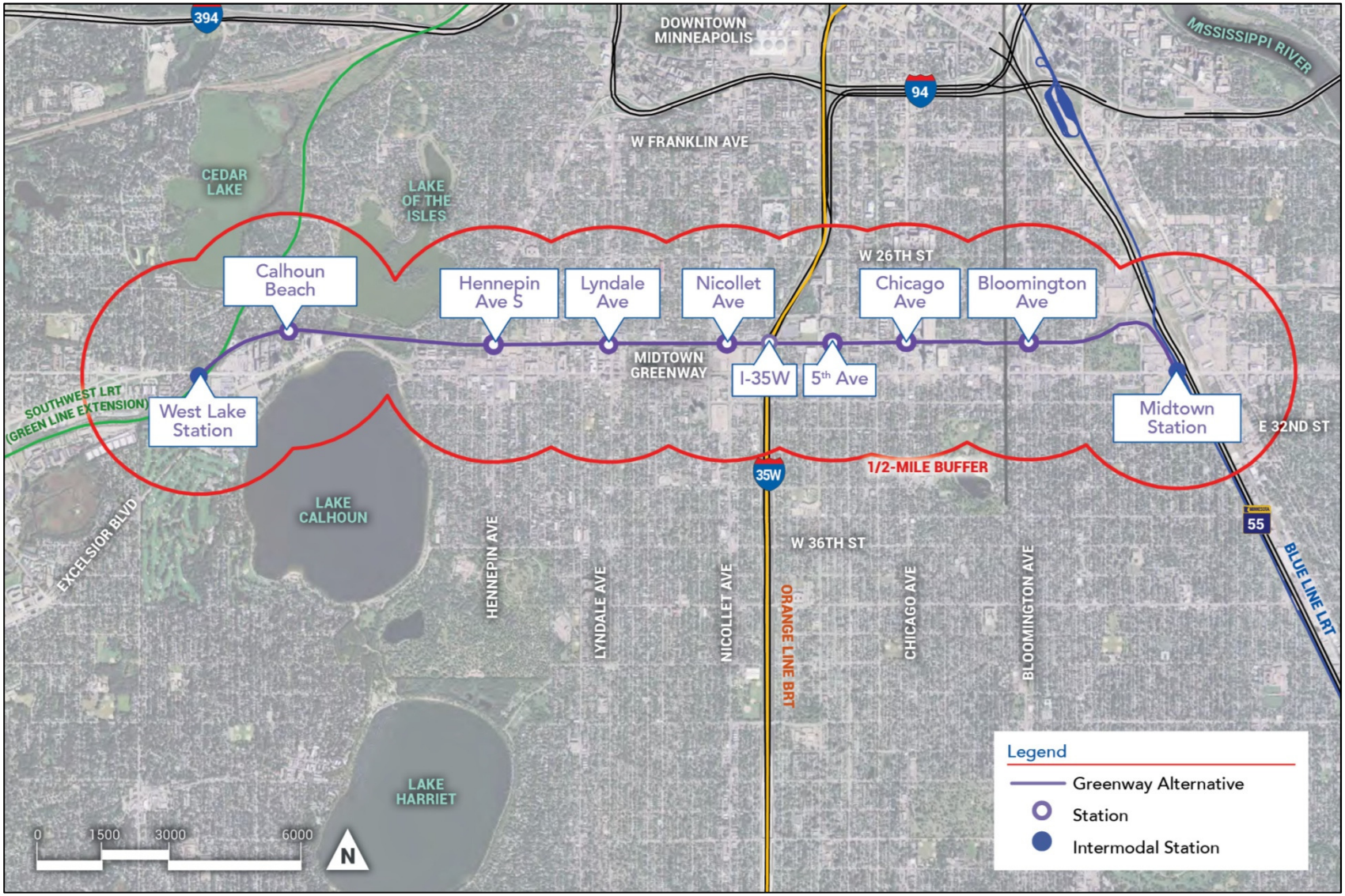
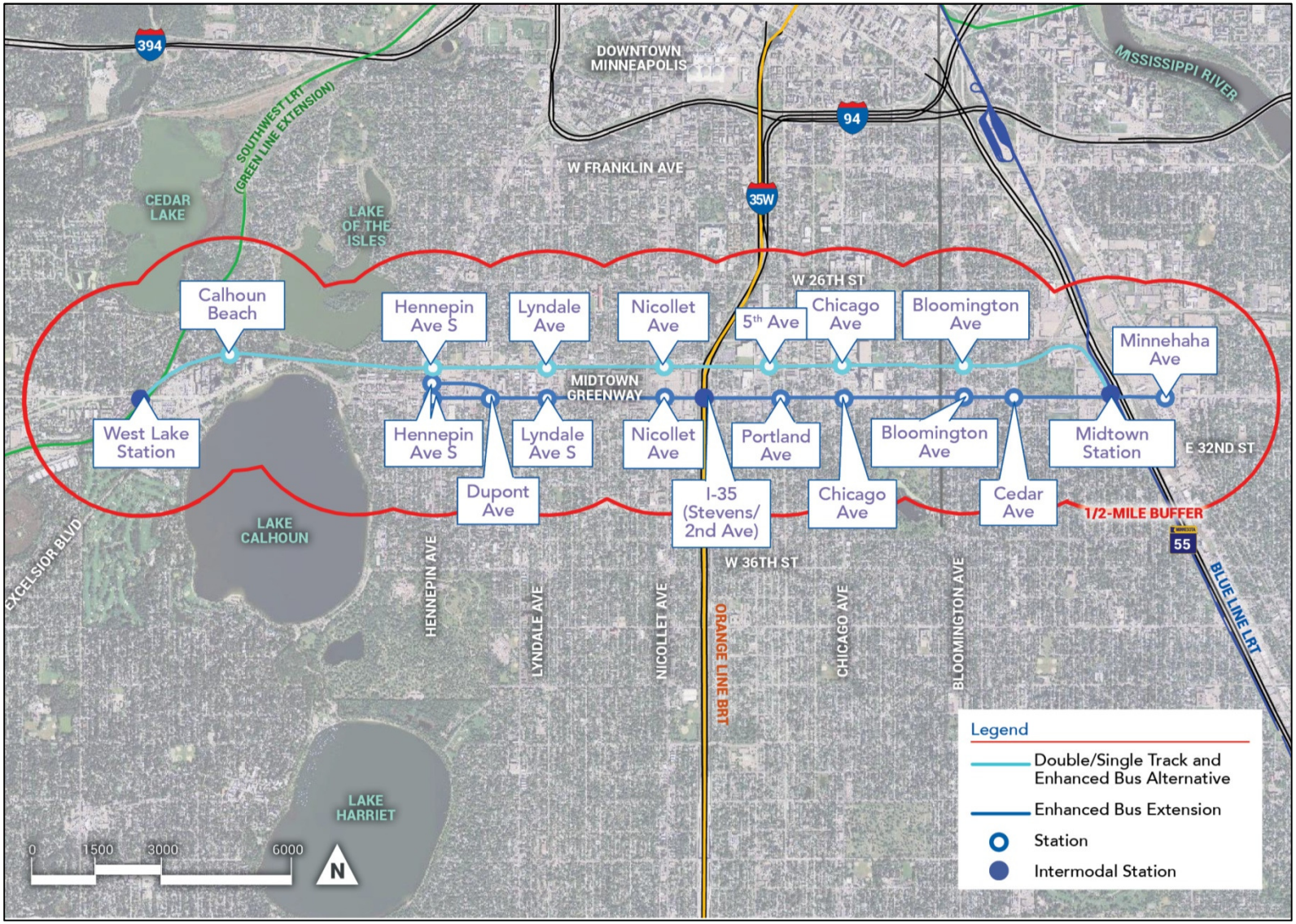


Figure 3: Dual Alternative



2.0 Issue Areas Addressed

The following environmental topic areas were evaluated during the AA process are detailed in the next sections:

- Wetlands and Public Waters
- Floodplains and Shoreland Overlay Districts
- Parks, Trails, and Recreation Areas
- Cultural and Historic Resources
- Hazardous Materials and Existing Contamination
- Threatened and Endangered Species
- Noise and Vibration
- Environmental Justice
- Air Quality
- Consistency with Existing and Future Land Use and Support of Transit Oriented Development (TOD)
- Access to Affordable Housing
- Supportive Policy for Affordable Housing
- Right-of-way Impacts

2.1 Wetlands and Public Waters

2.1.1 Overview

The purpose of this analysis is to identify potential wetland impacts due to the construction of each alternative in the Midtown Corridor. Federal and state regulations require that wetlands be protected under no net loss principles. Therefore, the most efficient way to prevent loss of wetland functions and the high cost associated with mitigation (either through restoration or purchase from a wetland bank) is to avoid and minimize wetland impacts.

2.1.2 Regulatory Framework

Wetlands are federally protected through Section 404 and 401 of the Clean Water Act, with the exception of those that are isolated hydrologically[1] on the landscape. Section 404 of the Clean Water Act requires a permit from the United States Army Corps of Engineers prior to the placement of any dredged or fill material into any waters of the United States, including wetlands. In Minnesota, wetland protection is augmented through the Minnesota Wetland Conservation Act (WCA), except where specific exemptions apply.

2.1.3 Data Sources and Methodology

Wetlands in the Midtown Corridor were inventoried using published data sources. Published data sources include high resolution aerial photography, National Wetland Inventory (NWI) mapping, Public Waters Inventory (PWI) mapping, and topographic maps. In addition to using published data to identify wetlands in the corridor, a cursory windshield survey was completed to verify the initial analysis and update any changes due to redevelopment in the corridor.

[1] The United States Army Corps of Engineers considers isolated wetlands to be those of any size that are not adjacent to or do not have a sufficient hydrologic connection to navigable waters.

All boundaries are approximate and were not formally delineated. For purposes of the wetland survey, the potential impact area was defined as approximately 100 feet on either side of the center line of all alternatives.

2.1.4 Comparative Analysis

Areas of NWI-mapped and PWI-mapped wetlands within the study area are identified in Figure 4: Natural Resource Inventory. These areas are all located toward the western end of the project between Lake of the Isles and Lake Calhoun. An estimation of the number of acres of wetlands that would potentially be affected by each alternative is shown in Table 1.

Table 1: Potential Wetland Impact Area

Alternative	Potentially Affected NWI Wetlands (acres)	Potentially Affected PWI Wetlands (acres)	Total Area of Potentially Affected Wetlands (acres)
Enhanced Bus on Lake Street	0.7 acres	0.4 acres	1.1 acres
Double/Single-Track Rail in Greenway	0.6 acres	0.3 acres	0.9 acres
Dual Alternative	1.3 acres	0.6 acres	1.9 acres

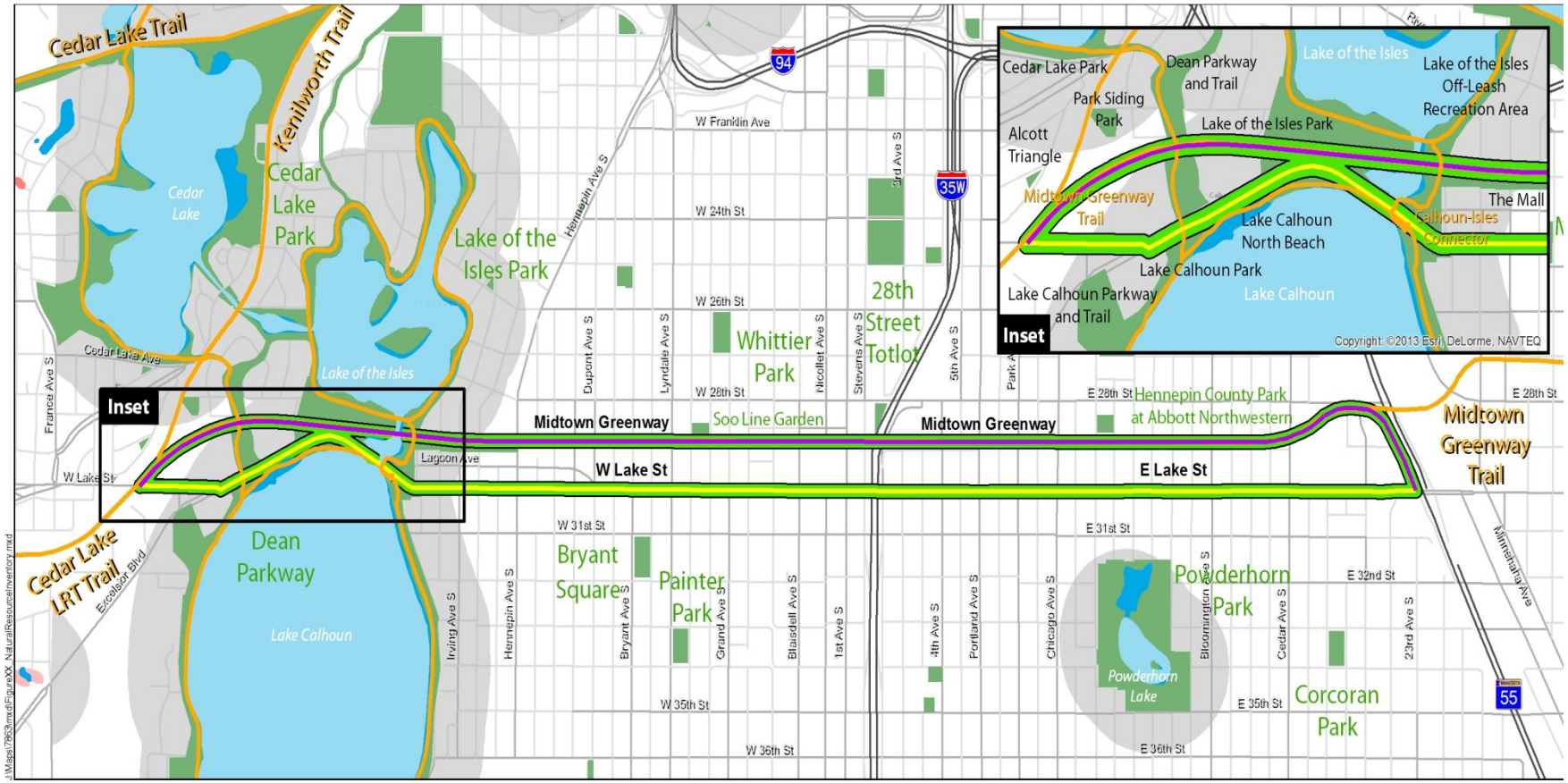
The dual alternative has the greatest amount of potential impacts to NWI- and PWI-mapped wetland areas. The enhanced bus on Lake Street alternative and the double/single-track rail in the Greenway alternative have a similar amount of wetland areas located within 100 feet of the center line of each alternative. These potential impacts do not necessarily mean wetland impacts are inevitable; a potential impact simply indicates that further study will be necessary in future phases of the project.

2.1.5 Conclusions

The dual alternative consists of both the double/single-track rail in the Greenway alternative and the enhanced bus on Lake Street alternative; therefore, it has the greatest potential for impacts to NWI- and PWI-mapped wetland areas because construction of two transitway options impacts a greater geographic area than the individual alternatives.

A full delineation of wetlands in the project corridor will be needed for an official environmental document. At the time of project design, efforts will be made to avoid, minimize, and/or mitigate potential wetland impacts.

Figure 4: Natural Resource Inventory



Note: Dual Alternative consists of both the Double/Single Track Rail Alternative and the Enhanced Bus Alternative.

Sources: City of Minneapolis, Federal Emergency Management Agency (FEMA), Hennepin County, Minnesota Department of Natural Resources (DNR), Minneapolis Park and Recreation Board (MPRB), USFWS - National Wetlands Inventory (NWI)

2.2 Floodplains and Shoreland Overlay Districts

2.2.1 Overview

A floodplain is the area adjacent to streams or lakes that is inundated from time to time and is the area required to store and/or allow passage of flood waters. The floodway is contained within stream floodplains where the flow is typically deepest and fastest and is normally inundated during annual flooding. However, floodways are not defined/regulated for every stream. A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved to allow flood waters to move downstream without cumulatively increasing the water surface elevation more than a designated height as defined by National Flood Insurance Program (NFIP) Section 59.1. The floodplain also contains the floodway fringe, which may be inundated during larger flood events such as the "100-year flood" or "500-year flood." NFIP defines a 100-year flood zone as the area inundated during a one-percent annual chance flood, or base flood. 500-year flood zones are the areas inundated during a 0.2 percent annual chance flood.

The Shoreland Overlay District is established to preserve and enhance the environmental qualities of surface waters and the natural and economic values of shoreland areas within the City of Minneapolis, to provide for the efficient and beneficial utilization of those waters and shoreland areas, to comply with the requirements of state law regarding the management of shoreland areas, and to protect the public health, safety and welfare.

2.2.2 Regulatory Framework

Floodplains for the various water bodies and water courses in the study area are regulated under a number of agencies. The 100-year and 500-year floodplain boundaries for many water bodies are established via the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) program. Municipalities and watershed management organizations use these maps to establish rules and/or ordinances that regulate the use of and fill encroachment into floodplains. Communities must regulate development in floodways to ensure that there are no increases in upstream flood elevations. The Minnesota Department of Natural Resources (DNR) assists the communities in establishing ordinances, interpreting, and reviewing proposed floodplain boundary changes. The DNR also has regulations regarding the maximum allowable increase in flood stage that can occur due to a floodplain encroachment within DNR-protected streams and lakes.

Floodplain encroachments are also regulated by the Minnehaha Creek Watershed Management District (western portion of the project area) and the Mississippi Watershed Management Organization (eastern portion of the project area). Generally, floodplain fill is not allowed unless compensating storage is provided within the affected area and hydraulically connected to the impacted resource.

Shoreland Overlay Districts are regulated by the City of Minneapolis and provide additional zoning protection to areas surrounding lakes and larger waterbodies within the City. In tangent with the City's current zoning code, the City has identified overlay zoning districts that either provide more flexibility or impose additional restrictions to the underlying zoning district.

2.2.3 Data Sources and Methodology

Flood Insurance Rate Maps (FIRM) for Hennepin County (all jurisdictions) were examined for determination of potential floodplain and floodway impacts for alternatives in the Midtown Corridor. The project area is located in FIRM Panels 27053C0354E, 27053C358E, 27053C0359E, and 27053C0378E.

Shoreland Overlay Districts were identified using information from the City of Minneapolis's Planning Division and Zoning Administration. Cedar Lake, Lake of the Isles, and Lake Calhoun are within Minneapolis Zoning Plates 17, 23, and 24.

2.2.4 Comparative Analysis

There were no floodplains identified within the project area (see Figure 4). Lake Calhoun, Lake of the Isles, and Cedar Lake are located within Zone X, defined as an area outside the 0.2% annual chance floodplain. The project is not anticipated to cause any floodplain impacts.

The Shoreland Overlay Districts of Cedar Lake, Lake of the Isles, and Lake Calhoun are shown in Figure 4. An inventory of the number of acres of Shoreland Overlay District that would potentially be affected by each alternative is shown in Table 2: Potential Shoreland Overlay District. For purposes of the Shoreland Overlay District inventory, the area of potential impact was defined as approximately 100 feet on either side of the center line of all alternatives.

Table 2: Potential Shoreland Overlay District Impact Area

Alternative	Potentially Affected Shoreland Overlay District Area (acres)
Enhanced Bus on Lake Street	20.0 acres
Double/Single-Track Rail in Greenway	23.2 acres
Dual Alternative	42.6 acres

2.2.5 Conclusions

Potential impacts to Shoreland Overlay Districts are greatest under the dual alternative because it impacts a greater geographic area than the individual alternatives. Potential impacts to Shoreland Overlay Districts are similar under the enhanced bus on Lake Street alternative and the double/single-track rail in the Greenway alternative. However, impacts to Shoreland Overlay Districts are most likely in areas of grading, filling, and removal of vegetation. These activities are not likely to be required for the enhanced bus on Lake Street alternative, except at station locations. There are four station locations located within the Shoreland Overlay District under the enhanced bus on Lake Street alternative. The double/single-track rail in the Greenway alternative is likely to require excavation/fill and vegetation removal to make trail modifications and modify existing bridge structures. Therefore, it is most likely that impacts to the Shoreland Overlay District would occur under the double/single-track rail in the Greenway alternative and the dual alternative.

Potential impacts to Shoreland Overlay Districts will be further reviewed during preliminary design, and efforts will be made to avoid construction impacts within Shoreland Overlay District areas. If grading or filling involving more than ten cubic yards is required within the Shoreland Overlay District, an erosion

control plan will be developed for the project and approved by the city engineer and the zoning administrator. Best management practice will be utilized to prevent erosion and sedimentation.

2.3 Parks, Trails, and Recreation Areas

2.3.1 Overview

This section discusses the existing Section 4(f) and Section 6(f) parks, trails, and recreation areas located near the Midtown Corridor.

2.3.2 Section 4(f) Regulatory Framework

The Section 4(f) legislation as established under the Department of Transportation Act of 1966 (40 USC 303, 23 USC 138) provides protection for publicly owned parks, recreation areas, historic sites, wildlife, and/or waterfowl refuges from conversion to transportation use. Conversion to transportation uses is not allowed unless all prudent and feasible alternatives to the Section 4(f) use and all possible planning activities to minimize harm have been considered.

A "use" of a Section 4(f) property occurs when: (1) Land is permanently incorporated into a transportation facility (i.e., direct use); (2) There is temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservation purposes; or (3) there is a constructive use of a Section 4(f) property (i.e., indirect use). Constructive use occurs when the proximity impacts of a project on an adjacent or nearby Section 4(f) property, after incorporation of impact mitigation, are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

Note that parks, recreation areas, and wildlife refuges are discussed in this section of the report, and historic sites protected under Section 4(f) are discussed in the following section titled "Cultural and Historic Resources."

2.3.3 Section 4(f) Data Sources and Methodology

Regional parks and recreation areas (including trails) were identified using Metropolitan Council data. Aerial photography was examined and compared to city comprehensive plans and Minneapolis Park and Recreation Board (MPRB) maps to identify non-regional parks, trails, and other recreation areas. This analysis yielded an inventory of parks and recreation areas located near the Midtown Corridor, as depicted in Figure 4. All parks, trails, and recreation areas were field verified to confirm locations relative to the project area. The likelihood for Section 4(f) use was then gauged by reviewing the proposed concept plans for each alternative.

DNR maps and databases, along with U.S. Fish and Wildlife Service maps, were reviewed to confirm that no state or federal wildlife and waterfowl refuges are present within the study area.

2.3.4 Section 4(f) Identified Parks and Trails

Park and recreational properties within approximately 100 feet on either side of the center line of all alternatives are identified in Figure 4 and described below.

Lake Calhoun Park and Lake of the Isles Park

Lake Calhoun and Lake of the Isles Parks are both part of the Chain of Lakes Regional Park system. These parks are located in southwest Minneapolis at the western end of the project area. Lake Calhoun Park is approximately 519 acres, including 422 acres of water. Lake of the Isles Park is approximately 208 acres, including 118 acres of water. Amenities at Lake of the Isles Park include walking paths, benches, fishing dock, ice rink, soccer field, and an off-leash dog park at the south end of the lake. Amenities at Lake Calhoun include walking paths, benches, parking lots, beaches, boat rental, boat launch, fishing dock, eatery/concession, picnic area, restroom facilities, archery, soccer field, softball field, and volleyball courts. These parks are owned and operated by the MPRB.

Soo Line Community Garden

The Soo Line Community Garden is an approximately one acre parcel located on the north side of the Midtown Greenway between Garfield Avenue and Harriet Avenue. Ownership of the Soo Line Community Garden was transferred from Hennepin County to the MPRB in 2010, and it is identified on the Minneapolis Park System Map (January 2013).

Dean Parkway

Dean Parkway is located from the southwest corner of Lake of the Isles to the northwest corner of Lake Calhoun. Less than a mile in length, Dean Parkway connects with Cedar Lake Parkway before ending at Lake Street. Dean Parkway is part of the Grand Rounds[2], and provides important connections to Cedar Lake, Lake of the Isles, and Lake Calhoun. The remaining parkway is divided by 13 acres of tree-lined green spaces with biking and walking paths that connect to the Midtown Greenway. Dean Parkway is owned by the MPRB and identified on the Minneapolis Park System Map (January 2013).

The Mall

Located between Lagoon Avenue and the Midtown Greenway in the East Isles neighborhood of south Minneapolis, The Mall is a circular parkway divided by a central median of green spaces, walking paths, and park benches. The Mall is approximately 4.9 acres in area, and is owned and maintained by the MPRB.

Chain of Lakes Trail

The Chain of Lakes Trail is approximately 12 miles in length and consists of trails surrounding and connecting Lake of the Isles, Dean Parkway, Lake Calhoun, Lake Harriet, and William Berry Parkway. The Calhoun-Isles Connector Trail (identified in Figure 4) is also part of the Chain of Lakes Trail system. In areas surrounding the lakes, the Chain of Lakes Trail is separated into two parallel paved trails for separate bicycle and pedestrian usage. The MPRB owns and maintains the Chain of Lakes Trail.

[2] The MPRB also owns and maintains the Grand Rounds and considers the parkways within the Grand Rounds to be significant parts of the City park system.

Cedar Lake LRT Trail

The Cedar Lake LRT Trail follows the former railroad lines of the Great Northern Railway and the Minneapolis and St. Louis Railway for a total length of 4.6 miles. This trail is a 10 foot-wide, multi-use paved trail that from downtown Minneapolis to Hopkins and connects to other popular bike and pedestrian trails in the city and western suburbs. Within the project area, the Cedar Lake LRT Trail is located between the south side of Cedar Lake and the northwest side of Lake Calhoun. The Cedar Lake LRT Trail is a regional trail that is owned and maintained by the Three Rivers Park District.

Cedar Lake Trail

The Cedar Lake Trail is an approximately 3.5-mile long paved trail that connects St. Louis Park to 7th Street in downtown Minneapolis. Within the project area, this trail runs along the west side of Cedar Lake and then connects to Dean Parkway and the Chain of Lakes Trail System. The Cedar Lake Trail is composed of a divided cycleway/pedway with a pair of one-way paths for bicycles and another path for pedestrians. This trail is owned and maintained by the MPRB.

Kenilworth Trail

Kenilworth Trail is a paved trail that runs nearly 1.5 miles and acts as a connector between the Cedar Lake Trail in the north and the Midtown Greenway in the south. The trail runs adjacent to a freight railway line that is owned by the Hennepin County Regional Railroad Authority with the Twin Cities and Western Railroad currently operating freight trains on the rail line. Like the Cedar Lake Trail, most of the route is composed of a triple-divided cycleway/pedway with a pair of one-way paths for bicycles and another path for pedestrians. The Kenilworth Trail is constructed on HCRRA property under a temporary agreement between the HCRRA and the trail permittee (City of Minneapolis).

2.3.5 Section 4(f) Comparative Analysis

Park and recreational properties within approximately 100 feet on either side of the center line of all alternatives are listed, by alternative, in Table 3. The likelihood of Section 4(f) use was categorized as low, medium, or high for each park or recreational property for each alternative. The analysis assessed the potential need for property acquisition or permanent easements. The analysis also considered potential changes in visual quality and noise levels resulting from the proposed alternatives to determine if any rose to a level of significance that would impair the activities, features, and attributes that qualify these resources for protection under Section 4(f).

Table 3: Likelihood of Potential Section 4(f) Use of Park and Recreational Properties

Park or Recreational Properties	Enhanced Bus on Lake Street Alternative	Double/Single-Track Rail in the Greenway	Dual Alternative
Parks			
Lake Calhoun Park	Low	None	Low
Lake of the Isles Park	Low	Low	Low
Soo Line Community Garden	None	Low	Low
Dean Parkway	None	Low	Low
The Mall	None	Low	Low

Trails			
Chain of Lakes	Low	Low	Low
Cedar Lake LRT	Low	Low	Low
Calhoun-Isles Connector	Low	Low	Low
Cedar Lake	None	Low	Low
Kenilworth	None	Low	Low

Note: A rating of "none" indicates that the Section 4(f) resource is not within 100 feet from the centerline of the listed alternative.

Enhanced Bus on Lake Street Alternative

The conceptual design of this alternative is completely within the existing road right of way. Therefore, no direct use of any park and recreational properties is anticipated. Indirect impacts (i.e., constructive use) to parks and trails due to noise and vibration impacts are not anticipated under the enhanced bus on Lake Street alternative. Vibration impacts do not typically result from bus operations, and noise impacts would require a change in alignment or significant increase in traffic volumes, neither of which are proposed under this alternative (see further discussion in "Noise and Vibration" section).

Potential effects of the enhanced bus alternative on this existing transportation corridor include potential visual effects from proposed stations and potential effects associated with construction activities. However, substantial impairment to the activities, features, or attributes that qualify these parks and recreation areas for protection under Section 4(f) is not anticipated; therefore, the likelihood for Section 4(f) use was rated as "Low."

Double/Single-Track Rail in the Greenway

From the West Lake Station to the Bloomington Avenue Station, this alternative would be constructed within the Midtown Greenway right of way. There would be no direct use of any park or recreational properties along this portion of the double/single-track rail in the Greenway. The Soo Line Community Garden, owned and operated by the MPRB, is directly north of the Midtown Greenway between Garfield and Harriet avenues. Given its proximity to the Midtown Greenway, changes in visual quality may occur at the garden. Noise levels are not anticipated to increase significantly at the Soo Line Community Garden because the park is not located on a curve or at an at-grade crossing where significant LRT noise impacts typically result. Substantial impairment to the activities, features, or attributes that qualify the resource for protection under Section 4(f) is not anticipated; therefore, the likelihood for Section 4(f) use was rated as "Low."

Dual Alternative

The conceptual design of this alternative is completely within the existing road right of way and the Midtown Greenway right of way. Therefore, no direct use of any park and recreational properties is anticipated. The Soo Line Community Garden is adjacent to the portion of the dual alternative that is located within the Midtown Greenway. As indicated above, no substantial impairment to the activities, features, or attributes that qualify the garden for protection under Section 4(f) is anticipated; therefore, the likelihood for Section 4(f) use was rated as "Low."

2.3.6 Other Section 4(f) Park and Recreational Property Considerations

The following properties were identified as park or recreational facilities that are located within the project area; however, these properties are not subject to Section 4(f) regulations for the reasons described below.

Grand Rounds National Scenic Byway

The area located around Cedar Lake, Lake of the Isles, and Lake Calhoun is part of the Grand Rounds National Scenic Byway – Chain of Lakes Byway District. The Grand Rounds National Scenic Byway consists of a network of parkways, regional parks, and regional trails that encircle Minneapolis. The Grand Rounds was designated a National Scenic Byway by the Federal Highway Administration in 1998. It is noteworthy that the designation of a road as a scenic byway is not intended to create a park or recreation area within the meaning of Section 4(f) regulations. Therefore, the Grand Rounds Scenic Byway is not identified as a Section 4(f) resource in regards to park and recreational lands.

Midtown Greenway Multi-Use Trail

The Midtown Greenway multi-use trail is a 5.5-mile long former Canadian Pacific Railway/Soo Line freight rail facility that is owned by the Hennepin County Regional Railroad Authority (HCRRA). HCRRA purchased the property in 1993 for the purpose of constructing light rail transit (LRT) or other transportation systems and associated facilities. Currently, the Midtown Greenway operates as a bicycle and pedestrian facility, with trails that are maintained by the City of Minneapolis.

The Midtown Greenway was constructed on HCRRA property under a temporary agreement between the HCRRA and the trail permittee (City of Minneapolis). As documented in the Midtown Greenway's interim use agreement, HCRRA permitted the trail as a temporary use with the stipulation that it may be used until HCRRA develops the corridor for a LRT system or other permitted transportation use. Therefore, the Midtown Greenway is not identified as a Section 4(f) resource in regards to park and recreational lands.

Other Midtown Greenway Community Facilities

The Midtown Greenway is viewed as an important community amenity with a park-like setting. Several community gardens are located along the Midtown Greenway. However, since the gardens are located on private land or within HCRRA right-of-way (see discussion of the temporary use agreement above) they are not considered a Section 4(f) resource.

In addition, two privately owned soccer fields were identified along the Midtown Greenway corridor between I-35W and Portland Avenue. It is recognized that the soccer fields are important community amenities; however, they are also not considered Section 4(f) resources because they are on privately owned land.

2.3.7 Section 4(f) Conclusions

Potential impacts to park and recreational properties would likely be limited to the Soo Line Community Garden, which is adjacent to the double/single-track in the Greenway alternative and the dual alternative. Given the slope of this area, the transitway infrastructure would be highly visible from the

garden. However, substantial impairment to the activities, features, or attributes that qualify the Soo Line Garden for protection under Section 4(f) is not anticipated.

The use of any Section 4(f) resource will require further evaluation. The extent of the use will determine the appropriate Section 4(f) evaluation process.

2.3.8 Section 6(f)

Section 6(f) protects outdoor recreation properties planned, developed, or improved with funds from the Land and Water Conservation Fund (LAWCON). These properties cannot be converted to other uses unless replacement land of equal fair market value and equivalent usefulness is provided.

To determine the applicability of Section 6(f), the parks and trails identified using the methodology above were checked against the DNR's current list of LAWCON-funded properties.

According to data from the Minnesota DNR, none of the parks or trails listed above (Table 3) were funded through the LAWCON program and therefore are not subject to Section 6(f) considerations.

2.4 Cultural and Historic Resources

2.4.1 Overview

The Midtown Corridor Transitway has been subjected to several extensive cultural resources investigations and much is known about the many historic resources that are located within the corridor. Within the Midtown Greenway lies the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District which is listed in the National Register of Historic Places (NRHP) and includes many historic bridges and other contributing resources. Other historic districts identified in proximity to the Midtown Corridor include the Grand Rounds, Lakes of the Isles Residential area, and Lyndale Corners. Lake Street, although not an NRHP listed or eligible corridor, has several properties that are listed in or are eligible for listing in the NRHP sited along the corridor.

2.4.2 Regulatory Framework

Section 4(f)

The Section 4(f) legislation, as established under the Department of Transportation Act of 1966 (40 USC 303, 23 USC 138), provides protection for historic sites (publically or privately owned) from conversion to transportation use. Conversion to transportation use is not allowed unless all prudent and feasible alternatives to the Section 4(f) use and all possible planning activities to minimize harm have been considered.

A "use" of a Section 4(f) property occurs when: (1) land is permanently incorporated into a transportation facility (i.e., direct use); (2) there is temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservation purposes; or (3) there is a constructive use of a Section 4(f) property (i.e., indirect use). Constructive use occurs when the proximity impacts of a project on an adjacent or nearby Section 4(f) property, after incorporation of impact mitigation, are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

Section 106

Like Section 4(f), Section 106 of the National Historic Preservation Act of 1966 (Section 106) also mandates consideration of a project's effect on historic sites. Projects that apply to receive federal funds must comply with Section 106 and with other applicable federal mandates. To comply with Section 106, potential impacts to historic properties (those listed in or eligible for listing in the NRHP) must be taken into account during project planning and design. Section 106 requires federal agencies to consider the effects of their actions on historic properties before undertaking a project.

During future project phases, Section 106 analysis provides a determination of effects caused by the project alternatives. Possible determinations are: (1) no historic properties affected; (2) no adverse effects to historic properties; or (3) adverse effect to historic properties. A determination of "adverse effect" is made if a project has the potential to alter characteristics that make a property historically significant. Adverse effects can be direct or indirect, and include all immediate and reasonably foreseeable effects to the property.

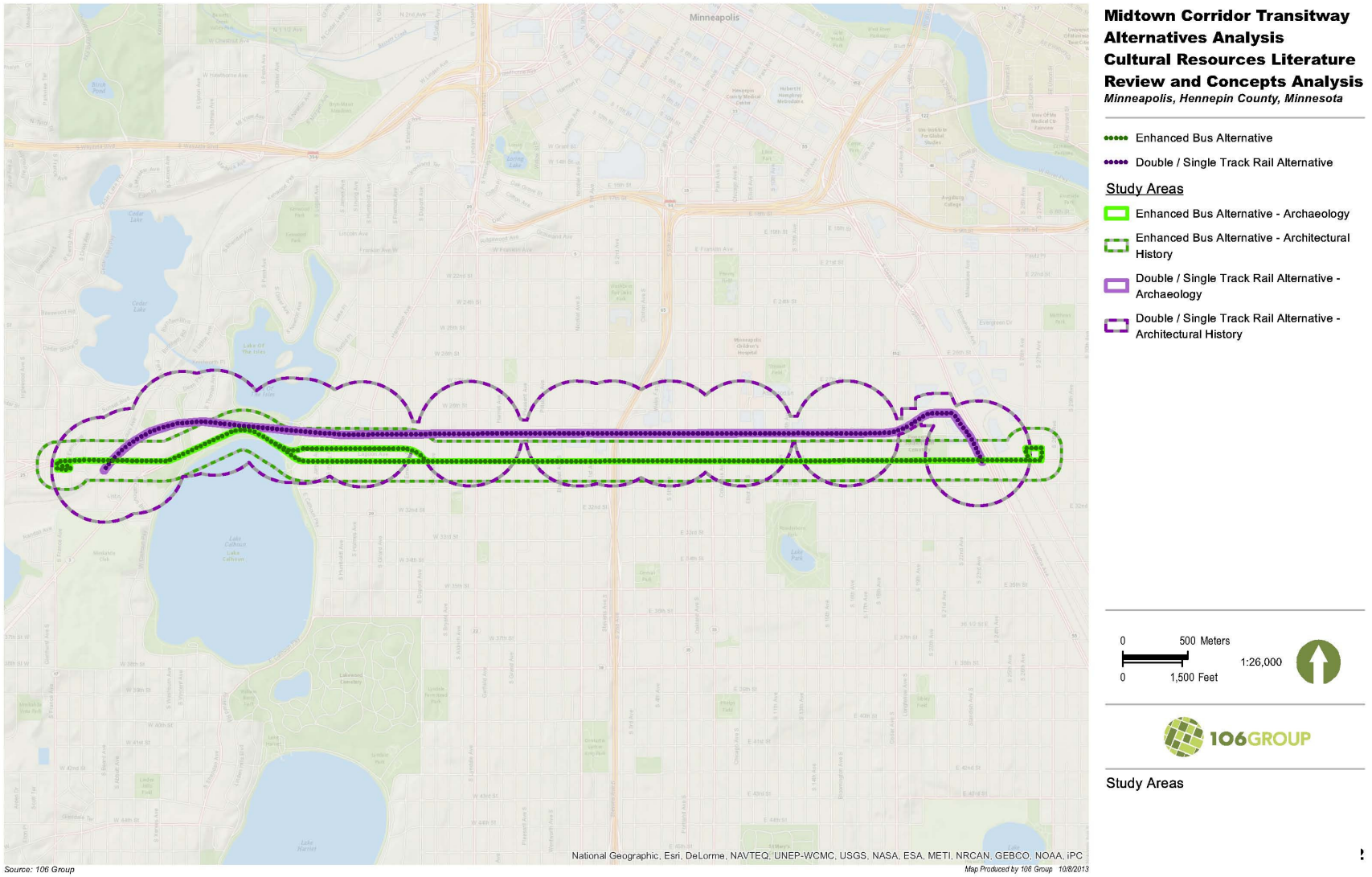
The Section 106 determinations are a critical part of determining the applicability of Section 4(f) and the outcome of Section 4(f) evaluation. However, at the AA level both the Section 4(f) and Section 106 analysis of historic resources only focuses on identifying known historic resources in the Midtown Corridor and discussing potential effects to those resources. Lastly, determining any adverse effects of historic resources under Section 106 and determining any use of historic resources under Section 4(f) will take place during the official NEPA process in further study phases.

2.4.3 Data Sources and Methodology

A cultural resources literature review was conducted to identify archaeological sites and architectural history properties that were previously listed or eligible for the National Register of Historic Places (NRHP), and previously identified Native American mound sites, burial grounds, and Traditional Cultural Properties (TCPs) located within the study areas. Previous cultural resources surveys conducted within the study areas were also consulted. The study areas for this analysis vary by alternative, as shown in Figure 5. For a discussion of how the study areas were identified refer to the Cultural Resources Literature Review and Concepts Analysis in Appendix A.

The likelihood for adverse effects under Section 106 and use under Section 4(f) use was then assessed by reviewing the proposed concept plans for each alternative. It should be noted that this analysis focuses on known historic sites within the corridor to aid in evaluating the proposed alternatives, but does not include a systematic survey to identify or evaluate any unknown sites along the corridors. Further investigation to determine potential adverse effects to historic properties that may be affected by the proposed project would be part of future stages of the project to support the NEPA and Section 106/ Section 4(f) processes.

Figure 5: Study Area for Cultural Resources Literature Review



2.4.4 Comparative Analysis

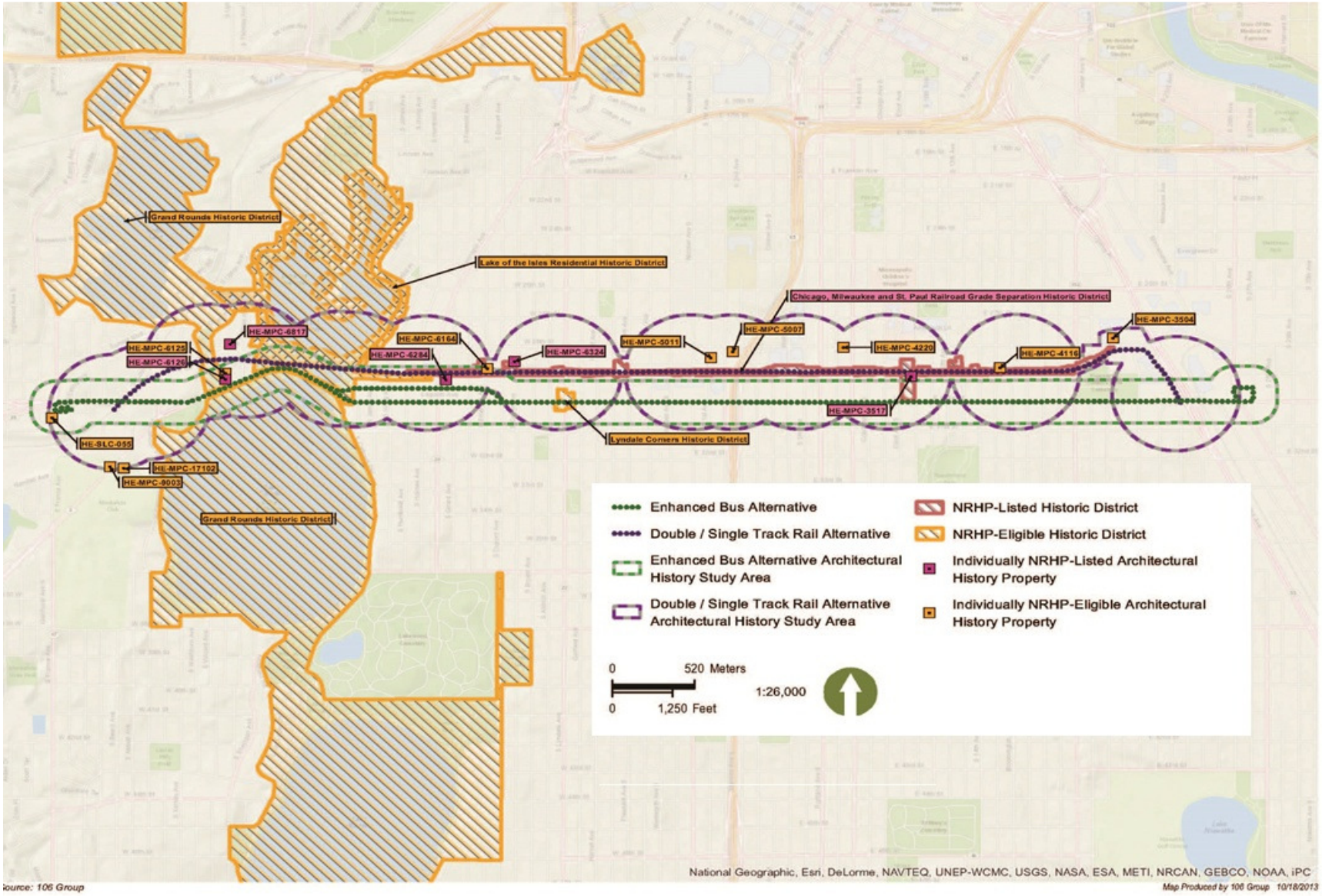
To inform a comparison of the proposed alternatives, previously NRHP-listed and eligible archaeological sites and architectural history properties, and previously identified Native American mound sites, burial grounds, and TCPs located within the study areas were reviewed. There are no listed or eligible archaeological sites, nor any previously identified Native American mound sites, burial grounds, or TCPs located within the study areas. All the properties discussed below are historic buildings or districts. Previously inventoried cultural resources are identified in Figure 6 and listed, by alternative, in Table 4.

Table 4: Cultural Resources Literature Review Results

Alternative	Listed and Eligible Archaeology Sites or Previously Identified Native American Mound Sites, Burial Grounds, and TCPs	Listed Architectural History Properties	Eligible Architectural History Properties
Enhanced Bus on Lake Street	0	11 (including the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District)	36 (including the Grand Rounds Historic District, Lake of the Isles Residential Historic District, and Lyndale Corners Historic District)
Double/Single-Track Rail in Greenway	0	53 (including the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District)	69 (including the Grand Rounds Historic District, Lake of the Isles Residential Historic District, and Lyndale Corners Historic District)
Dual Alternative	0	53 (including the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District)	69 (including the Grand Rounds Historic District, Lake of the Isles Residential Historic District, and Lyndale Corners Historic District)

The largest concentration of listed architectural history properties located within the study areas are part of the NRHP-listed Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District. This district consists of 48 associated resources including a trench, discontinuous retaining wall, modern bicycle/pedestrian trail, 37 bridges, and eight buildings, all of which are located within the double/single-track rail alternative study area. A large percentage of the previously determined eligible properties consist of the Grand Rounds, Lake of the Isles Residential, and Lyndale Corners Historic Districts and their associated resources. The study area for the double/single-track rail alternative encompasses all of the known listed and eligible resources within the enhanced bus alternative; therefore, the number of listed and eligible architectural history properties within the double/single-track rail alternative study area and the study area for the dual alternative are the same (see Table 4).

Figure 6: Previously Listed and Eligible NHRP Properties



Secondly, the likelihood of an adverse effect on the identified cultural resources under Section 106 was categorized as low, medium, or high in Table 5, and the likelihood of use under Section 4(f) was categorized as low, medium, or high for each historic property in Table 6. This analysis considered how elements of the proposed alternatives, such as vertical access to the street level from the Greenway, overhead catenary systems, station locations, and bridge modifications, might affect historic resources. The analysis assessed the potential need for property acquisition or permanent easements. The analysis also considered potential changes indirect effects such as visual quality, development/redevelopment, and noise levels resulting from the proposed alternatives to determine if any rose to a level of significance that would impair the activities, features, and attributes that quality these resources for protection under Section 106/ Section 4(f). The resources included in these tables below are not a complete inventory of all historic resources identified within each alternative's study area; the tables include only historic sites for which some degree of impact may occur. For a full list of historic resources located within each study area, refer to Appendix A.

Table 5: Likelihood of Section 106 Adverse Effect of Historic Properties

Historic Properties	Enhanced Bus on Lake Street Alternative	Double/Single-Track Rail in the Greenway	Dual Alternative
Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District	Low	High (Direct and Indirect)	High (Direct and Indirect)
Grand Rounds Historic District	Medium (Indirect)	High (Direct and Indirect)	High (Direct and Indirect)
Lake of the Isles Historic District	Low	Medium (Indirect)	Medium (Indirect)
Lyndale Corners Historic District	Medium (Indirect)	Low	Medium (Indirect)
Calhoun Beach Club (HE-MPC-6126)	Medium (Indirect)	Medium (Indirect)	Medium (Indirect)
Calhoun Beach Apartments (HE-MPC-6125)	Medium (Indirect)	Medium (Indirect)	Medium (Indirect)

Table 6: Likelihood of Section 4(f) Use of Historic Properties

Historic Properties	Enhanced Bus on Lake Street Alternative	Double/Single-Track Rail in the Greenway	Dual Alternative
Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District	Low	High	High
Grand Rounds Historic District	Medium	Medium	Medium
Lake of the Isles Historic District	Low	Low	Low
Lyndale Corners Historic District	Medium	Low	Medium
Individual Historic Properties	Low	Low	Low

Enhanced Bus on Lake Street Alternative

Section 106

Historic properties located within the enhanced bus alternative study area consist of the NRHP-listed Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District; the eligible Grand Rounds, Lake of the Isles Residential, and Lyndale Corners historic districts; and seven individually listed or eligible architectural history properties (see Figure 6). Based on design concepts developed to date for the enhanced bus alternative, potential impacts from the construction and operation of this alternative are likely limited to visual effects from the proposed new stations. Enhanced bus stations that may have potential visual effects and development/redevelopment impacts due to their proximity to eligible historic districts or other individually listed or eligible historic properties include:

- Calhoun Parkway West Station - located within the boundaries of the eligible Grand Rounds Historic District and adjacent to the NRHP-listed Calhoun Beach Club (HE-MPC-6126) and eligible Calhoun Beach Apartments (HE-MPC-6125)
- Knox Avenue Station - located adjacent to the eligible Grand Rounds Historic District
- Lyndale Avenue

These visual effects and development/redevelopment impacts near stations could potentially have adverse effects under Section 106. However, no direct effects are anticipated so likelihood for adverse effects for the historic properties outlined above were rated as “Medium.”

Section 4(f)

The conceptual design of this alternative is completely within the existing road right of way. Therefore, no direct use of any historic properties is anticipated. Construction of station locations may require temporary occupancy within historic districts located along the Lake Street Corridor; therefore, these historic properties were given a rating of “Medium” for likelihood of Section 4(f) use under the enhanced bus on Lake Street Alternative.

Potential visual effects and development/redevelopment near stations could indirectly affect the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District (NRHP-listed), Lake of the Isles Residential (NRHP-eligible), Grand Rounds Historic District (NRHP-eligible), Lyndale Corners Historic District (NRHP-eligible), Calhoun Beach Club (NRHP-listed), and Calhoun Beach Apartments (NHRP-eligible). However, substantial impairment to the activities, features, or attributes that qualify these resources for protection under Section 4(f) is not anticipated.

Double/Single-Track Rail in the Greenway

Section 106

The proposed double/single-track rail alternative will likely have potential physical, auditory, and visual impacts on historic properties located within the study area. The largest potential impact from the proposed rail alternative in the Midtown Greenway will be on the NRHP-listed Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District, which is a part of the Midtown Greenway. The proposed alternative will also likely have potential impacts on the eligible Grand Rounds, Lake of the Isles Residential, and Lyndale Corners historic districts and their associated resources, as well as 14 individually listed and eligible properties that are located within the study area (see Figure 6).

The Chicago, Milwaukee & St. Paul Railroad Separation Historic District has 48 associated resources including a contributing trench, a contributing discontiguous retaining wall, a non-contributing modern bicycle/pedestrian trail, 28 contributing bridges, nine noncontributing bridges, one contributing building that is no longer extant, and seven non-contributing buildings. Character-defining features of this Historic District include the 22-foot deep trench through which the historical railroad passed, historical street bridges that spanned the trench, and adjacent buildings that formed the walls of the trench.[3]

Modifications to portions of the corridor required in order to fit the double/single-track rail line and the pedestrian/bike trail within the corridor will potentially have a direct adverse effect on the trench, a character-defining feature of the district. Also, MnDOT will require protection on all bridge piers located along the double/single-track rail in the Greenway alternative, and these modifications could potentially impact the historic design of all of the bridges located within the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District. Indirect visual impacts due to the construction of overhead catenary systems, safety screens, and station platforms/vertical circulation headhouses are also anticipated under the double/single-track rail in the Greenway alternative. Because this alternative has potential for both direct and indirect adverse effects to the Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District, likelihood for Section 106 adverse effects was rated as “High.”

Within the Grand Rounds Historic District, the double/single-track rail in the Greenway alternative will require expansion of the Dean Parkway Bridge and construction of two new bridges parallel to the existing Midtown Greenway bridges that cross a channel between the Lake of the Isles and Lake Calhoun. These bridges are contributing resources to the eligible Grand Rounds Historic District. Modifications to these bridges could have potential direct and indirect (visual) adverse effects to the bridges and the overall Grand Rounds Historic District; therefore, likelihood for Section 106 adverse effects was rated as “High.”

Based on concepts developed to date for the double/single-track rail alternative, potential impacts to individually listed and eligible properties sited along the corridor and the Lake of the Isles Historic Districts are likely limited to indirect effects such as increases in noise during from operation of the rail,

[3] Vermeer, Andrea C., and William E. Stark. 2004 Chicago, Milwaukee and St. Paul Railroad Grade Separation National Register of Historic Places Registration Form. Prepared by the 106 Group Ltd., St. Paul, Minnesota. On file at the State Historic Preservation Office, St. Paul, Minnesota.

visual effects from the proposed stations and vertical circulation headhouses, and possible development/redevelopment along the corridor and around stations. The Lake of the Isles Historic District is located along the double/single-track along the Greenway alternative in an area with several at-grade crossings that require a warning signal; therefore, there is potential for indirect adverse effects related to noise. Proposed stations for the double/single-track rail alternative that may have potential visual effects and development/redevelopment impacts due to their proximity to eligible historic districts or other individually listed or eligible historic properties include:

- Calhoun Beach Station - located within the boundaries of the eligible Grand Rounds Historic District and adjacent to the NRHP-listed Calhoun Beach Club (HE-MPC-6126) and eligible Calhoun Beach Apartments (HE-MPC-6125)

These noise impacts, visual effects, and development/redevelopment impacts near stations could potentially have adverse effects under Section 106. However, no direct effects are anticipated so likelihood for adverse effects for the historic properties outlined above was rated as "Medium."

Section 4(f)

The conceptual design of this alternative is completely within the existing road right of way and the Midtown Greenway right of way. However, the double/single-track rail in the Greenway alternative would require use of property within the NRHP-listed Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District. Cutting and leveling portions of the trench slopes around 26 of the 37 bridge located within the Historic District will result in permanent physical changes within the Historic District. In addition, the construction of seven station platforms and vertical headhouses within the boundaries of the Historic District introduces non-historic features to the corridor. Modifications to the trench walls and trench slope to construct the vertical circulation headhouses and pedestrian access walkways would result in a permanent Section 4(f) use of property within the Chicago, Milwaukee, and St. Paul Railroad Grade Separation Historic District; therefore, the likelihood of Section 4(f) use was rated as "High."

Potential effects to the eligible Grand Rounds Historic District would include proposed bridge modifications within the district, proposed construction of two new bridges, noise from warning signals at at-grade crossings, and visual effects from the proposed Calhoun Beach Station. This proposed station is also adjacent to the NRHP-listed Calhoun Beach Club and the eligible Calhoun Beach Apartments. The proposed bridge modifications and new bridges required in order to fit the double/single-track rail line and the pedestrian/bike trail within the Midtown Greenway corridor could potentially have impacts to the Grand Rounds Historic District. Reconstruction of the Dean Parkway Bridge may require temporary occupancy within the Grand Round Historic District; therefore, this historic property was given a rating of "Medium" for likelihood of Section 4(f) use under the double/single-track rail in the Greenway alternative. However, substantial impairment to the activities, features, or attributes that qualify these resources for protection under Section 4(f) is not anticipated.

It is important to note that the specific boundaries of the Grand Rounds Historic District continue to be defined and will be finalized upon final district nomination to the NRHP. Therefore, it is not possible to

provide an accurate assessment of the potential use of the Grand Rounds Historic District. Section 4(f) use of this eligible Historic District would undergo further analysis during a future NEPA process.

The potential effects of the double/single-track rail in the Greenway alternative on the Lake of the Isles Historic District, Lyndale Corners Historic District, and individual historic properties are likely limited to indirect effects such as noise from warning signals at at-grade crossings, visual effects for the proposed stations and vertical circulation headhouses, and possible development and/or redevelopment along the corridor and around stations. However, substantial impairment to the activities, features, or attributes that qualify these Historic Districts for protection under Section 4(f) is not anticipated; therefore, the likelihood for Section 4(f) use was rated as "Low."

Dual Alternative

The conceptual design of this alternative is completely within the existing road right of way and the Midtown Greenway right of way. Potential Section 106 adverse effects and Section 4(f) use of the dual alternative includes the impacts identified under the enhanced bus on Lake Street alternative and the double/single-track rail in the Greenway alternative, as described above.

2.4.5 Conclusions

The double/single-track in the Greenway alternative and the dual alternative have the greatest potential for Section 106 adverse effects and Section 4(f) use of historic properties that are listed, or eligible for listing in, the NRHP. Both alternatives would require use of the NRHP-listed Chicago, Milwaukee & St. Paul Railroad Grade Separation Historic District. Both alternatives would also require bridge modifications and construction to bridges located within the Grand Rounds Historic District, and these changes could cause a possible adverse effect to the integrity and feeling of the Grand Rounds Historic District.

Potential impacts to the historic resources discussed above do not necessarily mean Section 106 involvement or Section 4(f) use is inevitable. Further investigation to determine potential adverse effects to historic properties that may be affected by the proposed project would be part of future stages of the project to support the NEPA and Section 106/ Section 4(f) processes.

However, based on the analysis described above, the proposed alternatives are likely to have some form of direct and indirect effect on known historic properties. Therefore, during future stages of work, ways to possibly avoid or minimize any adverse effects will need to be examined in consultation with regulatory agencies, including the State Historic Preservation Office (SHPO). Several options for minimizing potential impacts are further described in Appendix A.

2.5 Hazardous Materials and Existing Contamination

2.5.1 Overview

Properties with potential to contain contaminated materials should be identified in the early stages of a project to avoid impacts caused by disturbing hazardous soils. The property owner or operator is liable for cleanup for contaminated areas within the project area, so it is critical to identify these areas before agency acquisition to prevent unexpected costs and delays.

2.5.2 Regulatory Framework

At the federal level, the U.S. Environmental Protection Agency (EPA) manages Superfund cleanup sites regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In Minnesota, the cleanup of contaminated materials is regulated by the Petroleum Tank Release Cleanup Act, the Minnesota Environmental Response Liability Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Resource Conservation and Recovery Act (RCRA). Contaminated materials are tracked and regulated by the Minnesota Pollution Control Agency (MPCA).

2.5.3 Data Sources and Methodology

Potentially contaminated properties are often found in industrial and commercial areas. Buildings may contain materials such as asbestos, lead paint, fluorescent lights, and chemicals. Properties may contain buried or above ground storage tanks which may or may not be leaking. Contaminated materials or soils may also have been abandoned at the ground surface or buried.

A search of the MPCA "What's in my Neighborhood?" (WIMN) database was conducted to inventory previously investigated properties, properties suspected of contamination, and currently enrolled cleanup sites, including those managed under the Superfund program. These sites include the following WIMN categories: Feedlots, Voluntary Investigation and Cleanup (VIC), Tanks and Leaks, and Multi-Use sites. For purposes of the contaminated sites survey, the impact area was defined as approximately 500 feet on either side of the center line of all alternatives.

2.5.4 Comparative Analysis

Potentially contaminated sites identified within 500 feet of the center line of each alternative are identified in Figure 7. An inventory of the number of potentially contaminated sites that may potentially be affected by each alternative is shown in Table 7. However, contaminated soil or groundwater is only likely to be encountered in areas that require soil excavation or grading. Table 7 also provides a ranking of each alternative for its likelihood to require these types of activities.

Table 7: Potentially Contaminated Sites

Alternative	Number of Potentially Contaminated Sites within 500 feet of Center Line	Likelihood for Alternative to Require Soil Excavation or Grading
Enhanced Bus on Lake Street	116	Somewhat Likely
Double/Single-Track Rail in Greenway	111	Likely
Dual Alternative	190	Likely

The dual alternative has the greatest number of potentially contaminated sites located within 500 feet of the center line because it impacts a greater geographic area than the individual alternatives. The enhanced bus on Lake Street alternative and the double/single-track rail in the Greenway alternative have a similar number of potentially contaminated sites located within 500 feet of the center line of each alternative.

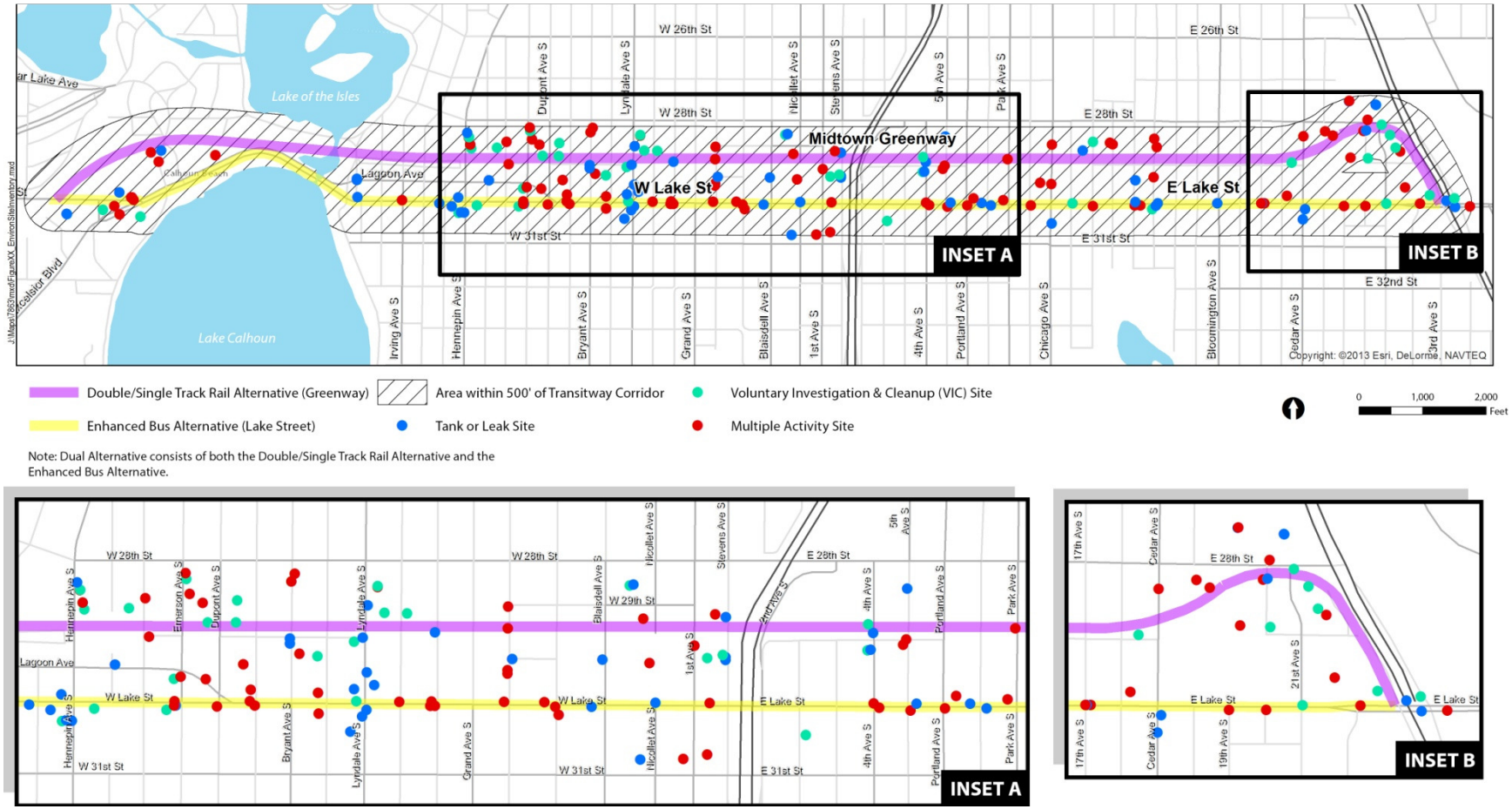
One additional area to note is the South Minneapolis Residential Soil Contamination Site, which runs from approximately 11th Avenue South to Hiawatha Avenue within the project corridor. This is an area where high levels of arsenic have been found in the soil and groundwater, likely due to wind-blown arsenic contamination from a pesticide plant operating at Hiawatha Avenue and 28th Street from 1938 to 1968. Between 2004 and 2012, the Environmental Protection Agency (EPA) has helped clean up more than 600 properties with unsafe levels of arsenic within the South Minneapolis Residential Soil Contamination Site. While much of the site's cleanup is complete, there is still potential to encounter areas of arsenic contamination along the project corridor.

2.5.5 Conclusions

The enhanced bus alternative on Lake Street and the double/single-track rail alternative in the Greenway are both located within areas of past and present industrial and commercial land uses. The potential for encountering contaminated soils or groundwater is high along both of these alignments; however, soil and groundwater contamination are most likely to be encountered in areas where the project requires soil excavation. For the enhanced bus alternative on Lake Street, soil excavation may be required at station sites. For the double/single-track rail alternative in the Greenway, soil excavation may be required at station sites and along the Midtown Corridor in areas where retaining walls, trail modifications, or bridge pier reconstruction are required. Therefore, it is most likely that contaminated sites would be encountered along the double/single-track rail alternative in the Greenway and the dual alternative.

More detailed analysis is necessary to determine if construction of any of the project alternatives is likely to encounter contaminated soils or groundwater. A Phase I Environmental Site Assessment (ESA) will likely be completed for the corridor as part of a future environmental document. The Phase I ESA will further assess impacts to potentially contaminated sites located within the project's construction limits.

Figure 7: Environmental Site Inventory



Sources: Hennepin County, Minnesota DNR, Minnesota Pollution Control Agency (MPCA)

2.6 Threatened and Endangered Species

2.6.1 Overview

The project is subject to both federal and state laws protecting threatened and endangered species. Both federal- and state-listed threatened and endangered species are typically listed by county.

2.6.2 Regulatory Framework

Section 7 of the Endangered Species Act (ESA) of 1973 is administered by the U.S. Fish and Wildlife Service. Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future.

State-listed species are subject to Minnesota's Endangered and Threatened Species Statutes, which protects species at risk of extinction. Special concern species are species that are not endangered or threatened, but extremely uncommon in Minnesota or have unique or highly specific habitat requirements requiring special monitoring status. These species are tracked by the Minnesota DNR and listed in the state's Natural Heritage Inventory System.

2.6.3 Data Sources and Methodology

The U.S. Fish and Wildlife Service's Environmental Conservation Online System was accessed to identify federally-listed threatened and endangered species for Hennepin County.

A one-mile buffer surrounding the Midtown Corridor transitway alternatives was evaluated for the presence of rare plants, animals, native plant communities, and other rare features using Geographical Information Systems (GIS) in conjunction with the Minnesota DNR's Natural Heritage Information System (NHIS)[4]. The Natural Heritage data is provided by the DNR Division of Ecological and Water Resources and was current as of June 13, 2013 (License Agreement 625). These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area shall not be construed to mean that no significant features are present. Identified species (below) are listed by current Minnesota protection statuses based on the August 19, 2013 statuses update.

2.6.4 Comparative Analysis

The following federally-listed species were identified in Hennepin County:

- Higgins eye pearlymussel (Endangered)

The habitat area for the Higgins eye pearlymussel is the Mississippi River which is located approximately 1.5 miles to the east of the eastern project terminus at Minnehaha Avenue. Therefore, it is unlikely that the project will impact the Higgins eye pearlymussel.

Based on an NHIS review of state-listed species, two vascular plants and three vertebrate animals were found within a mile of the build alternatives. The species are:

[4] Copyright 2013 State of Minnesota, Department of Natural Resources

- Valerian (*Valeriana edulis var. ciliate*) (Threatened)
- Handsome sedge (*Carex formosa*) (Endangered)
- Pugnose shiner (*Notropis anogenus*) (Threatened)
- Least darter (*Etheostoma microperca*) (Special Concern)
- Blanding's turtle (*Emydoidea blandingii*) (Threatened)

Based on the nature of the project, none of the build alternatives are anticipated to impact any of the species listed in the review. Although no impacts to these species are anticipated, contractors would be provided with the necessary information regarding Blanding's turtles.

No known calcareous fens, railroad right-of-way prairies, Minnesota County Biological Survey sites, native plant communities, Central Region Regionally Ecological Significant Areas, trout streams, or other rare species are located within one-mile of the project area.

2.6.5 Conclusions

Based on the nature of the project, it is unlikely that any of the build alternatives would adversely affect any federally-listed or state-listed threatened and endangered species. Future project review will re-evaluate data from the U.S. Fish and Wildlife Service and Minnesota DNR NHIS database to verify that the information on wildlife, fisheries, and ecological areas is up to date when an official environmental document is prepared.

2.7 Noise and Vibration

Noise impacts are a quality of life issue that can create negative public opinion if not properly addressed. Noise walls can help shield sensitive land uses from excessive noise, but they are expensive, require space, and do not always fit with the character of a neighborhood. Topography and proximity of land uses to the noise source are also important factors. Avoiding areas most sensitive to noise will help avoid expensive noise mitigation.

Vibrations are rarely noticed or cause damage to buildings, but can cause problems for vibration-sensitive land uses. These types of uses include high-tech manufacturing and research facilities where vibrations can interfere with equipment such as microscopes. Modifications to equipment are possible, but expensive.

2.7.1 Regulatory Framework

NEPA and the Minnesota Environmental Policy Act (MEPA) require analysis of noise and vibration impacts and appropriate mitigation of impacts. Additional noise and vibration analysis will be completed once the Midtown Corridor transitway project progresses into more advanced project development stages.

2.7.2 Data Sources and Methodology

The FTA Transit Noise and Vibration Impact Assessment manual describes appropriate levels of analysis for noise and vibration impacts for FTA projects. FTA screening procedures were used to identify noise- and vibration-sensitive land uses. Land uses sensitive to noise and vibration are grouped according to

sensitivity. The analysis screened for Category 1 uses (buildings or areas where quiet is essential) and Category 2 (land uses that include places where people sleep). The screening included examination of comprehensive plans and previous environmental documents to identify noise- and vibration-sensitive uses, including sensitive research and manufacturing, recording studios, theaters, hospitals, university research, and residential land uses.

A modified general assessment[5] was then performed to identify severity of potential impacts in those areas. The assessment paid particular attention to areas with sharp turns with potential for curve squeal in the double/single-track rail in the Greenway alternative (turn radii of 1,000 feet or less). Curve squeal does not apply to the enhanced bus on Lake Street alternative.

2.7.3 Comparative Analysis

The following noise and vibration sensitive land uses were identified within 500 feet of the Midtown Corridor transitway alternatives (see site locations in Figure 8):

- Four recording studios
- Four theaters
- Two hospitals/clinics

Additionally, areas of residential land use are identified in Figure 8 by housing density. Areas of residential land use are located along both the Lake Street and the Midtown corridors.

Noise

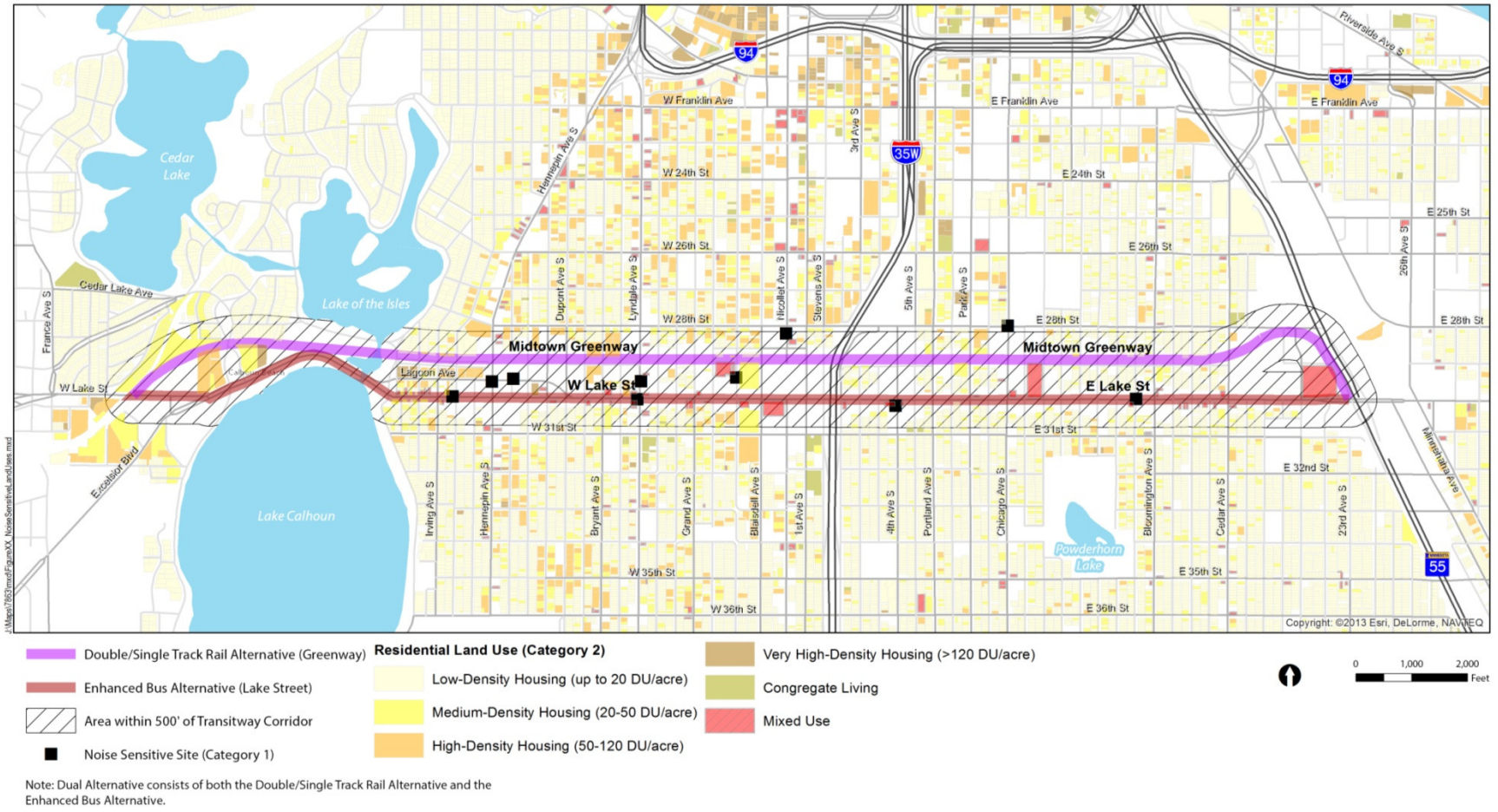
A summary of the noise sensitive resources that would potentially be affected by each alternative is shown in Table 8. For purposes of the General Assessment for noise, the impact area was defined as approximately 500 feet on either side of the center line of all alternatives. Potential impacts do not necessarily mean an impact is inevitable; a potential impact simply indicates that further study may be necessary in future phases of the project.

Table 8: Noise Sensitive Land Uses Located Within 500 feet of Centerline

Alternative	Category 1 Land Use	Category 2 Land Use
Enhanced Bus on Lake Street	4 recording studios 4 theatres	892 residential parcels
Double/Single-Track Rail in Greenway	3 theatres 1 recording studio 2 hospitals	848 residential parcels
Dual Alternative	4 recording studios 4 theaters 2 hospitals	1,430 residential parcels

[5] A full General Assessment as described by the FTA Transit Noise and Vibration Impact Assessment manual would include a comparison of Average Daily Traffic (ADT) with the likely noise increase from enhanced bus and LRT alternatives. The modified General Assessment identifies wheel squeal areas based on conceptual design information. LRT tracks with a turn radii of 1,000 feet or less can produce loud squeal noises, or wheel squeal. Curve squeal does not apply to the enhanced bus on Lake Street alternative.

Figure 8: Noise Sensitive Land Uses



Note: Dual Alternative consists of both the Double/Single Track Rail Alternative and the Enhanced Bus Alternative.

Sources: City of Minneapolis, Hennepin County, Minnesota DNR

Areas of limited turning radii (less than 1,000 feet) are located on the west and east ends of the rail alternatives. Residential land uses located at the west end of the project area, near Dean Parkway, and the east end of project area, near Hiawatha Avenue, may experience noise impacts due to wheel squeal at these locations.

The double/single-track rail in the Greenway alternative and dual alternative includes six at-grade rail crossings that could require warning devices such as rail horns and crossing bells to alert pedestrians, bicyclists, and drivers to the approaching arrival of a rail vehicle. Noise sensitive resources in proximity to these at-grade crossings may experience additional noise-related issues due to the warning devices.

Vibration

Because of the low operating speeds of most light rail transit (LRT) systems such as the double/single-track rail in the Greenway alternative, significant vibration problems are not common[6]. However, steel-wheel LRT systems that operate close to vibration-sensitive buildings have the potential of causing intrusive vibration. While several vibration sensitive resources were identified within 500 feet of the double/single-track rail in the Greenway alternative and the dual alternative, none of these resources are located directly adjacent to the transitway corridor. Most bus rapid transit (BRT) projects (buses with rubber tires), such as the enhanced bus on Lake Street alternative, do not cause significant vibration impacts. Therefore, vibration-related impacts are not anticipated under any of the project alternatives.

2.7.4 Conclusions

It is anticipated that the double/single-track rail in the Greenway alternative would result in less noise impact potential than the enhanced bus on Lake Street alternative because there are fewer Category 1 and Category 2 noise-sensitive land uses in proximity to the rail alternative. However, residences located near the western and eastern ends of the rail alternatives may experience noise-related impacts due to wheel squeal, while those located near the at-grade crossings may experience noise-related impacts due to warning devices. The dual alternative would have the greatest potential for noise impacts because it includes both individual alternatives and covers a larger geographic area. Vibration-related impacts are not anticipated under any of the project alternatives.

It is anticipated that a more detailed noise and vibration study will be undertaken as part of a future NEPA process.

2.8 Environmental Justice

2.8.1 Regulatory Framework

Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994), requires the U.S. Department of Transportation (DOT) and the FTA to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies,

[6] The ground-borne vibration characteristics of light rail systems are very similar to those of rapid transit systems. Because the speeds of light rail systems are usually lower than rapid transit systems, the typical vibration levels usually are lower.

and activities on minority populations and/or low-income populations (collectively "EJ populations"). Environmental justice at FTA includes incorporation of environmental justice and non-discrimination principles into transportation planning and decision-making processes and project-specific environmental reviews. Furthermore, U.S. DOT order 5610.2(a) sets forth steps to prevent disproportionately high and adverse effects to minority or low-income populations through Title VI analyses and environmental justice analyses conducted as part of Federal transportation planning and NEPA provisions.

Detailed information on the potential effects of the Midtown Corridor transitway on minority and low-income populations is not available at this early stage of planning, and the information presented in this section is not intended to be a full analysis of the project's impacts to EJ populations. However, consideration of the public transportation needs of EJ populations is critical information for selection of an LPA in the Midtown Corridor. Consistent with the framework outlined in FTA Circular 4703.1 (August 2012), this AA will identify EJ populations in the corridor, and document the project's engagement with EJ populations throughout the AA process. This will allow for consideration of EJ populations in the LPA selection, and set the stage for a full analysis of the project's impacts to EJ populations as part of its NEPA process.

2.8.2 Data Sources and Methodology

Decennial census data was used as a primary source for mapping and locating minority populations in the Midtown Corridor. The U.S. Census, mandated by Article I, Section 2 of the Constitution, takes place every 10 years and counts every resident in the United States. The census also collects information on homeownership, sex, age, race, and ethnicity. Year 2010 U.S. Census data was used to quantify the percentage of minority populations at the block level, which is the smallest geographic unit for which race and ethnicity data are available.

American Community Survey (ACS) 2007-2011 data was used as a primary source for mapping low-income populations in the Midtown Corridor. The ACS is an ongoing survey that provides data on age, sex, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities, where people work and how they get there, and where people live and how much people pay for some essentials. The purpose of the ACS is to provide an annual data set that enables communities, state governments, and federal programs to plan investments and services. In general, ACS estimates are period estimates that describe the average characteristics of population and housing over a period of data collection. The ACS is administered continually and, unlike the census, is a random sampling of people from all counties and county-equivalents in the United States. ACS 2007-2011 5-Year Estimates were used to quantify the percentage of low-income populations at the block group level, which is the smallest geographic unit for which low-income population data are available.

A GIS platform was used to draw a half-mile buffer[7] around each of the three Midtown Corridor build alternatives: enhanced bus on Lake Street, double/single-track rail in the Greenway, and the dual alternative. For the analysis of minority populations, each census block that intersects with the half-mile

[7] A half-mile radius is commonly used by transit planners to represent the distance transit users are willing to walk to access an LRT or BRT station

buffer or is completely within the half-mile buffer is shown. For the analysis of low-income populations, each census block group that intersects with the half-mile buffer or is completely within the half-mile buffer is shown.

2.8.3 Environmental Justice Populations in the Midtown Corridor

As defined in FTA Circular 4703.1, a **low-income person** is one whose median household income is at or below the Department of Health and Human Services poverty guidelines. Low income populations are identified by the Census Bureau using a set of dollar value thresholds that vary by family size and composition.[8] A low-income population is any readily identifiable group of low-income persons who live in geographic proximity, and if circumstances warrant, geographically dispersed or transient persons such as migrant workers or Native Americans who will be similarly affected by the proposed project. Figure 9 shows the percentage of low-income residents living within a half mile of each of the Midtown Corridor alternatives. The Midtown Corridor also has a higher percentage of low-income populations than the state of Minnesota, the seven-county Twin Cities Metropolitan Area, and Hennepin County, as shown in Table 9.

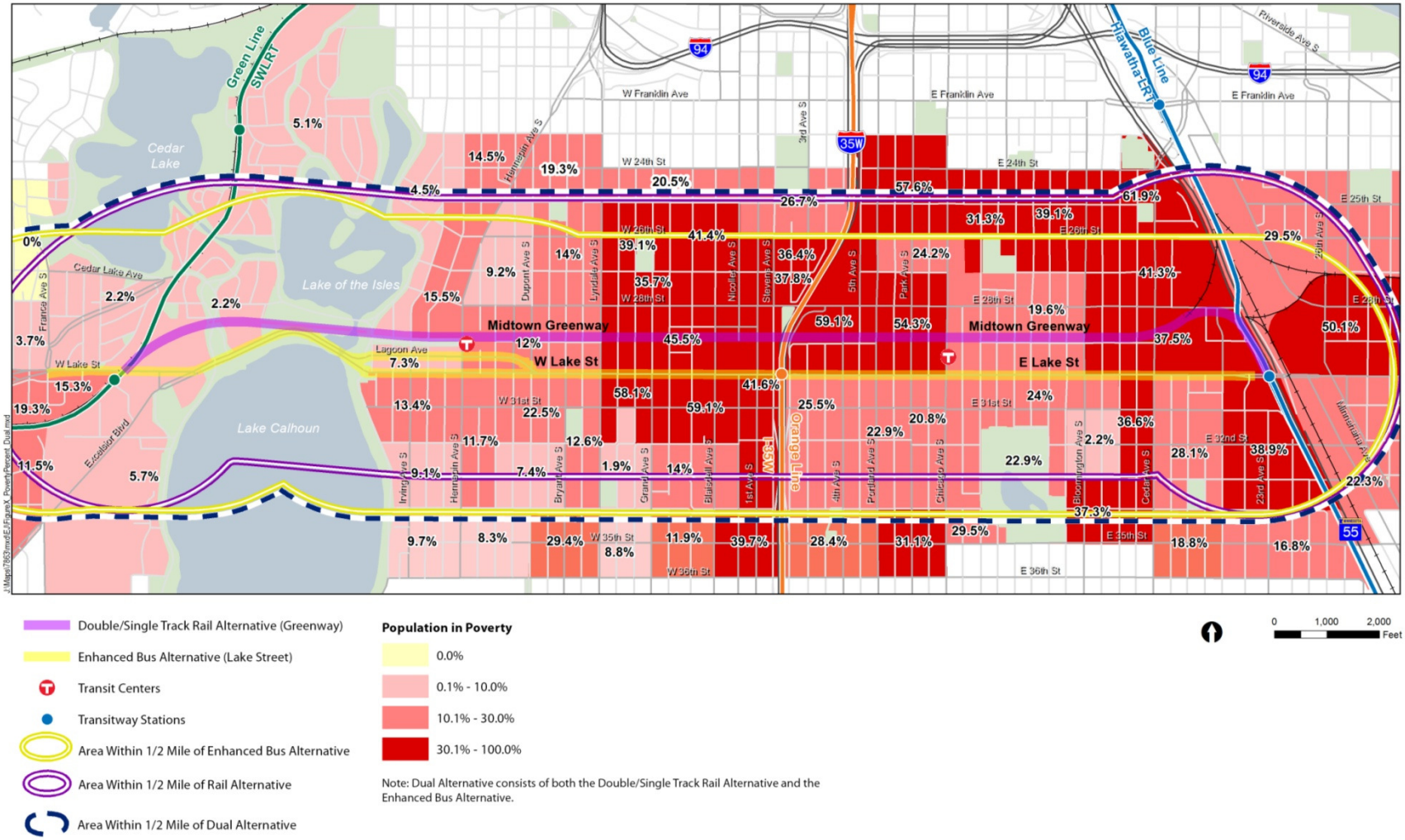
Table 9: Low-Income Population by State, Region, County, and Corridor

	Total Population for whom Poverty is Determined	Population Living Above the Poverty Line	Population Living Below the Poverty Line	Percent in Poverty
State of Minnesota	5,155,949	4,590,795	565,154	10.9%
Seven-County Twin Cities Metropolitan Area	3,084,447	2,775,636	308,811	10.0%
Hennepin County	1,124,293	986,035	138,258	12.3%
Enhanced Bus on Lake Street	73,979	55,024	18,955	25.6%
Double/Single-Track in the Greenway	68,209	50,734	17,475	25.6%
Dual Alternative	76,456	57,008	19,448	25.4%

Source: 2007-2011 American Community Survey 5-Year Estimates, block group-level data

[8] In determining the poverty status of families and unrelated individuals, the Census Bureau uses thresholds (income cutoffs) arranged in a two-dimensional matrix. The matrix consists of family size (from one person to nine or more people) cross-classified by presence and number of family members under 18 years old (from no children present to eight or more children present). Unrelated individuals and two-person families are further differentiated by age of reference person (RP) (under 65 years old and 65 years old and over).
To determine a person's poverty status, one compares the person's total family income in the last 12 months with the poverty threshold appropriate for that person's family size and composition. If the total income of that person's family is less than the threshold appropriate for that family, then the person is considered "below the poverty level," together with every member of his or her family. If a person is not living with anyone related by birth, marriage, or adoption, then the person's own income is compared with his or her poverty threshold. The total number of people below the poverty level is the sum of people in families and the number of unrelated individuals with incomes in the last 12 months below the poverty threshold.
Since ACS is a continuous survey, people respond throughout the year. Because the income questions specify a period covering the last 12 months, the appropriate poverty thresholds are determined by multiplying the base-year poverty thresholds (1982) by the average of the monthly inflation factors for the 12 months preceding the data collection. Source: http://www.census.gov/acs/www/Downloads/data_documentation/SubjectDefinitions/2011_ACSSubjectDefinitions.pdf

Figure 9: Low-Income Population within a Half Mile of the Lake Street Enhanced Bus Alternative



Source: 2007-2011 American Community Survey 5-Year Estimates, block group-level data

As defined in FTA Circular 4703.1, minority populations are any readily identifiable group or groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed or transient persons such as migrant workers or Native Americans who will be similarly affected by the proposed project. Minority includes persons who are American Indian and Alaska Native, Asian, Black, or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander. Figure 10 shows the percentage of minority populations in the Lake Street, Greenway, and dual alternative study areas. For broader context and reference, the Midtown Corridor alternatives were compared with Hennepin County, the seven-county Twin Cities Metropolitan Area, and the state of Minnesota. The Midtown Corridor has a higher percentage of minority populations than the state of Minnesota, the seven-county Twin Cities Metropolitan Area, and Hennepin County, as shown in Table 10 below.

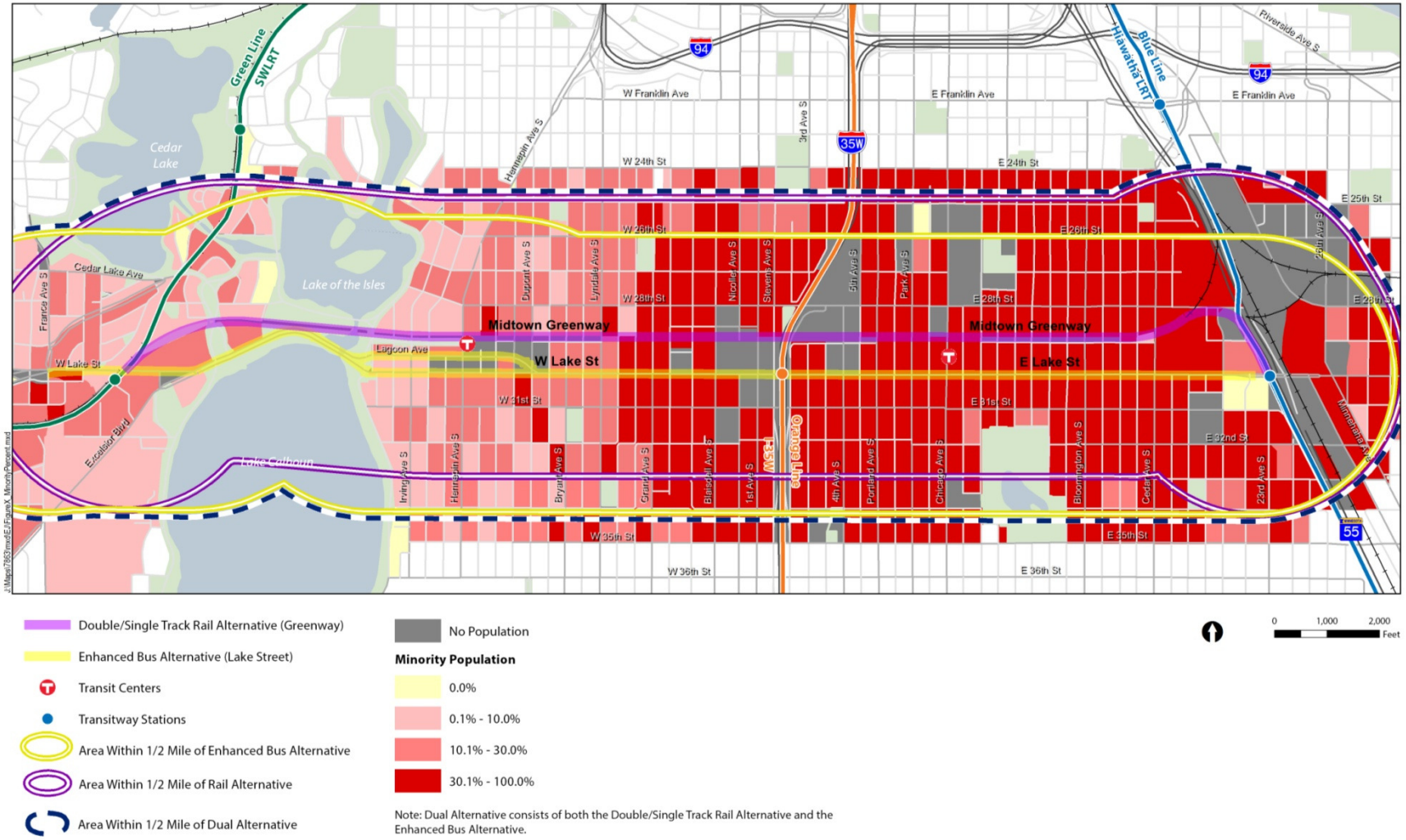
Table 10: Minority Population by State, Region, County, and Corridor

	Total Population	Non-Minority Population	Minority Population	Percent Minority
State of 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%
Enhanced Bus on Lake Street	59,329	30,420	28,909	48.7%
Double/Single-Track in the Greenway	58,571	29,403	29,168	49.8%
Dual Alternative	65,619	33,488	32,131	49.0%

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

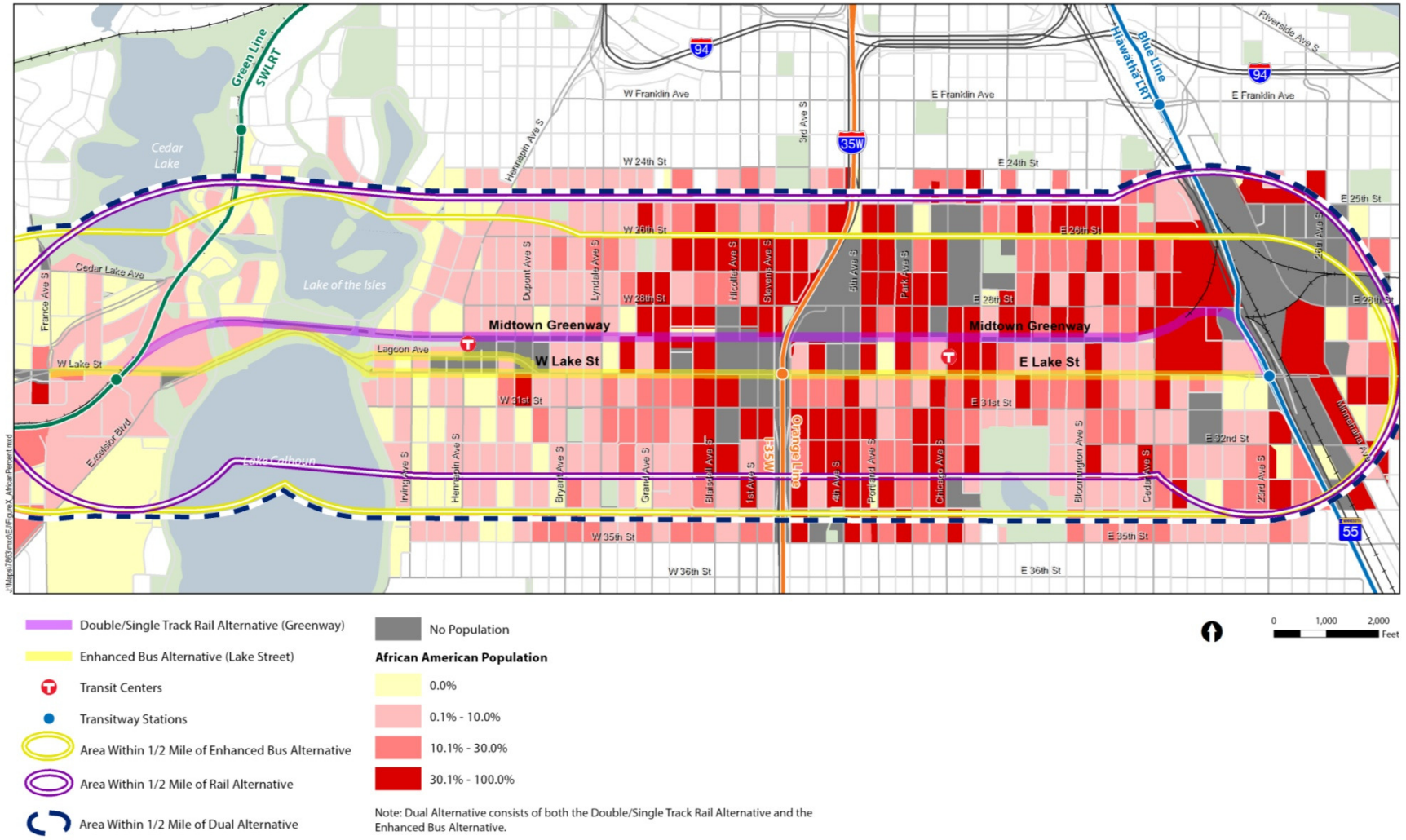
Minority populations were further analyzed to identify individual minority statistics. While census data identifies African Americans, Asian Americans, and Latino populations along the Lake Street, Greenway, and dual alternatives (shown in Figure 11, Figure 12, and Figure 13) community engagement has facilitated a more nuanced understanding of corridor populations.

Figure 10: Minority Population within a Half Mile of Build Alternatives



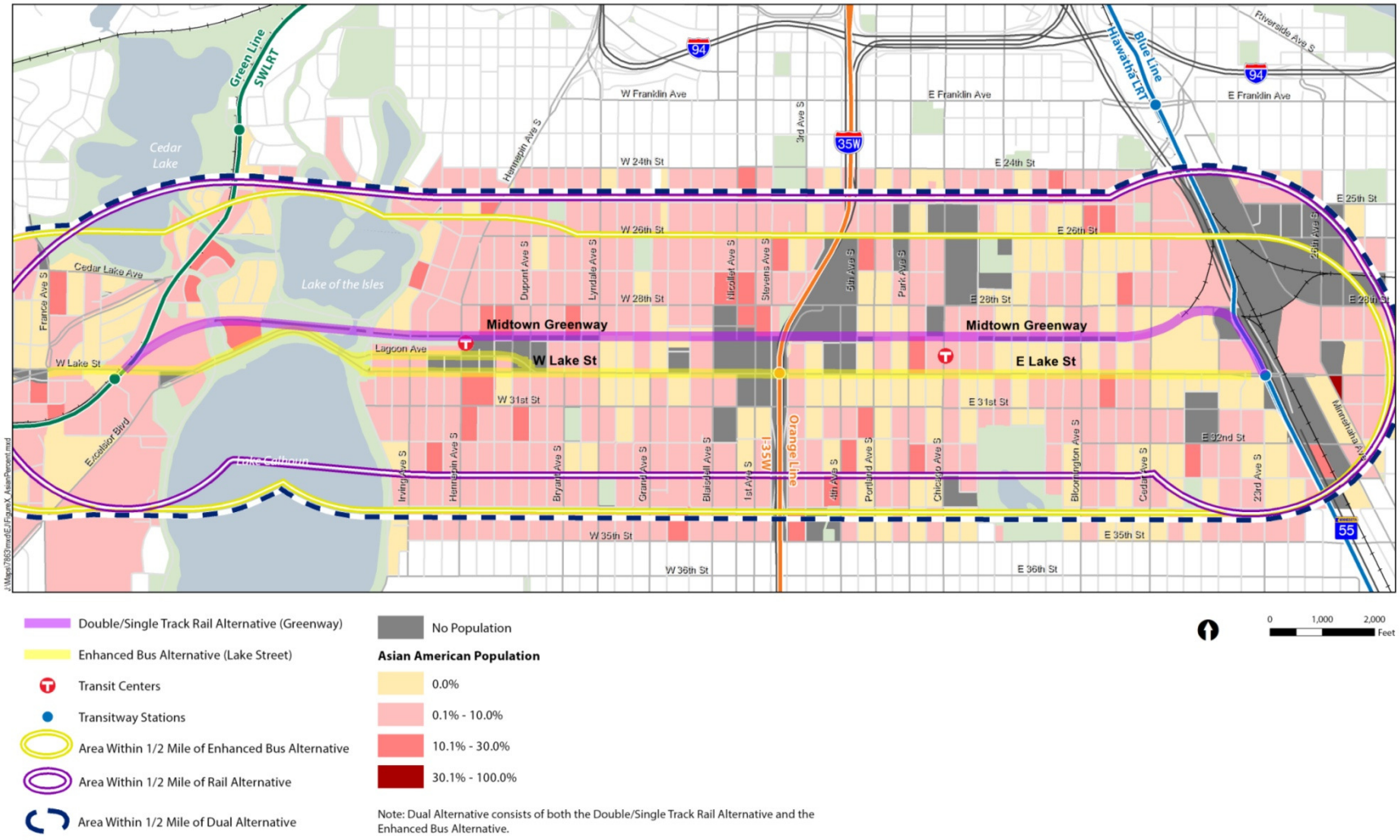
Source: 2010 U.S. Census, block-level data

Figure 11: African American Population within a Half Mile of the Build Alternatives



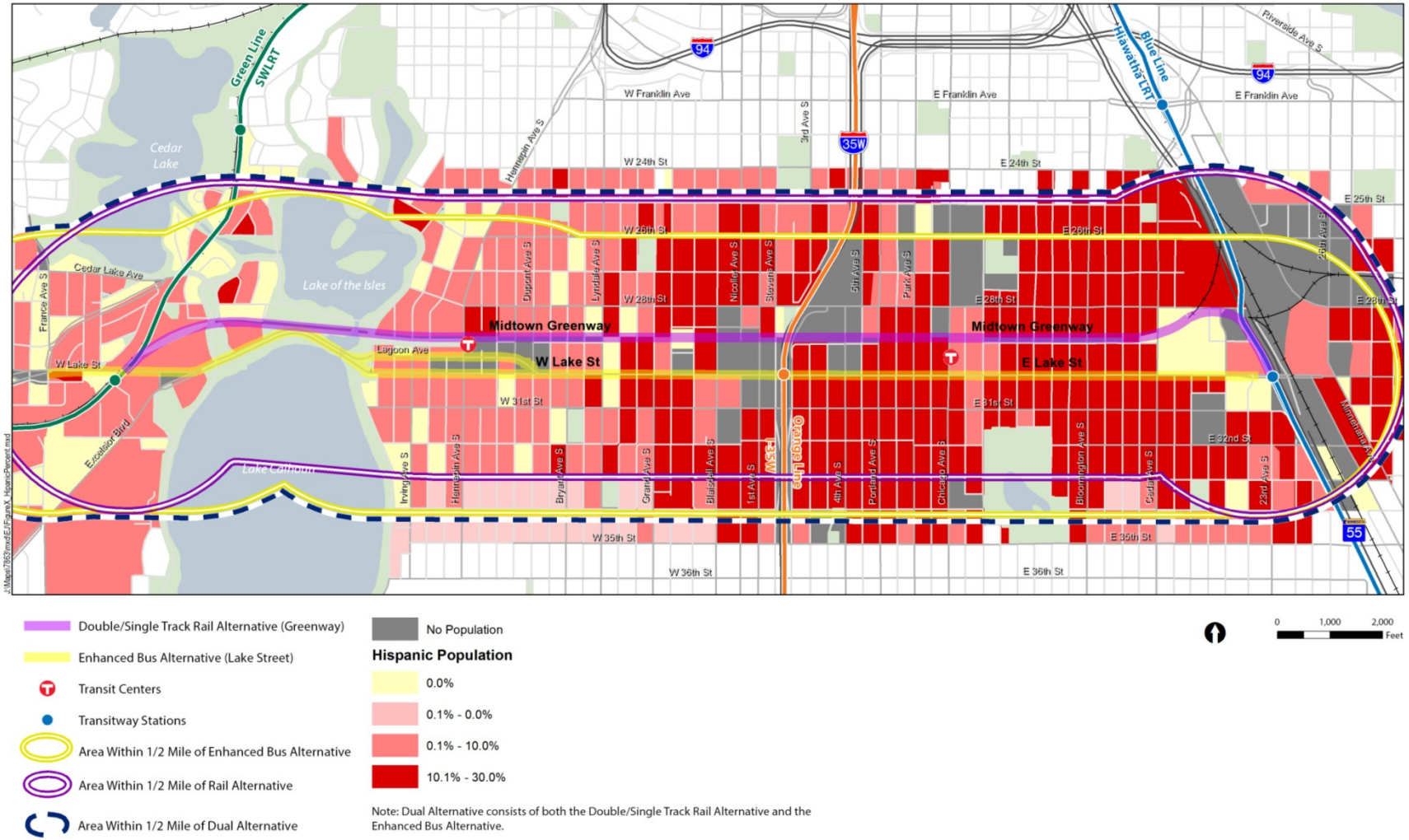
Source: 2010 U.S. Census, block-level data

Figure 12: Asian American Population within a Half Mile of the Build Alternatives



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

Figure 13: Hispanic Population within a Half Mile of the Double/Single Track in the Greenway Alternative



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

2.8.4 Community Engagement

Community engagement efforts during the Midtown AA have focused on a two-way exchange of information between project staff and residents and businesses in the corridor. To ensure that decisions made during the AA consider the needs and desires of the community and are understood by the residents and businesses the project will affect, the project has established three standing advisory committees, the Policy Advisory Committee, the Technical Advisory Committee, and the Community Advisory Committee, which represent a diverse set of interests in the corridor.

- Policy Advisory Committee (PAC): The PAC consists of policymakers, elected and appointed officials from the Metropolitan Council, Hennepin County, the City of Minneapolis, the Latino Economic Development Center, a non-profit organization in the corridor that promotes economic opportunities for Latinos, and other key partner agencies and organizations. The PAC provides direction and guidance for the study process and will make the final LPA recommendation on route and mode to the Metropolitan Council.
- Technical Advisory Committee (TAC): The TAC consists of staff representatives from the Metropolitan Council, Metro Transit, Hennepin County, the City of Minneapolis, and MnDOT. The TAC provides technical guidance and works to resolve technical issues regarding planning, engineering, and operation of transit in the Midtown Corridor.
- Community Advisory Committee (CAC): The CAC is a forum for community input on project decisions, and is critical to dissemination of project information. Each of the 16 neighborhoods and six business associations in the Midtown Corridor are represented on the CAC.

Project staff routinely communicates project information, decisions, and upcoming opportunities for participation in a number of ways:

- Via the project's website: www.midtowntransitway.org
- Via email updates
- Distribution of meeting notices in English and non-English language publications (Spanish and Somali)
- News releases to non-English language media outlets (print, radio, television)
- Attend local events and festivals to provide information and answer questions about the project.

Finally, in addition to traditional open houses, project staff has provided many opportunities for public input to the project and have specifically endeavored to solicit participation from minority and low-income communities by:

- Providing project information at existing neighborhood and community meetings, particularly those with high minority participation.
- Providing Spanish and Somali translators at each meeting.

- Attendance at meetings or events of established organizations that serve specific cultural/ethnic groups, residents, or business communities such as the Horn Towers, the Latino Economic Development Center, National Night Out, and Mercado Central.
- Attending the 5th Precinct open house to speak with area residents who might not usually attend a transit meeting.
- Riding the Route 21 buses to share project information and open house materials.
- Distributing project information to all local businesses on Lake Street (nearly 250 businesses).
- Coordinating with Minneapolis Neighborhood and Community Relations (NCR) staff to distribute project information through Somali, Latino, and American Indian staff.
- Meeting with key leaders in the community and with organizations that provide services to communities of color.
- Collaborating with the Midtown Greenway Coalition transit coordinator (Spanish-speaking) to broaden the outreach to community members whose first language is Spanish.
- Staffing table displays at variety of locations such as Mercado Central, the Chicago Avenue Transit Center, and the Uptown Transit Center.

2.8.5 Conclusions

The three alternatives: enhanced bus on Lake Street, double/single-track rail in the Greenway, and the dual alternative, are located within one to two city blocks of each other for their entire length, and thus minority and low-income populations residing along the alternatives are very similar in number and composition. The Midtown Corridor is home to both minority and low-income EJ populations; when the Midtown Corridor project completes the NEPA process, the potential for high and disproportionate impacts to these EJ populations will be thoroughly investigated.

2.9 Air Quality

2.9.1 Overview

Air quality, at the project level, must be addressed during the NEPA process. The Clean Air Act, which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (40 CFR part 50) for pollutants considered harmful to public health and the environment. The EPA has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. Criteria pollutants that are commonly addressed for transit projects include carbon monoxide (CO) and Mobile Source Air Toxics (MSATs).

2.9.2 Regulatory Framework

The Minnesota Pollution Control Agency (MPCA) regulates air quality to protect public health and the environment in the State of Minnesota. Air monitoring data are required by regulation and are used to determine compliance with the EPA's National Ambient Air Quality Standards (NAAQS).

2.9.3 Data Sources and Methodology

Existing air quality in the vicinity of the project was characterized using available air quality monitoring data from the MPCA. The analysis below focuses on the projected change in vehicle miles traveled (VMT) in the forecast year. VMT is an output of the Regional Travel Demand Model. Through the projected VMT, each alternative was evaluated for its potential impact to emissions in the forecast year.

2.9.4 Comparative Analysis

Reductions in VMT act as a proxy in this measure for air emissions reductions. Based on the outputs generated during the ridership modeling process, change in VMT was calculated at the regional level over the no-build alternative. VMT values are shown as daily figures. Results ranged from a 1,400 to 11,800 change in VMT over the no-build alternative (Table 11).

Table 11: Reduction in VMT

Alternative	Reduction in Auto Person Trips	Reduction in Auto Vehicle Trips	Reduction in Daily Auto VMT over No-Build (miles)
Enhanced Bus on Lake Street	200	150	1,400
Double/Single-Track Rail in Greenway	2,200	1,800	11,200
Dual Alternative	2,300	1,900	11,800

2.9.5 Conclusions

As shown above in Table 11, the dual alternative would produce the greatest reduction in VMT and would therefore have the greatest amount of air emission reductions. Overall, the enhanced bus on Lake Street alternative and dual alternative would emit greater amounts of airborne pollutants than the double/single-track rail in the Greenway alternative due to the use of diesel engines to run the buses. However, these differences will likely be small in relation to the overall air quality of Hennepin County and the State of Minnesota.

The State of Minnesota meets NAAQS for all of the criteria pollutants at this time. In 1999, the EPA redesignated all of Hennepin, Ramsey, Anoka, and portions of Carver, Scott, Dakota, Washington, and Wright counties as a maintenance area for carbon monoxide (CO). This means the area was previously classified as a nonattainment area but has now been found to be in attainment. This area includes the project area, which is located in Hennepin County. Evaluation of CO for assessment of air quality impacts is required for environmental approval in any future NEPA document.

2.10 Consistency with Existing and Future Land Use and Support of Transit Oriented Development

2.10.1 Overview

Land use plays a key role in determining the success of a transitway investment. Denser, high-activity land uses are considered more conducive to transit use than low-density uses. Future development plans for areas surrounding proposed transit stations in the three alternatives were examined for consistency with and neighborhood support of a large-scale transitway investment.

2.10.2 Data Sources and Methodology

Consistency with Existing and Future Land Use

A quantitative approach was used to measure each alternative's consistency with future land use plans; a general description of the relationship of the proposed transit improvements to other land use designations and local plans is also provided.

Using GIS, one-half mile buffer distances were overlaid on a map of 2030 land use designations as specified in the City's comprehensive plan, the *Minneapolis Plan for Sustainable Growth*. A half-mile radius is commonly used by transit planners to represent the distance transit users are willing to walk to access an LRT or BRT station. Because the stations along each alternative are less than one mile apart and often much closer, the half mile radii around stations overlap significantly. Rather than use the half mile radius around each station, the half mile distance around each alternative was used to define the area of potential growth. The future land uses around each of the three Midtown Corridor alternatives are shown in Figure 14.

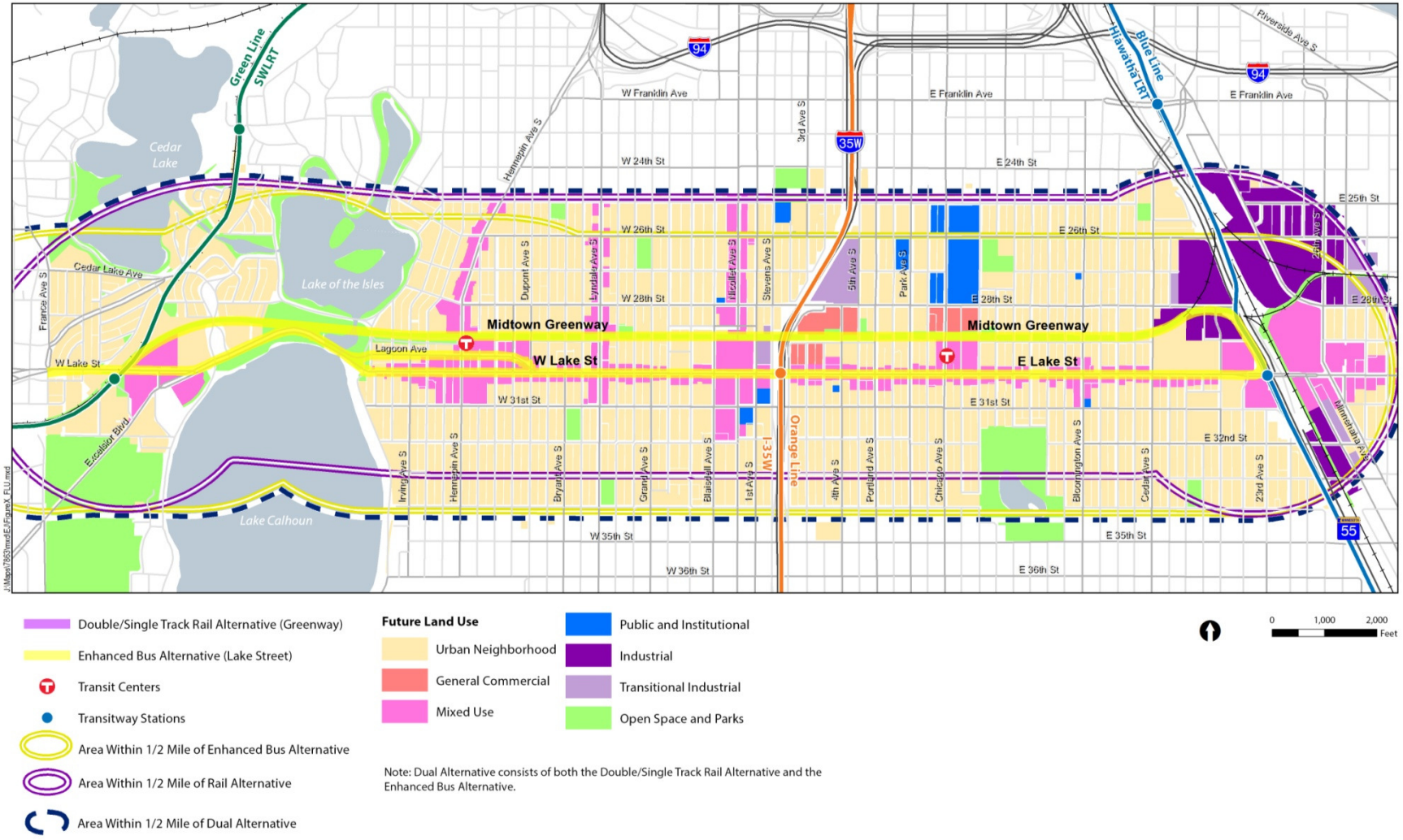
As shown in Table 12, future land uses were scored 1, 2, or 3; land uses with a score of three are considered most transit-supportive, as they will increase the number of people working or living near transit, and contribute to an environment conducive to walking or biking to a transit station. Land uses with a score of two are considered somewhat transit-supportive, but are lower density. Land uses with a score of one are considered not to be transit-friendly, as they do not allow for clustering of residents or employers near transit, and may contribute to an environment in which walking or biking to a transit station is undesirable. Public and Institutional uses and Open Space and Parks uses were not scored, as these uses are considered permanent and non-developable. Acreage of each land use present within the buffered areas was determined and summed by use. Sums were then converted from acres to percent of coverage for the total buffered area for each alternative. Percentages were multiplied by the number of points assigned to each land use (as described in Table 12) to reach an overall score for each alternative based on the composition of land uses in its study area.

Table 12: Future Land Use Classifications, Densities, and Scoring

Land Use Classification	Description	Density Range	Score
Urban Neighborhood (UN)	Predominantly residential area with a range of densities, with highest densities generally to be concentrated around identified nodes and corridors. May include undesignated nodes and some other small-scale uses, including neighborhood-serving commercial and institutional and semi-public uses (for example, schools, community centers, religious institutions, public safety facilities, etc.) scattered throughout. More intensive non-residential uses may be located in neighborhoods closer to Downtown and around Growth Centers. Not generally intended to accommodate significant new growth, other than replacement of existing buildings with those of similar density.	Varies, but predominantly low density (8-20 du/acre); not intended to accommodate significant new growth or density	2
General Commercial (CO)	Includes a broad range of commercial uses. This designation is reserved for areas that are less suited for mixed use development that includes residential.	Residential generally not appropriate for these areas	2
Mixed Use (MU)	Allows for mixed use development, including mixed use with residential. Mixed use may include either a mix of retail, office, or residential uses within a building or within a district. There is no requirement that every building be mixed use.	Medium to high density housing or office with commercial uses on the ground floor	3
Public and Institutional (PI)	Accommodates public and semi-public uses, including museums, hospitals, civic uses, stadiums, airport related uses, and college and university campuses. Note that some smaller uses (including schools, libraries, and emergency services) may be incorporated into Urban Neighborhood, where they are generally allowed.	Residential generally not appropriate for these areas	Not Scored
Open Space and Parks (OP)	Applies to land or water areas generally free from development. Primarily used for park and recreation purposes, natural resource conservation, or historic or scenic purposes. This designation does not capture privately-owned and operated open spaces and plazas.	Residential generally not appropriate for these areas	Not Scored
Industrial (IN)	Includes areas suited for industrial development and limited supporting commercial uses. Generally found within Industrial Employment Districts, with a high level of policy protection and an emphasis on job retention and creation. Industrial uses have primacy over other uses.	Residential generally not appropriate for these areas	1
Transitional Industrial (TI)	Industrial areas located outside of Industrial Employment Districts will be labeled “transitional” since they may eventually evolve to other uses compatible with surrounding development. Although they may remain industrial for some time, they will not have the same level of policy protection as areas within industrial districts.	Residential generally not appropriate for these areas	1

Source: Minneapolis Plan for Sustainable Growth

Figure 14: Midtown Corridor: Future Land Use



Note: Dual Alternative consists of both the Double/Single Track Rail Alternative and the Enhanced Bus Alternative.

Neighborhood Support for Higher Density and Transit-Oriented Development

A qualitative approach was used to assess the local support of high density development and TOD in the Midtown corridor. Local plans were reviewed for language that spoke of support for this kind of development. The following plans were reviewed in conjunction with the *Minneapolis Plan for Sustainable Growth*:

- Corcoran Midtown Revival Plan (2002)
- Development Objectives for the Hi-Lake Center (2001)
- Hiawatha/Lake Station Area Master Plan (2001)
- Lyn-Lake Small Area Plan (2009)
- Lyndale Avenue: A Vision (1997)
- Midtown Greenway Land Use and Development Plan (2009)
- Midtown Minneapolis Land Use and Development Plan (2005)
- Nicollet Avenue: The Revitalization of a Minneapolis Main Street (2000)
- Uptown Small Area Plan (2008)

2.10.3 Comparative Analysis

Consistency with Existing and Future Land Use

Results of the methodology used to measure consistency with existing and future land use is shown below are shown below in Table 13. As seen in the table, there is very little variation between the scores for each alternative.

Table 13: Land Use Scores by Alternative

Alternative	Percent Mixed Use Score x3	Percent Urban Neighborhood Score x2	Percent Commercial Score x2	Percent Transitional Industrial Score x1	Percent Industrial Score x1	Overall Score
Enhanced Bus on Lake Street	12.0 **36**	60.2 **120.4**	1.1 **2.2**	1.6 **1.6**	4.3 **4.3**	**164.5**
Double/Single-Track in the Greenway	11.8 **35.4**	58.0 **116.0**	1.1 **2.2**	1.8 **1.8**	6.0 **6.0**	**161.4**
Dual Alternative	11.1 **33.3**	60.4 **120.8**	1.0 **2.0**	1.7 **1.7**	5.6 **5.6**	**163.4**

Neighborhood Support for Higher Density and Transit-Oriented Development

Corridor and Center Designations

In addition to future land uses, the *Minneapolis Plan* also identifies Activity Centers, Growth Centers, Community Corridors, and Commercial Corridors, designations that also have a bearing on density, land use, and transit oriented development design. As shown in the *Plan*'s Development Density map, the city intends to concentrate density in these Corridors and Centers in order to ensure that new growth and density is located in places with excellent transit access, as well as a range of shopping,

employment, and other urban amenities. There are several of these Corridors and Centers in the Midtown Corridor, as described below in Table 14 and shown in Figure 15.

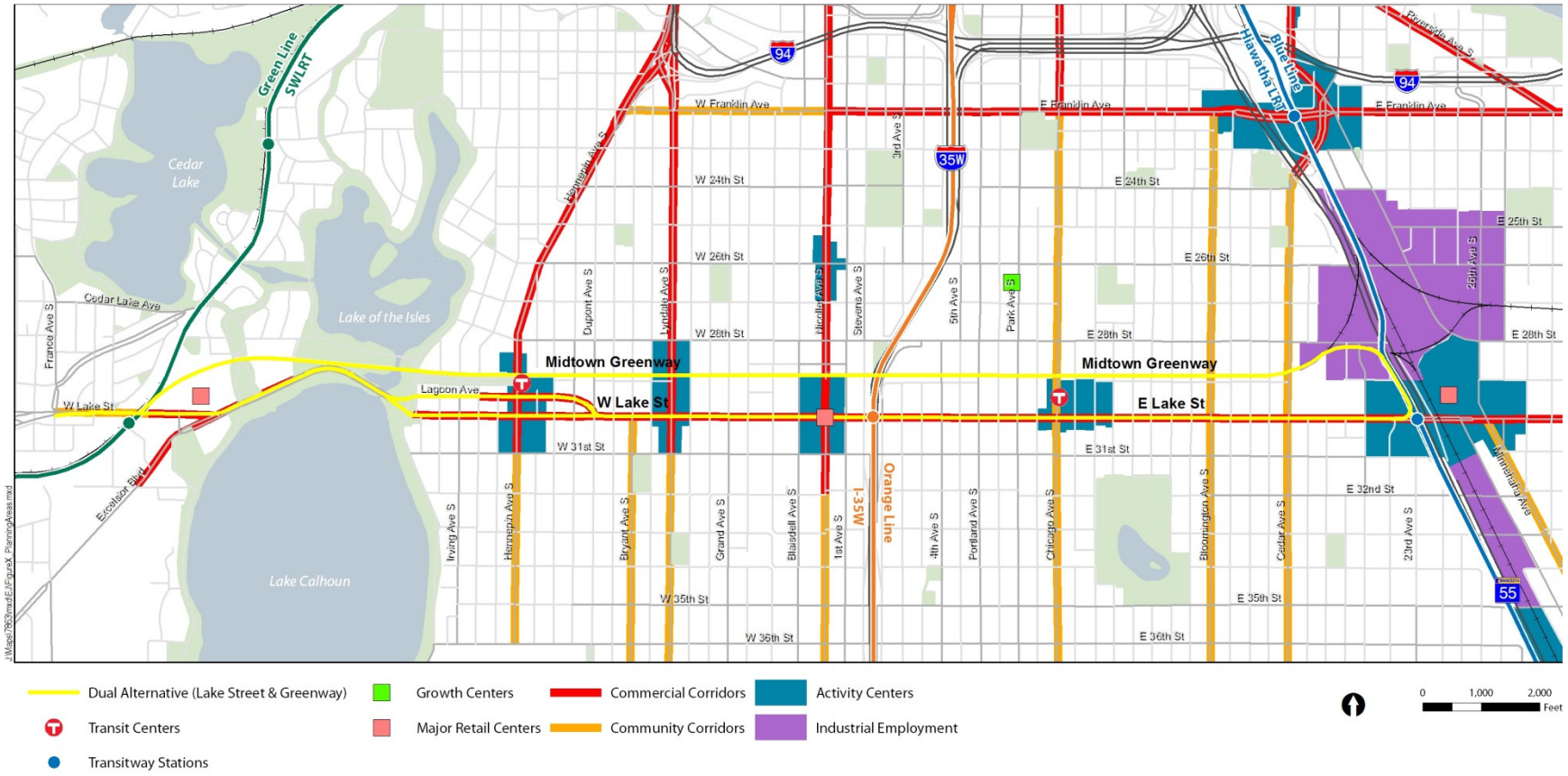
Table 14: Corridors and Centers

Classification	Description	Density Range	Study Area Corridors & Centers
Commercial Corridor	Historically have been prominent destinations. Mix of uses, with commercial uses dominating	High density (50-120 du/acre), transitioning down to medium density in surrounding areas	Lake Street Hennepin Ave (N of 31st St) Lyndale Ave (N of 31st St) Nicollet Ave (N of 31st St)
Community Corridor	Primarily residential with intermittent commercial uses clustered at intersections in nodes. Commercial uses, generally small-scale retail sales and services, serving the immediate neighborhood	Medium density (20-50 du/acre), transitioning to low density in surrounding areas	Hennepin Ave (S of 31st St) Bryant Ave (S of 31st St) Lyndale Ave (S of 31st St) Nicollet Ave (S of 31st St) Chicago Ave Bloomington Ave Cedar Ave
Activity Centers & Growth Centers	Mix of uses with citywide and regional draw. High intensity of uses, including employment, commercial, office, and residential uses.	High density (50-120 du/acre) and very high density (120-200 du/acre), dependent on context	Hennepin Ave & Lake St Lyndale Ave & Lake St Nicollet Ave & Lake St Chicago Ave & Lake St Hiawatha Ave & Lake St
Major Retail Centers	Locations characterized by immediate connections to regional road networks that can accommodate large-scale retail uses.	Unspecified	Excelsior Blvd & Lake St Nicollet Ave & Lake St Hiawatha Ave & Lake St
Industrial Employment District	Industrial areas with a high level of policy protection and an emphasis on job retention and creation.	Unspecified	Seward/Hiawatha

Source: Minneapolis Plan for Sustainable Growth

In addition to the city-wide future land use map, the comprehensive plan incorporates by reference land use recommendations from a number of adopted small area plans that cover various sub-sectors of the city. Small area plans apply to several segments in the Midtown Corridor. Generally, these plans are supportive of increased density, including transit oriented development design features, in the corridor, as described in Table 15.

Figure 15: Corridors and Centers along the Lake Street, Greenway, and Dual Alternatives



Source: Minneapolis Plan for Sustainable Growth

Table 15: Local & Small Area Plans

Plan	Area	Summary
Corcoran Midtown Revival Plan (2002)	Corcoran Neighborhood	The plan recommends mixed use along the Lake Street corridor, with higher density residential and commercial nearer to the LRT station. Lower intensity uses are proposed to transition from the Lake Street corridor to surrounding neighborhoods.
Development Objectives for the Hi-Lake Center (2001)	A small area within the Midtown/Lake Street LRT Station Area	The plan calls for strengthening the commercial mix, adding residential uses, and reinforcing pedestrian-friendly urban design.
Hiawatha/Lake Station Area Master Plan (2001)	Portions of Phillips East, Corcoran, Longfellow, and Seward within a half-mile of the Lake Street LRT station	As a designated Transit Station Area, the master plan proposes transforming the area from an auto- oriented shopping center into a higher density pedestrian-oriented district with a mix of uses, including housing and smaller scale commercial uses. The plan also includes recommendations for infill development on underutilized sites as well as infrastructure changes.
Lyn-Lake Small Area Plan (2009)	The area between Bryant Ave and Blaisdell Avenue and 26th Street and 31st Street	The plan recommends extension of the activity center designation at Lyn-Lake from the Greenway north to 28th Street (change made in the Comprehensive Plan). Land use recommended in the activity center and along West Lake Street is mixed-use residential/commercial. High-density housing is preferred along the Greenway, mixed-use residential is allowed.
Lyndale Avenue: A Vision (1997)	Lyndale Avenue between Franklin Ave and 56th Street	Primarily a road improvement plan for Lyndale Avenue, the plan includes guidance on roadway width, on-street parking, bicycle and pedestrian facilities, and streetscape improvements.
Midtown Greenway Land Use and Development Plan (2009)	Properties within one block of the Greenway from Hiawatha Avenue to the western border of the city	Land use guidance includes concentrating commercial uses at nodes and along designated corridors, directing industrial site redevelopment in a compatible manner, and placing the highest density residential along commercial corridors and near proposed transit stations.
Midtown Minneapolis Land Use and Development Plan (2005)	Lake Street between Blaisdell Ave and 11th Avenue	Land use guidance included two high intensity mixed use nodes at the I-35W interchange and the Chicago-Midtown Exchange district, with lower intensity development in the area between the two. Generally, the area was planned for transit-oriented, mixed use urban development.
Nicollet Avenue: The Revitalization of a Minneapolis Main Street (2000)	Nicollet Avenue from Grant Street to 62nd Street	The plan provides recommendations for redeveloping and investing in commercial nodes, promoting good urban design and pedestrian-friendly scale, and mitigating traffic impacts along Nicollet Avenue. Primarily a corridor redevelopment strategy, land use guidance in this plan is fairly general.
Uptown Small Area Plan (2008)	The area between Bryant Avenue and East Calhoun Parkway, 28th Street and 31st Street	A land use and development plan for the Uptown area that prioritizes protecting established neighborhoods, values well designed density, celebrates Uptown's primary amenities, prioritizes streets for social interaction and urban activity, and accepts Uptown's dual role as regional attraction and local community.

Source: **Minneapolis Plan for Sustainable Growth**

2.10.4 Conclusions

Generally, planned land use and local plans in the Midtown Corridor is conducive to transit use and transit oriented development, as well as increased density. The *Minneapolis Plan* calls for Mixed Use along Lake Street throughout the entirety of the Midtown Corridor, with more intensive development at Hennepin, Lyndale, Nicollet, Chicago, and Hiawatha Avenues. This intensive development is surrounded by areas designated Urban Neighborhood, which for the purposes of this analysis is treated equally across densities, but in practice incorporates a range of densities with the highest densities surrounding nodes such as the ones named above. Overall, because the three alternatives are located within just one or two blocks, the analysis of nearby land uses reveals few differences between the land use qualities of each alternative.

2.11 Access to Affordable Housing

2.11.1 Overview

Supporting a mix of housing choices, including affordable housing, is an objective identified in the project's purpose and need. Also, affordable housing reporting was introduced as a required element of the Existing Land Use and Economic Development categories within MAP-21 legislation, signed into law in July 2012. The FTA chose to incorporate this criterion into MAP-21 requirements, because "one measure of the readiness of a community to accept a new transit investment and avoid significant gentrification that can occur over time is the presence of 'legally binding affordability restricted' units."[9] A "legally binding affordability restriction" on housing is defined by the FTA as "…a lien, deed of trust, or other legal instrument attached to a property and/or housing structure that restricts the cost of housing units to be affordable to households at specified income levels for a defined period of time and requires that households at these income levels occupy these units."[10]

This analysis follows FTA guidance and measures the relative amount of access provided to affordable units by the proposed alternatives by comparing the proportion of legally binding affordability restricted housing units served by the project alternatives to the proportion of legally binding affordability restricted housing units within Hennepin County.

2.11.2 Data Sources and Methodology

Under FTA's MAP-21 guidance, projects are to compare "…the proportion of existing 'legally binding affordability restricted' housing within ½ mile of station areas to the proportion of 'legally binding affordability restricted housing' in the counties through which the project travels through."[11] The FTA then rates the compared proportions based on the break points shown in Table 16. For example, an alternative with a proportion two and half times larger than the proportion of affordable units found in the project's county are considered to provide access to a comparatively higher proportion of affordable

[9] Federal Transit Administration New and Small Starts Evaluation and Rating Process, Final Policy Guidance, August 2013, pg 29.
[10] Federal Transit Administration New and Small Starts Evaluation and Rating Process, Final Policy Guidance, August 2013, pg 29.
[11] Federal Transit Administration New and Small Starts Evaluation and Rating Process, Final Policy Guidance, August 2013, pg 29.

housing units. FTA directs project sponsors to analyze those legally binding affordability restricted units that are restricted to renters with incomes below 60 percent of the area median income (AMI) and/or owners with incomes below the AMI.

Table 16: FTA Affordable Housing Rating and Breakpoint

Rating	Proportion of legally binding affordability restricted housing in the project corridor compared to the proportion in the counties through which the project travels*
High	≥ 2.50
Medium-High	2.25 – 2.59
Medium	1.50 – 2.24
Medium-Low	1.10 – 1.49
Low	< 1.10

The analysis uses data collected from HousingLink, a Twin Cities non-profit that acts as an affordable housing information clearinghouse, to make these calculations. HousingLink maintains a comprehensive database of all publicly-financed rental housing locations in the seven-county Twin Cities Metropolitan Area with existing affordability restriction (i.e. "legally-binding affordable housing). Each year, HousingLink contacts four primary funders of affordable housing, US Department of Housing & Urban Affairs (HUD), Minnesota Housing Finance Agency (MN Housing), Minneapolis' Community Planning and Economic Development department (CPED), and the US Department of Agriculture (USDA), to obtain current lists of in-force affordable properties. Those lists are analyzed and compiled to create "non-duplicated" lists of properties with total units by rent restriction level by AMI, and addresses associated with those properties. An additional 28 community developers (counties, cities, other governmental agencies, and nonprofits) are then contacted to see if they have any changes or additions to the data. When all community feedback has been vetted and incorporated as appropriate, the addresses are mapped using computer software.

The project used the following proportions to calculate the proportion of affordable housing for the build alternatives:

$$\text{Affordable Housing Proportion for Build Alternatives} = \frac{\textit{Number of units restricted to <60\% AMI within ½ mile of station locations}}{\textit{Total housing units within ½ mile of station locations}}$$

$$\text{Affordable Housing Proportion for Hennepin County} = \frac{\textit{Number of units restricted to <60\% AMI in Hennepin County}}{\textit{Total housing units in Hennepin County}}$$

Calculating Total Housing Units

Total housing units for all three alternatives and for Hennepin County were calculated using ACS 2007-2011 data at the block group level, as directed by FTA guidance. Because the block groups within the study area cover relatively large areas, the total number of housing units for each alternative, and for Hennepin County, was calculated based on the proportional share of the block group covered by the ½ mile station area buffers, or the Hennepin County limits.

- Example Total Housing Unit Calculation: Assume a block group with 10 housing units. Fifty-percent of the block group area is within a ½ mile station area buffer. Therefore, the total housing units calculated for this block group is five units.

2.11.3 Comparative Analysis

The results of the affordable housing analysis for the three build alternatives are shown in Table 17. All three alternatives have medium proportions of affordable housing units in comparison to the proportion of affordable housing units in Hennepin County. The three alternative all have 1.6 to 1.7 times as many affordable units in comparison to the proportion of affordable units in the county.

Table 17: Affordable Housing Analysis Results

	Income Restricted Affordable Units	Total Housing Units	Proportion of Income Restricted Affordable Units	Proportion of Income Restricted Units Compared to Hennepin County	Rating
Hennepin County	10,126	508,587	0.02	_	_
Enhanced Bus on Lake Street	785	24,012	0.03	1.6	Medium
Double/Single-Track Rail in the Greenway	823	23,964	0.03	1.7	Medium
Dual Alternative	829	26,505	0.03	1.6	Medium

2.11.4 Conclusions

Based on the FTA rating system, all three project alternatives receive a rating of "Medium," meaning they serve a moderately higher proportion of affordable housing units than the proportion of affordable housing units in Hennepin County as a whole.

2.12 Supportive Policy for Affordable Housing

2.12.1 Overview

The section reviews existing policies and documentation to assess the level of support for affordable housing development by alternative. This review aligns with the FTA's New Starts Guidance (August 2013) which calls for a qualitative examination of existing local plans and policies for tools which maintain or increase the share of affordable housing in the project corridor.

2.12.2 Data Sources and Methodology

The following local plans, policies, and related documentation were reviewed:

Minneapolis Plan for Sustainable Growth/Minneapolis Affordable Housing Resolution

The Minneapolis Plan for Sustainable Growth, updated in 2009, in coordination with the City's 2004 Affordable Housing Resolution, addresses a variety of housing diversity and affordability goals essential for the City's future growth and development. Within the Plan and the Affordable Housing Resolution, the following goals are explicitly stated:

- *Goal 4.10: Minneapolis will increase its housing that is affordable to low and moderate income households.*
- *Goal 4.11: Minneapolis will improve the availability of housing options for its residents.*
- *Goal 4.17: Minneapolis will promote housing development that supports a variety of housing types throughout the city.*

Minneapolis Housing Action Plan (HAP)

The City of Minneapolis adopted the *Housing Action Plan* (2010) as a requirement for continued participation in the Metropolitan Council's Livable Communities Act Local Housing Incentives Account. The adoption agreement specifies that the City has agreed to the goal of 4,200 to 9,300 units of affordable housing production over the period of 2011 to 2020. Additionally, within the HAP, multiple goals indirectly support affordable housing production in the corridors, including:

"Goal 6: The City establishes a goal of at least 50 percent of new City-produced affordable housing to be located in areas of the city where it is presently lacking."

Minneapolis Municipal Zoning Code

The Minneapolis Municipal Zoning Code includes density bonuses for affordable housing, which provide incentives for developers to increase a project's density where a project furthers the City's objectives for affordable housing. Specifically, the Code states:

An automatic 20% increase in the allowable floor area ration (FAR) and the allowable number of residential units will be provided when at least twenty (20) percent of the dwelling units are affordable to households whose income does not exceed fifty (50) percent of the metropolitan median household income, as determined by the U.S. Department of Housing and Urban Development. Housing must remain affordable continuously for a period of not less than fifteen (15) years to qualify as affordable housing.

As it applies to the project corridors, density bonuses apply to commercial districts and residential districts.

Hennepin County Affordable Housing Incentive Program

As part of the Hennepin County Affordable Housing Incentive Program, the Hennepin County Board approved funds in 2013 to support the construction of the planned Greenway Heights Family Housing project. This housing development will be located on the northeast corner of Bloomington Avenue South and the Midtown Greenway, and is proposed to include 42 affordable housing units with rents adjusted for residents at or below 50 percent of the AMI.

2.12.3 Comparative Analysis

The existing local plans, policies, and tools that support affordable housing all apply equally to the three build alternatives, because the policies all apply to general instead of specific areas. The one exception, the planned Greenway Heights affordable housing project falls within the analysis extent of all three alternatives.

2.13 Right-of-way

2.13.1 Overview

Each of the alternatives being considered for the Midtown Corridor will likely require a certain amount of additional land beyond that already dedicated to transportation purposes.

2.13.2 Regulatory Framework

Public agencies are required by law to compensate land owners for property acquired for public uses. Any potential acquisition of property due to the Midtown Corridor Project will be conducted in accordance with the Uniform Relocation and Real Property Acquisition Act of 1970, as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987 and 49 Code of Federal Regulations, Part 24, and effective 1989 (revised January 2005).

2.13.3 Data Sources and Methodology

Right-of-way acquisitions can be divided into two categories: partial takes and full takes. A partial take occurs when a public agency acquires part of a property but the original use of the property remains intact. For example, a partial take may occur when a strip of land is acquired from the front of a residential lot for a transitway project, but the residence remains intact and undisturbed. A full take, on the other hand, occurs when the entire property is taken for public use.

Aerial photography, parcel data, and concept drawings will be used to estimate the magnitude of full and partial takes required by each alternative. Right-of-way acquisitions will be counted and summed for each alternative.

2.13.4 Comparative Analysis

The existing right-of-way for enhanced bus alternative on Lake Street and the double/single-track rail in the Greenway alternative within the Midtown Greenway are different from each other. The existing right-of-way on Lake Street is 80-feet wide for the length of the corridor and generally consists of multiple travel lanes, parking, and sidewalk on either side of the right-of-way. The right-of-way within the Midtown Greenway varies in width from 80 to 120-feet for the length of the corridor and generally consists of a trail along the north side, and an empty freight rail corridor along the south side. The Midtown Greenway property was purchased by HCRRA in 1993 for the purpose of constructing light rail transit (LRT) or other transportation systems and associated facilities.

The enhanced bus alternative on Lake Street includes construction of station areas that are located within the existing public roadway right-of-way. No right-of-way acquisition is anticipated.

The double/single-track rail in the Greenway alternative will require some right-of-way acquisition at the following locations to accommodate the proposed infrastructure:

- West Lake Station – Construction of a platform adjacent to the Green Line station at West Lake Street will require shifting Chowen Avenue to accommodate the platform and existing trail infrastructure. This will impact two parcels that are directly adjacent to Chowen Avenue.

- Nicollet Ave Station – The proposed vertical circulation building that is located on the southwest corner of the Greenway and Nicollet Ave Bridge does not fit within the Greenway right-of-way and partially encroaches on the adjacent private property.
- 21st Ave S & E 28th St – A parcel owned by the Soo Line Railroad, which is undeveloped at this time, would need to be acquired to accommodate the proposed alignment.
- Northeast corner of Hi-Lake Shopping center – To accommodate the proposed track adjacent to the METRO Blue Line LRT at the eastern end of the alignment (at the northeast corner of the Hi-Lake Shopping Center) a small portion of a parcel in this location may need to be acquired. Also, the proposed track in this area may affect rear door access to the Hi-Lake Shopping Center.
- Operations & Maintenance (O&M) Facility – An O&M facility is expected to be located outside of the existing Greenway right-of-way. A specific location is not identified at this time, but it is assumed that it will require approximately a three acre parcel.

These impacts are associated with both the double/single-track rail and dual alternatives.

It should also be noted that in both the double/single-track and dual alternatives it is possible that existing access to the northeast corner of the Hi-Lake Shopping Center (located at the very eastern end of the alignment) may be affected. However, there right-of-way acquisition in this specific area is not expected.

As summary of potential right-of-way impacts and full and partial takes by alternative is provided in Table 18.

Table 18: Right-of-Way

Alternative	Potentially Affected ROW Area (acres)	Full & Partial Takes
Enhanced Bus Alternative	None identified	None identified
Double/Single Track Rail Alternative	3.6 acres	2 Full, 4 Partial
Dual Alternative	3.6 acres	2 Full, 4 Partial

2.13.5 Conclusions

Each of the alternatives is located within public right-of-way and would generally have limited right-of-way impacts. The double/single-track rail and dual alternatives require additional features, such as vertical circulation, trail modifications, roadway reconstruction, as well as an O&M facility, which has a greater right-of-way impact than the enhanced bus alternative. All alternatives will likely require temporary easements during construction.

3.0 Environmental and Community Impacts Assessment Summary

Table 19 summarizes the environmental and community impacts of each alternative based on the analysis provided above.

Table 19: Environmental and Community Impacts Assessment Summary

Issue Area	Enhanced Bus on Lake Street Alternative	Double/Single-Track Rail in the Greenway Alternative	Dual Alternative
Wetlands and Public Waters (acres of potential impacts to NWI and PWI-mapped wetlands)	1.1 acres	0.9 acres	1.9 acres
Parks, Trails, and Recreation Areas (likelihood of potential Section 4(f) use of park and recreational properties)	Low	Low	Low
Flood Plains and Shoreland Overlay Districts (acres of potentially affected shoreland overlay district area)	20.0 acres	23.2 acres	42.6 acres
Cultural and Historic Resources (likelihood for Section 106 adverse effects/Section 4(f) use of cultural and historic resources)	Medium	High	High
Hazardous Materials and Existing Contamination (likelihood for impacts to potentially contaminated properties)	Somewhat Likely	Likely	Likely
Threatened and Endangered Species (likelihood for impacts to threatened and endangered species)	Unlikely	Unlikely	Unlikely
Noise and Vibration (number of noise/vibration sensitive sites located within 500 feet of alignment)	8 Category 1 892 Category 2	6 Category 1 848 Category 2	10 Category 1 1,430 Category 2

Table 19: Environmental and Community Impacts Assessment Summary, *continued*

Issue Area	Enhanced Bus on Lake Street Alternative	Double/Single-Track Rail in the Greenway Alternative	Dual Alternative
Environmental Justice	EJ Populations Present	EJ Populations Present	EJ Populations Present
Air Quality (Reduction in daily auto VMT over no-build in VMT)	1,400	11,200	11,800
Consistency with Existing and Future Land Use and Support of Transit Oriented Development (TOD)	Consistent and Supportive	Consistent and Supportive	Consistent and Supportive
Access to Affordable Housing	Medium	Medium	Medium
Supportive Policy for Affordable Housing	Supportive	Supportive	Supportive
Right-of-Way Impacts	None	3.6 acres	3.6 acres

4.0 Enhanced Bus Extension

In response to stakeholder feedback, an enhanced bus extension was studied in conjunction with the dual alternative. The extension extends east of the Minnehaha Avenue station and into Saint Paul, as shown in Figure 16. For a more detailed discussion of the enhanced bus extension please see the *Detailed Definition of Alternative Report*.

This section reviews potential right-of-way impacts and changes in VMT under the dual alternative with the enhanced bus extension included.

4.1 Dual Alternative with Enhanced Bus Extension: Right-of-Way Impacts

Similar to the enhanced bus on Lake Street alternative, the enhanced bus extension includes construction of station areas that are located within the existing public roadway right-of-way. No right-of-way acquisition is anticipated to construct the extension. Therefore, the potentially affected right-of-way area remains at 3.5 acres, the same amount of acres as the dual alternative without the extension.

4.2 Dual Alternative with Enhanced Bus Extension: Change in VMT

With the enhanced bus extension included, the enhanced bus alignment is approximately 8.5 miles long. The longer corridor translates into higher potential changes in daily VMT over the no-build alternative. This analysis estimates that the dual alternative with the enhanced bus extension has the potential to decrease VMT in the corridor by 18,000 miles a day.

Figure 16: Dual Alternative with Enhanced Bus Extension