METRO
Gold Line

BUS RAPID TRANSIT PROJECT ENVIRONMENTAL ASSESSMENT

Environmental Assessment Appendix A Technical Report

Indirect Effects and Cumulative Impacts

September 2019

CONTENTS

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
BMP	Best Management Practice
BRT	Bus Rapid Transit
CFR	Code of Federal Regulations
TOD	Transit-Oriented Development
Council	Metropolitan Council
EA	Environmental Assessment
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-	Interstate
MnDOT	Minnesota Department of Transportation
MnSHPO	Minnesota State Historic Preservation Office
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
PA	Programmatic Agreement
Project	METRO Gold Line Bus Rapid Transit Project
SDS	State Disposal System
USC	U.S. Code

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7. INDIRECT EFFECTS AND CUMULATIVE IMPACTS

This report was prepared in support of the METRO Gold Line Bus Rapid Transit (BRT) Project (Project) Environmental Assessment (EA). It provides results of the analysis conducted to determine the potential indirect effects and cumulative impacts of the Project for Build Alternative 1 and Build Alternative 2. It also addresses the Hazel Street Option and the Dedicated Guideway Option at Hadley Avenue and 4th Street design options for Alignment C of the Build Alternatives. The *Alternatives Technical Report* in **Appendix A** of this EA provides descriptions and illustrations of the Build Alternatives, and **Appendix B** includes the 15% Concept Plans on which the impact analysis was based.

Indirect effects are actions a project itself does not undertake but that the project implementation may drive in part or in full. Examples of indirect effects include changes in land use patterns and new developments around stations, population and employment growth and/or redistribution, or other changes to the natural and built environment. These changes usually happen after a project is constructed and operating. In contrast, direct effects are "caused by the action and occur at the same time and place."[1]

Cumulative impacts result from "*the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions.*"[1] A cumulative impact analysis provides context: It considers the positive and negative impacts of a project in combination with other actions by other agencies in a similar timeframe. Cumulative impacts can result from individually minor but collectively significant actions taking place over time. The purpose of the cumulative impact analysis for the Project is to fully understand the entire range of its consequences in the context of the federal decisions related to it.[2]

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[1] *"Terminology" Title 40, CFR, Part 1508.7. 2019 edition. Available at https://www.ecfr.gov/cgi-bin/text-idx?SID=0bae51842cb92a036e010648f7fbcf4e&mc=true&node=pt40.37.1508&rgn=div5#se40.37.1508_11. Accessed April 2019.*

[2] *Council on Environmental Quality.* Considering Cumulative Effects under the National Environmental Policy Act. *1997. Available at: https://ceq.doe.gov/publications/cumulative_effects.html. Accessed November 2018.*

7.1. Regulatory Context and Methodology

7.1.1. Regulatory Context

The Federal Transit Administration (FTA) and Metropolitan Council (Council) assessed the Project's indirect effects and cumulative impacts according to the requirements of the National Environmental Policy Act (NEPA)[3,4] and the following federal guidance documents:

- *Considering Cumulative Effects Under the National Environmental Policy Act*[5]
- *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*[6]
- "Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process"[7]
- "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis"[8]
- *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects*[9]

Federal Highway Administration (FHWA) guidance specifies that "*the document needs to present a reasonably complete and accurate picture of the probable consequences involved in implementation of a proposed project, commensurate with the potential for adverse impacts ...*"[7] The FHWA guidance further specifies that the analysis must be of sufficient detail to be "*useful to the decision-maker in deciding whether, or how, to alter the program to lessen cumulative impacts.*"[7] The analysis and discussion in this section was prepared with this guidance in mind.

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[3] *The National Environmental Policy Plan Act of 1969, as amended. ("The Public Health and Welfare," Title 42, USC, Sec. 4321 et seq. (1969)). Available at: https://www.gpo.gov/fdsys/pkg/USCODE-2011-title42/pdf/USCODE-2011-title42-chap55-sec4321.pdf. Accessed November 2018.*

[4] *"Council on Environmental Quality," Title 40, CFR, Chap. V. 2011 edition. Available at: https://www.ecfr.gov/cgi-bin/text-idx?SID=30655823cf5f0dcb1c5ee59d01883b89&mc=true&tpl=/ecfrbrowse/Title40/40chapterV.tpl. Accessed November 2018.*

[5] *Council on Environmental Quality.* Considering Cumulative Effects Under the National Environmental Policy Act. *1997. Available at: https://ceq.doe.gov/publications/cumulative_effects.html. Accessed November 2018.*

[6] *Office of Federal Activities, U.S. Environmental Protection Agency.* Consideration of Cumulative Impacts in EPA Review of NEPA Documents*. May 1999. Available at: http://www2.epa.gov/sites/production/files/2014-08/documents/cumulative.pdf. Accessed November 2018.*

[7] *Federal Highway Administration. "Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process". 2003. Available at: https://www.environment.fhwa.dot.gov/guidebook/qaimpact.asp. Accessed November 2018.*

[8] *Council on Environmental Quality. "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis". 2005. Available at: https://ceq.doe.gov/docs/ceq-regulations-and-guidance/regs/Guidance_on_CE.pdf. Accessed November 2018.*

[9] *National Cooperative Highway Research Program.* Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*. Report 466. 2002. Available at: https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_466.pdf. Accessed November 2018.*

7.1.2. Methodology

7.1.2.1. Indirect Effects

ANALYSIS METHOD

Given the urban and suburban nature of the Project study area, the indirect effects assessment focuses on changes in land use and the intensity of development that could occur around the Project, and the impacts that may follow from these changes. Although the Project itself does not propose residential, commercial or industrial development, high-quality transit investment can be a catalyst for development, particularly in areas surrounding stations, which is called transit-oriented development (TOD). Generally, new development is positive, so while the analysis identifies indirect impacts from new development, the new development itself may be desirable.

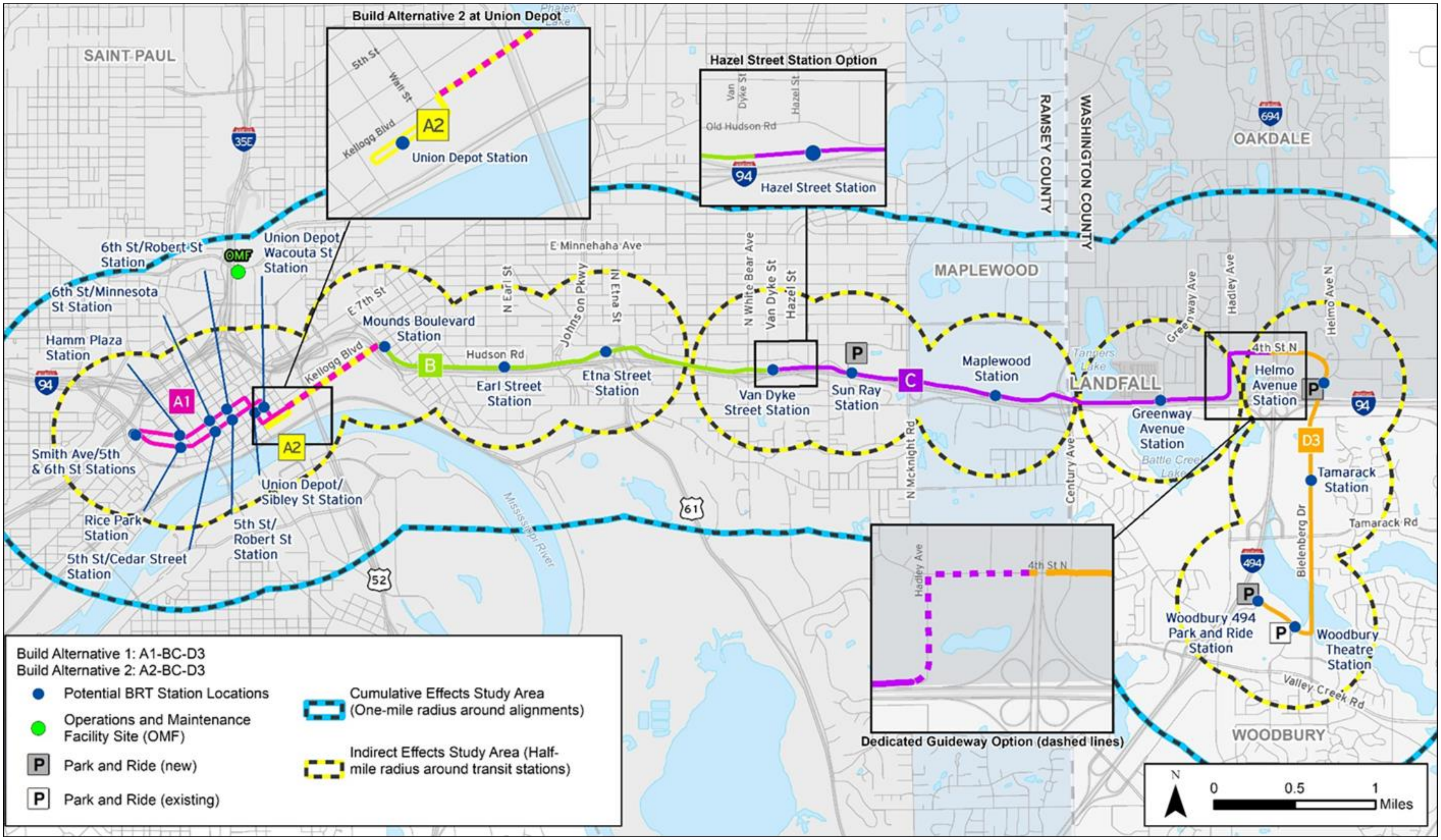
The analysis identified specific potential indirect impacts for each resource (see **Appendix A**) qualitatively using the following methodology:

- **Existing Conditions and Trends:** The Council reviewed the existing conditions of each potentially affected resource, focusing on the status, viability and historical context of each to determine its relative vulnerability to indirect impacts. The existing conditions analysis also provided an understanding of the condition of the resources over a broader geographic area, which is critical to assessing the potential for indirect impacts that both space and time might separate. The existing conditions analysis methods used were quantitative and qualitative, depending on the approach in each relevant resource technical report.
- **Project Impacts:** The Council reviewed the Project-related impacts to each resource. To anticipate how the Project might result in indirect impacts, the analysis assumed the Project had been implemented. The Council used its understanding of the Project-related impacts combined with existing conditions and past trends to determine the state of each resource and its likely vulnerability to secondary impacts.
- **Indirect Impacts:** The indirect effects analysis used a qualitative understanding of the Project-related impacts to the built and natural environment likely to result from development, drawing on analyses for similar projects locally and elsewhere. The Council reviewed each resource to assess potential interactions among physical, spatial and ecological (system) elements. Descriptions of potential impacts are by necessity qualitative; therefore, the review emphasized the comprehensiveness of the Council's analysis of potentially affected resources and the estimated potential magnitude of the impacts.

STUDY AREA

The analysis for indirect effects focuses on a ½-mile radius around each of the proposed transit stations, as **Figure 7.1-1** shows. A 2002 National Cooperative Highway Research Program report supports this approach, stating: "*development effects are most often found up to one-half mile around a transit station*."[9]

FIGURE 7.1-1: STUDY AREA FOR INDIRECT EFFECTS AND CUMULATIVE IMPACTS



The Project's indirect effects such as the development it induces most likely would occur in the areas around stations because the new service would improve access to those locations. Project-induced new development is less likely to occur beyond ½-mile; however, the Project could indirectly impact the area beyond ½-mile from the stations. For example, new development near a station could produce impacts to a natural resource that follow the resource itself for a given distance rather than keep to the ½-mile boundary relevant to the built environment. To address this, the Council analyzed potential impacts to natural resources such as wetlands, waterways, floodplains and habitats according to the resources' boundaries.

7.1.2.2. Cumulative Impacts

Consistent with regulatory guidance for a cumulative impact analysis, the Council considered the following past, present and reasonably foreseeable development actions:

- **Past:** The "Affected Environment" section within each technical report in **Appendix A** summarizes the past actions within each resource study area and the current state of the resource
- **Present:** Present actions are just completed or under construction by local, state or federal agencies, or private development projects known to local jurisdictions
- **Future:** Reasonably foreseeable future actions (see **Section 7.2**) have reached some local, state or federal government approval (including private development approvals) and could be constructed any time through the year 2040, which is the analysis horizon for Project-related impacts. The reasonably foreseeable actions are not speculative.

ANALYSIS METHOD

The cumulative impact analysis used the following specific methods:

- **Existing conditions and trends:** Reviewed and analyzed the existing condition of each potentially affected resource as described in the technical reports in **Appendix A**. The assessment of existing conditions, by definition, includes the impact of past actions on the condition of the resource. Thus, the review focused on understanding the status, viability and historical context of each resource to determine the relative vulnerability of the resource to cumulative impacts. The Council used quantitative and qualitative analysis methods depending on the relevant approach the technical reports outlined.
- **Project impacts:** Reviewed and analyzed the direct and indirect impacts from the Project on each resource, as described in the Environmental Consequence section within each technical report and the indirect effects analysis in this report. To anticipate how the Project would contribute to cumulative impacts, the review focused on the state of the resource if the Project were implemented. The Council used its understanding of Project-related impacts combined with existing conditions and past trends to determine the state of each resource and its likely vulnerability to impacts from other present or reasonably foreseeable future actions.
- **Impacts of other actions:** Identified other present actions and reasonably foreseeable future actions and their potential impacts to each resource. **Section 7.2** discusses these actions and the process used to identify them. The Council used a checklist to evaluate each resource in relation to each action. For example, many reasonably foreseeable future actions are residential or commercial development projects; understanding the status of the existing resources (provided by the existing conditions analysis) and the impacts typical of land development allowed the Council to describe qualitatively the resources that the Project likely would affect. The result is a listing of each resource that the Council anticipate these actions potentially would affect.

- **Cumulative impacts:** Identify potential cumulative impacts to each resource by considering the combination of existing conditions and trends, Project impacts, and the impacts of other present actions and other reasonably foreseeable future actions. As with the other steps, the Council used a checklist to account for all potentially affected resources. The Council used professional judgment to reach conclusions about the potential magnitude of cumulative impacts, factoring the frequency, duration, magnitude and extent of potential past, present and future impacts. The results of the analysis (see **Section 7.4.2**) generally are qualitative, reflecting the overall lack of available data about other present and future actions. However, the lack of quantification does not prevent the analysis from considering potential magnitude of the impact and does not limit the analysis' value or thoroughness.

STUDY AREA

The study area for the analysis of cumulative impacts is an area of 1 mile on each side of the proposed Build Alternatives, as **Figure 7.1-1** shows. The Council selected this area based on guidance documents and the study areas the EA used; however, the boundary varies by the resource the analysis is evaluating. For example, air, water and habitat impacts could be greater depending on the location of the resource and the degree of impact. Thus, the analysis considered the potential degree of spatial impact for each resource within this basic framework.

7.2. Reasonably Foreseeable Future Actions

Table 7.2-1 lists state, local and private projects currently anticipated, planned and funded roadway project and other infrastructure projects generally within the study area. The Council identified these actions through coordination with local agency partners serving on the Project's Technical Advisory Committee, which included members from the following municipalities, agencies and governmental bodies:

- Cities of Saint Paul, Maplewood, Landfall, Oakdale and Woodbury
- Ramsey and Washington counties
- Minnesota Department of Transportation (MnDOT)
- Council
- Metro Transit

The Council also used web-based research, and local and regional transportation, land use and development plans to develop **Table 7.2-1**. The analysis identifies reasonably foreseeable future actions through the year 2040, the planning horizon for the Project.

None of these future actions are the direct result of the Project, and their implementation is not dependent on whether the Council implements the Project. These actions are reasonably foreseeable because they are likely to be funded, approved or part of an officially adopted planning document.

Future station-area planning and other initiatives may identify other actions the identified reasonably foreseeable future actions do not include at this time.

TABLE 7.2-1: REASONABLY FORESEEABLE FUTURE ACTIONS IN THE CORRIDOR

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Seven Corners Gateway	Mixed use	TBD	Master planned mixed use development of the City-owned site north of Xcel Energy Center, bounded by Smith Avenue, Kellogg Boulevard, 7th Street West and 5th Street West	A1	Transportation, land use, business, visual	Saint Paul
Saint Paul Opportunity Center and Dorothy Day Residence (Phase 2)	Residential	2019	Construction of 193 single-room occupancy rental units at 183 Old 6th Street West	A1	Visual, community facility	Saint Paul
Robert Piram Regional Trail	Pedestrian and bicycle	2019-2020	The new trail segment will connect the Harriet Island Regional Park and its trail system to Kaposia Landing Park in South Saint Paul	A1	Transportation, land use, right-of-way, community facility	Saint Paul
Addition of MnPASS lanes on Interstate 94 (I-94) between downtown Minneapolis and downtown Saint Paul	Roadway	2022	Design under study between MN 55 and MN 61	A1	Transportation, air quality, land use, right-of-way, stormwater, noise, business	Saint Paul
Pedro Park	Park	TBD	Planned and funded park at the southwest corner of 10th Street E and Robert Street in downtown Saint Paul	A1	Community facility	Saint Paul
10th Street City Center Bikeway	Bicycle	2022-2023	Component of the Capital City Bikeway	A1	Transportation, community facility	Saint Paul
West Side Flats Future Phase	Residential	2019	A master planned project consisting of multiple multifamily buildings. One building is built, while a future phase will be constructed in 2019	A1	Land use, stormwater, transportation, visual	Saint Paul

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Fillmore West	Residential	2022	Five-building apartment project	A1	Land use, stormwater, transportation, business, visual	Saint Paul
Printer's Row II	Residential	2019	Construction of 37 market rate condominium units at Temperance Street and 9th Street	A1	Land use, visual	Saint Paul
Ramsey County Riverfront Properties	Residential and commercial	TBD	Redevelopment of the vacant, 4-acre, riverfront site at Kellogg/Wabasha that was formerly the Adult Detention Center and West buildings	A1	Transportation, land use, community facility, visual, floodplain, surface waters, stormwater	Saint Paul
Robert Street mill and overlay from 12th Street to E Annapolis Street	Roadway	2022	Mill and overlay of street improvements for compliance with the Americans with Disabilities Act (ADA), drainage improvements	A1	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
Seal surface of Robert Street bridge over Mississippi River	Roadway	2022	Seal bridge surface and repair railings with drainage improvements	A1	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
Replace sidewalks along I-94 corridor from Trunk Highway (TH) 280 to Western Avenue	Pedestrian	2020	Replace sidewalks and make ADA improvements	A1	Transportation, land use, right-of-way, business, visual	Saint Paul

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Kellogg Boulevard – Capital City Bikeway Phase I	Bicycle	TBD	Narrow the roadway to create space for the bikeway on the north side of Kellogg Boulevard	A1/A2	Transportation, community facility	Saint Paul
Rush Line BRT	Transit	2026	14-mile transit route between Union Depot and downtown White Bear Lake	A1/A2	Transportation, land use, business, environmental justice, stormwater, visual	Saint Paul, Maplewood
Kelly's Bar Redevelopment	Mixed use	2019	7-story apartment complex with ground-floor retail	A1/A2	Land use, stormwater, business, visual	Saint Paul
Kellogg Boulevard/ 3rd Street Bridge reconstruction	Roadway	2022+	Bridge reconstruction	A1/A2	Transportation, right-of-way, visual, business, floodplain, stormwater	Saint Paul
Union Pacific/BNSF Grade Separation	Rail	2021-2022	Grade separation of Union Pacific Railroad and BNSF Railway traffic between Westminster and 7th Street	A1/A2	Transportation, right-of-way, visual, noise	Saint Paul
TH 5 over BNSF Railroad east of Downtown Saint Paul	Roadway	2021	Rehab bridge with ADA improvements	A2	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
TH 52 mill and overlay from Mississippi River to I-494	Roadway	2021	Mill and overlay of street with ADA improvements, drainage improvements	A2	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
Indian Mounds Regional Park Trail	Pedestrian and bicycle	2019	Commercial Street to TH 61 in Saint Paul, construct Indian Mounds Regional Park Trail	A1/A2, B	Transportation, community facility, stormwater	Saint Paul
East Metro Yards Improvement	Rail	2022	Improvements to the East Metro Yards (Union Depot in Saint Paul to I-494) including new mainline segments, switch upgrades, yard shifts and potential flyover or duck under tracks	A1/A2, B	Transportation, noise, visual	Saint Paul
Concrete pavement repair on I-94 from Western Avenue to Mounds Blvd	Roadway	2022	Concrete pavement repairs with drainage improvements	A1/A2, B	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
TH 5 mill and overlay from Munster Avenue to Mounds Boulevard	Roadway	2024	Mill and overlay of street with ADA improvements, drainage improvements	A1/A2, B	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul
TH 61 mill and overlay from TH 5 to Roselawn Avenue	Roadway	2023	Mill and overlay of street with ADA improvements, drainage improvements	A2, B	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Bruce Vento Pedestrian and Bicycle Bridge	Pedestrian and bicycle	TBD	Connect Bruce Vento Trail and Sam Morgan Trail	B	Transportation, community facility, visual	Saint Paul
Fish Hatchery Trail Reconstruction	Pedestrian and bicycle	TBD	Stabilize the embankment and reconstruct the full 1.4-mile length of the trail	B	Transportation, community facility	Saint Paul
Better Bus Stop Program	Transit	Ongoing	Bus stop and shelter improvements at several locations in Saint Paul's east side neighborhoods, replacing aged shelters, and enhancing priority downtown bus stops	B	Transportation, right-of-way, visual	Saint Paul
Margaret Street Bicycle Boulevard and McKnight Road Trail	Bicycle	2019	Construction of bicycle boulevard on Margaret Street between McKnight Road and Forest Avenue and on McKnight Road between Minnehaha and Burns avenues	B	Transportation, community facility	Saint Paul
Johnson Parkway Regional Trail	Bicycle	2020	An off-street walking and biking trail along the eastern boulevard of Johnson Parkway between Burns Avenue and Phalen Boulevard. Part of the St. Paul Grand Round	B	Transportation, stormwater, community facility	Saint Paul
TH 61 mill and overlay from I-94 to Carver Avenue	Roadway	2026	Mill and overlay of street with ADA improvements, drainage improvements	B	Transportation, land use, right-of-way, storm water, noise, business, visual	Saint Paul

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
TH 120 mill and overlay from north of I-94 to TH 244	Roadway	2023	Mill and overlay of street with ADA improvements, drainage improvements	C	Transportation, land use, right-of-way, stormwater, noise, business, visual	Saint Paul, Maplewood
Farrell/Ferndale Area Street Improvements	Roadway	2018-2019	Full street reconstruction of Margaret Avenue, 5th Avenue, Fremont Avenue, Farrell Street, Ferndale Street, Conway Service Drive; will also construct new drainage, trails and sidewalks	C	Transportation, right-of-way, stormwater, visual	Maplewood
Dennis/ McClelland Area Street Improvements	Roadway	2020	Full street reconstruction of Sterling Street, James Drive, McClelland Street, Ferndale Street, Dennis Lane, O'Day Street, Mayer Lane, Farrell Street and Mayhill Road; will also construct new drainage, trails and sidewalks	C	Transportation, right-of-way, stormwater, visual	Maplewood
TH 5 mill and overlay from TH 61 to TH 120	Roadway	2021	Mill and overlay of street with ADA improvements, drainage improvements	C	Transportation, land use, right-of-way, stormwater, noise, business, visual	Landfall, Maplewood
Strip Mall Redevelopment	Commercial	TBD	Redevelopment of property at 10th Street and MN120	C	Business, land use, visual	Oakdale
Tanners Lake Redevelopment	Residential and mixed use	TBD	3-acre site west of Tanners Lake	C	Transportation, land use, visual, business, floodplain, surface waters, stormwater, visual	Oakdale

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
I-694 concrete pavement repair from TH 61 to CSAH 10	Roadway	2025	Mill and overlay of street with ADA improvements, drainage improvements	C	Transportation, land use, right-of-way, storm water, noise, business, visual	Oakdale
I-94 Unbonded Concrete Overlay from TH 120 to Wisconsin border	Roadway	2023	Mill and overlay of street with ADA improvements, drainage improvements	C, D3	Transportation, land use, right-of-way, stormwater, noise, business, visual	Maplewood, Landfall, Oakdale, and Woodbury
4th Street Bridge Widening	Roadway	2020-2025	Widening of the 4th Street bridge over I-694 to add pedestrian amenities; paved trail between Hadley and Helmo Avenues along 4th Street	C, D3	Transportation, right-of-way, business, visual	Oakdale
St. Paul STEM School (former Crosswinds Middle School)	School	2019	Transitioning from administrative office to middle school	C, D3	Land use, community facility	Woodbury
4th Street Reconstruction	Roadway	2022	Reconstruction of 4th Street between Hadley and Inwood avenues	D3	Transportation, right-of-way, visual, business impacts, stormwater	Oakdale
Helmo Station Area Plan	Mixed use	2020	Mixed use residential and commercial-retail, industrial office, park	D3	Transportation, land use, right-of-way, visual, floodplain, surface waters, stormwater	Oakdale

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
CSAH 13 (Inwood Avenue/Radio Drive) expansion and bicycle/ pedestrian bridge over I-94	Pedestrian and bicycle	2019	Construction of a new bicycle/pedestrian bridge over I-94 and conversion of existing sidewalk to general travel lane	D3	Transportation, right-of-way, community facility, visual, business, stormwater	Oakdale, Woodbury
I-94/I-494/I-694 interchange in Oakdale/Woodbury	Roadway	2020	Interchange reconstruction	D3	Transportation, right-of-way, stormwater, visual business, noise	Oakdale, Woodbury
Launch Properties (Parcel D) SW Corner of Tamarack/Bielenberg Development	Commercial, roadway	TBD	65,000 square feet, multiple buildings and a 120-room hotel; new two-lane roadway between Bielenberg Drive and Tamarack Road	D3	Transportation, land use, right-of-way, visual	Woodbury
Woodspring Suites at Weir Drive	Commercial	2018	Hotel development	D3	Biological environment, land use, stormwater, visual	Woodbury
The Glen at Valley Creek	Residential	2018-2019	42-unit senior living facility	D3	Biological environment, land use, stormwater, visual	Woodbury
Artis Senior Living	Residential	2018-2019	72-unit senior living facility	D3	Biological environment, land use, stormwater, visual	Woodbury

Action	Project Type	Estimated Construction	Description	Nearest Project Alignment	Potential Impacts	Location
Tamarack Road Extension	Roadway	TBD	New facility (two lanes) between Upper Afton Road and Weir Drive	D3	Transportation, right-of-way, stormwater, land use, business, visual	Woodbury
Tamarack Hills 2nd Addition Building E1	Commercial	2019	New 25,000-square-foot multitenant office	D3	Land use, business, visual	Woodbury
Leadership Academy Charter School (former Globe University site)	School	TBD	Potential expansion to school, play areas, etc.	D3	Land use, community facility, business, visual	Woodbury
MN Eye Outlot	Commercial	2019	40,000-square-foot medical office building	D3	Land use, business, visual	Woodbury
Upper Afton Road Century Ave to Weir Dr.	Roadway	2019	Utility and roadway rehabilitation	D3	Transportation, stormwater	Woodbury
I-94 at Radio Drive interchange turn lane and trail improvements	Roadway, pedestrian and bicycle	2022	Construct turn lane, trail and pedestrian improvements	D3	Transportation, land use, community facility, right-of-way, stormwater, noise, business, visual	Woodbury
Park-and-ride construction	Parking	2019	Construction of a 550-space surface parking lot at Manning Avenue and Hudson Boulevard	D3	Transportation, land use, right-of-way, visual	Lake Elmo
Metro Transit electric bus fleet plan	Transit	2022	Purchase up to 125 electric buses	All	Transportation, air quality	Regional

7.3. Potential Indirect Effects and Cumulative Impacts

This section describes by resource the potential indirect effects of the Project and other reasonably foreseeable actions. Anticipated new development near stations makes up most of the Project's indirect effects. New developments can change the transportation system, land use in the corridor cities and the surrounding natural environment. The indirect effects described herein focus on long-term rather than short-term issues because indirect effects tend to occur later, but they can still be reasonably foreseen.

This section also describes by resource the cumulative impacts associated with the Project. This includes a discussion of how the Project, in tandem with other infrastructure or development projects planned in the corridor, would affect the transportation system, land use and the natural environment. The cumulative impacts described herein focus on long-term impacts, rather than short-term impacts because cumulative impacts to the natural, cultural, and/or social environment are not just the result of the transportation Project, but also other collective actions and projects that occur in the study area over time.

7.3.1. Transportation

7.3.1.1. Indirect Effects

Potential indirect effects of the Project on transportation include effects on traffic, transit, pedestrian and bicycle facilities, parking and driveways. Ridership forecasts for the Project show an increase in new transit trips, which is associated with a decrease in automobile trips from people switching from automobile to transit for the first time. This would also help to minimize an increase in traffic volumes and congestion that could occur with Project-induced new development in the station areas. While the intent of implementing the Project is to attract new riders, it is an indirect effect in that people may choose to use the new facility after construction based on their transportation needs.

Implementation of the Project also would result in ridership and operational changes to the existing local bus system after the Project in operation redistributes trips. Trips via bicycle and pedestrian modes would increase with the increase in transit trips, as a certain number of transit riders would access the transit system by foot and/or bicycle. It is likely that demand for pedestrian and bicycle access to transit stations would increase as an indirect result of the Project. Potential indirect, short-term impacts during construction would include reduced pedestrian and bicycle volumes on existing facilities. In addition, Project-induced new development could increase the demand for on- and off-street parking spaces, driveways and new access points in the study area. The Council does not anticipate Project-related indirect effects to freight rail or aviation.

7.3.1.2. Cumulative Impacts

The analysis anticipates that continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, would generally increase demand for transportation as activity and development density increase. The decrease in automobile trips due to the Project would reduce the cumulative demand on the roadway system while increasing the demand on transit, bicycle and pedestrian facilities, compared to the No-Build Alternative. The analysis anticipates that future station-area planning activities would address needs for enhanced station-area pedestrian and bicycle connections in correlation with future development and redevelopment plans.

The construction of a 550-space park-and-ride facility at Manning Avenue and Hudson Boulevard would shift travel and facility use in the corridor. Two of the easternmost existing park-and-ride facilities, at Guardian Angel's Church and Woodbury Theatre, are operating at or near capacity. The analysis anticipates that a portion of users originating east of these facilities would shift to the newly constructed facility at Manning Avenue and Hudson

Boulevard, more evenly distributing park-and-ride use in the corridor. The Council does not anticipate Project-related cumulative impacts to freight rail or aviation.

7.3.1.3. Mitigation

Because the Project-related indirect effects and cumulative impacts are consistent with the comprehensive plans the communities developed, as well as county and regional plans, the Project would not require mitigation measures.

7.3.2. Land Use Plan Compatibility

7.3.2.1. Indirect Effects

Local jurisdiction zoning and comprehensive plans guide land use. A local planning process typically must approve changes in land use designation (for example, changing from single-family to multifamily residential or changing from residential to commercial).

A major public investment such as the Project often provides momentum and market changes that prompt new development or redevelopment. Assuming such development is consistent with existing approved land uses, this in and of itself does not constitute an indirect land use impact, as the designated land use would not change. However, such development pressures can lead to pressure to change zoning, typically in the form of increasing the intensity of allowed development. Thus, the Project could indirectly result in land use changes, particularly in station areas, in the form of intensified uses. In some of the station areas, local comprehensive plans already anticipated and approved such changes, and station-area planning activities may address other additional changes.

The following subsections summarize the station area plans for the Project and discusses the potential for the Project's increased transportation accessibility to prompt new development or redevelopment that could intensify or change land use patterns within the half-mile study area. The potential for the Project to alter land use patterns is influenced by several factors such as local land use and development policies, the availability of land (vacant/underutilized), market demand and other development constraints or opportunities. These factors are considered for each station area below to assess the potential for the Project to prompt new development or redevelopment and intensity land use.

SAINT PAUL STATION AREAS

Build Alternative 1 would include 10 BRT stations in downtown Saint Paul including a stop at Union Depot. The stations in the downtown area would improve transportation access to the existing employment uses and other high-density uses in downtown. The increased accessibility provided by the Project would support ongoing redevelopment and reuse of existing buildings in the downtown area and Union Depot. Due to the built-out nature of the downtown area, the Project is not expected to substantially intensify or alter the land use patterns of the areas surrounding the stations in downtown. Build Alternative 2 includes a stop at Union Depot and serves as the terminus for downtown Saint Paul.

In 2014, the City of Saint Paul began a Station Area Planning process to plan for land uses surrounding Gold Line stations in Saint Paul outside of the downtown area. The process aimed to develop Station Area Plans (Mounds Boulevard, Earl Street, Etna Street, Van Dyke Street and Sun Ray) to guide development and public realm improvements around the stations. The *Gold Line Station Area Plans were* completed and adopted by the City of Saint Paul in 2015 and amended in 2019. The 2019 amendment adjusted the White Bear Station area to more closely align with the planned Hazel Street Station location.

The Mounds Boulevard station area is the first station in Saint Paul that is outside the downtown area. This station is characterized by a residential neighborhood that is fully built out and part of the Dayton's Bluff Heritage Preservation District. According to the Mounds Boulevard Station Area Plan adopted by the City of Saint Paul, the area is expected to maintain its existing character and only minor intensity increases from infill townhomes and small commercial uses on vacant lots should be accommodated. Given the lack of available land and the focus of local development policies on neighborhood preservation, increased access to BRT service at the Mounds Boulevard Station is not likely to prompt new development or redevelopment that would substantially alter the existing land use character of the area.

The Earl Street Station area is in an established residential area with a commercial node. The Earl Street Station Area Plan adopted by the City of Saint Paul recommends the preservation of the residential neighborhood and the rehabilitation of the commercial node with mixed commercial and residential buildings that fit the context of the neighborhood. The increased accessibility from the Project may help facilitate the revitalization of the Earl Street commercial node. However, due to the built-out nature of the area and local development policies that are focused on preserving the area's existing development scale, the improved transportation access from the BRT station is not expected to substantially alter the land use patterns in the area.

The Etna Street Station area includes the TH 61/I-94 interchange, the Metro 94 business center, multifamily residential and single family uses. According to the Etna Street Station Area Plan adopted by the City of Saint Paul, the vacant parcel between Wilson Avenue and I-94 next to the BRT station is planned for a high-intensity transit-oriented development. The plan also identifies a similar character for the northwest quadrant of Wilson Avenue and Etna Street, which would require the redevelopment of the Metro 94 business center. Supportive local land use policies and the increased accessibility to this area from the Etna Street Station may help facilitate planned development that would increase the intensity of development in this area.

The Van Dyke Street Station area or the Hazel Street Option, just east of White Bear Avenue, is dominated by auto-oriented commercial uses on both sides of I-94 surrounding the White Bear Avenue interchange. The area also includes vacant lots, two- or three-story apartment buildings and single-family residential areas farther from the interchange. The plan for this area, known as the White Bear Station Area Plan adopted by the City of Saint Paul, states this area presents opportunities for transit-oriented development due to the several larger vacant lots and underutilized surface parking lots in the commercial areas, particularly to the north of I-94.

The Sun Ray Station is the last BRT station in Saint Paul. The station area is dominated by the suburban-style Sun Ray Shopping center and other retail uses. The Sun Ray Station Area Plan adopted by the City of Saint Paul recommends a high-intensity transit-oriented development on land mainly occupied by the shopping center on the north side of I-94. According to the marketing analysis completed for the station area plan, the commercial uses are viable and retail demand is high, while multi-family residential demand is medium. Thus, land use change and intensification of the existing commercial developments will likely need to be phased and driven by market demand.

MAPLEWOOD STATION AREA

The Project would include one BRT station in Maplewood adjacent to the 3M Campus. In addition to serving 3M, the Maplewood Station would provide transit service to the Lions Park Neighborhood north of I-94. The Draft Maplewood 2040 Comprehensive Plan notes the Project has the potential to increase interest in redevelopment in the surrounding neighborhoods. While the plan initially considered a change to the land use classification for the Lion's Park Neighborhood to Mixed Use Community Commercial, the plan was revised to instead include an action to develop a neighborhood master plan due to concerns about changing the predominately single-family residential neighborhood. The neighborhood plan is intended to better assess the extent of potential redevelopment and identify where it would be best to designate mixed use community. According to the "BRT-oriented development" (BRTOD) Plan for the Maplewood Station adopted by the city in January 2019, 3M has no current plans to redevelop portions of their campus for non-corporate use, but should redevelopment occur, there is market potential for apartments and townhomes, retail and hospitality uses as the area has existing access points along Hudson Road, McKnight Road and Geneva Avenue.

LANDFALL/OAKDALE STATION AREAS

The Project would include two BRT stations in Oakdale at the Greenway Avenue Station and the Helmo Avenue Station.

The Greenway Avenue Station is envisioned as a neighborhood station that serves Landfall and the existing single-family neighborhood north of I-94 in Oakdale.

The Helmo Avenue station area in Oakdale currently includes relatively low-intensity commercial, warehouse and light manufacturing uses to the west of Helmo Avenue and vacant land to the east of Helmo Avenue. The draft 2040 Oakdale Comprehensive Plan added a BRTOD land use designation for the area surrounding the Helmo Avenue Station. The city recently adopted the Helmo Station BRTOD Plan in 2018 that envisions transit-oriented development surrounding the Helmo Avenue Station and park-and-ride. The BRTOD plan modifies the land use of the station area from an office-industrial business campus to a new mixed-use neighborhood with multi-family, office and retail uses with open space and trail amenities. According to the market analysis completed for the station plan, the station area can support transit-oriented development with strong demand for housing and commercial in the area. Improved accessibility from the Helmo Avenue Station has the potential to facilitate new development and redevelopment within the station area due to available land, supportive local land use development policies and market demand.

WOODBURY STATION AREAS

The Project would include three BRT stations in Woodbury: Tamarack Road, Woodbury Theatre, and Woodbury 494 Park and Ride stations. The draft Woodbury 2040 Comprehensive plan supports economic development in the one-half mile area surrounding the proposed station areas in Woodbury at Tamarack and Woodbury Theatre, with a goal of identifying infrastructure investments to help support the desired outcomes.

The Tamarack station area has developable vacant land in the areas immediately adjacent to the station and within the Tamarack Hills development south of the station. Property near Tamarack Station is planned as Places to Work, with a focus on attracting larger employers that seek transit options for their employees. Due to the proximity to Bielenberg Drive, these areas have immediate access which could help to promote development. The increased accessibility provided by the Project would likely support development on the vacant parcels with existing access around the Tamarack Station.

The areas near the Woodbury Theatre and the Woodbury 494 Park-and-Ride Stations contain vacant parcels and surface parking lots that could potentially be developed. Property near the Woodbury Theatre and Woodbury 494 Park-and-Ride Station is primarily planned as Places to Shop, with a focus on commercial shopping areas. The existing access to Woodbury Village would provide access to potential development on vacant parcels and the surface lot. The increased accessibility provided by the Project would likely support development on the vacant parcels with existing access in the area surrounding the Woodbury Theatre Station and Woodbury 494 Park-and-Ride Station.

7.3.2.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, could cumulatively result in land use changes in the study area, most likely in the form of increased residential and commercial densities or other intensification of land use. These trends likely would continue until communities meet the demands for housing, retail, office and industrial needs.

7.3.2.3. Mitigation

Local governments along the corridor have the authority to regulate the use and development of land in their communities. The cities in the corridor have planned for future growth and development with their individual comprehensive plans and station-area plans and administer a range of other growth management tools to promote orderly development of their communities. As a result, potential indirect and cumulative impacts on land use would be compatible with these plans, the Project would not require mitigation measures.

7.3.3. Community Facilities, Character and Cohesion

7.3.3.1. Indirect Effects

Potential indirect effects would be that the Project could attract new businesses and residential developments to locate in the station areas, and that the Project would increase accessibility to the station areas. This new development and access could in turn result in increased use of and demand for community services (parks) and facilities (recreation centers and schools) and changes in community character (a mostly commercial area adds multifamily housing and becomes a mixed use district). In locations where comprehensive plans call for growth and mixed use development, such changes in character would be consistent with planned growth and development. Greater use of parks could in turn create strain on recreation facilities and increased maintenance levels.

7.3.3.2. Cumulative Impacts

Over time, continued development of transit and transportation facilities in the Project area, combined with future actions and the direct and indirect effects of the Project, would place increased demands on community services and facilities and could change community character. For locations where comprehensive plans call for growth and mixed use development, such changes in character would be consistent with planned growth and development. Without attentive management and adequate funding, funding from the Council and the local counties and municipalities, overuse or degradation of facilities or resources could result. Because cities and park jurisdictions typically forecast and plan for future population growth over time, their development plans would anticipate such potential impacts. These potential impacts are typically consistent with and governed by applicable land use plans and capital improvement plans to expand public infrastructure and services. The Council and the counties and municipalities in the corridor have plans to expand and enhance parks and open spaces in the area to meet the demand of population growth over time.

7.3.3.3. Mitigation

The types of indirect and cumulative impacts identified are typically consistent with and governed by applicable land use plans and capital improvement plans to expand public infrastructure and services. Also, the Council and the counties and municipalities in the corridor have plans to expand and enhance parks and open spaces in the area to meet the demand of population growth over time. The Project would not require mitigation measures.

7.3.4. Acquisitions and Displacements

7.3.4.1. Indirect Effects

New development in Project station areas could potentially result in the displacement of existing residents and/or businesses. Applicable laws would guide such displacements, which would be consistent with zoning and comprehensive plans. Given the focus on more compact mixed use and TOD around stations in applicable land use plans, any such displacements would likely produce a net increase in development densities.

7.3.4.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, could cumulatively result in displacements of residents and/or businesses. However, individual community comprehensive plans guide the land uses in the station areas and typically show steady or increasing development densities. The need for additional transportation infrastructure to support new development could produce additional displacements. Future acquisition or displacement would be conducted in accordance with applicable laws. Also, corridor communities' comprehensive and station-area plans address local housing needs and policies that address affordable housing for renters and owners.

7.3.4.3. Mitigation

As described above, the Project could result in a cumulative impact on residences and businesses through acquisition and displacement. However, new development, along with available housing in the corridor, would likely generate more jobs and housing opportunities than what the Project would eliminate. Also, corridor communities' comprehensive and station-area plans address local housing needs and policies that address affordable housing for renters and owners. The Project would acquire property in accordance with the implementing regulation, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970[10] (Uniform Relocation Act).

7.3.5. Visual Quality and Aesthetic Resources

7.3.5.1. Indirect Effects

The primary contributor to indirect impacts on visual and aesthetic resources would be from changes to development that might result indirectly from the Project. Typically, this would take the form of construction of a new building, the development of which would be in some way catalyzed by construction of the Project. Development induced by the Project would most likely occur within ½-mile of stations, as described above. The type and degree of impact would depend on the location, size and context of any new development. For example, a new building in a developed neighborhood that is in keeping with the scale and character of the existing neighborhood typically would produce a positive impact on visual resources, whereas a new building that does not fit in with the existing character could be seen as a negative impact. Generally, impacts would be minor along the Build alternative alignment given the already developed, or developing, nature of the area.

7.3.5.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area, combined with future actions and the direct and indirect effects of the Project, would cumulatively change the visual setting in the Project area over time. Specifically, the visual setting would become more organized and urbanized; and wide-open views would, in some cases, become more closed. These changes are consistent with adopted comprehensive plans for the corridor communities, which call for continued development of transportation infrastructure and land. Local development review processes are in place in the corridor communities to ensure the aesthetic quality of development is consistent with local preferences, plans and policies.

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[10] *"Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs," Title 49, CFR, Part 24. January 2005. https://www.gpo.gov/fdsys/pkg/CFR-2017-title49-vol1/xml/CFR-2017-title49-vol1-part24.xml. Accessed November 2018.*

7.3.5.3. Mitigation

Development that occurs in response to the Project and future actions would likely have a visual impact on some areas of the corridor. Applicable municipal codes and land use plans regulate all development. The Project would not require additional mitigation measures.

7.3.6. Business and Economic Resources

7.3.6.1. Indirect Effects

New development could produce adverse indirect impacts to businesses. Potential positive indirect impacts to businesses could include improved access for customers and employees from the connectivity the Project would provide.

7.3.6.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, may cumulatively strengthen the business climate by providing improved transportation access to customers and employees. While the Project could negatively affect individual businesses, particularly in the short term due to construction activity, the cumulative result of the Project would be positive.

7.3.6.3. Mitigation

Development that occurs in response to the Project and the reasonably foreseeable future actions would be expected to increase access to businesses in the area and expand the base of potential local consumers. Applicable municipal codes and land use plans regulate all development. The Project would not require additional mitigation measures.

7.3.7. Safety and Security

7.3.7.1. Indirect Effects

It is possible that the increased development density and intensity anticipated around new transit stations would affect law enforcement and security providers. New planned concentrations of residential, commercial and other uses would put more transit riders, pedestrians and bicyclists in proximity with transit vehicles and roadway crossings, potentially creating safety conflicts. This could in turn place greater demands on security providers and/or require changes in current patrol routes, schedules and equipment needs. In some cases, increased density could result in more foot traffic, more casual observance of users on the street, and increased actual and perceived safety.

7.3.7.2. Cumulative Impacts

The continued development of transit and transportation facilities in the Project area over time, combined with future actions, natural population growth, and the direct and indirect effects of the Project, may cumulatively add to the demands on law enforcement and security providers, potentially affecting staffing levels and budgets over the long term.

7.3.7.3. Mitigation

Local municipalities, counties and emergency service providers would plan measures to address safety and security for Project-induced development and future actions. The Council would establish a Safety and Security Management Plan and a Safety and Security Certification Plan to guide safety and security policies for the Project during design and construction. These plans would include requirements for design criteria, hazard analyses, threat and vulnerability analyses, construction safety and security, operational staff training and emergency response measures. These plans would also specify actions and requirements of Metro Transit and its police force to maintain safety and security during BRT operations. The Project would not require additional mitigation measures.

7.3.8. Environmental Justice

7.3.8.1. Indirect Effects

Potential indirect effects on environmental justice populations could result from increased development and redevelopment in the station areas. While not every station area is likely to see meaningful change in the short-term, those areas where demand for new development is stronger could experience increased property values and corresponding increases in rents and real estate taxes. While all populations in the study area could experience these impacts, low-income populations are more likely to adversely experience them, particularly if they rent rather than own property.

7.3.8.2. Cumulative Impacts

Development around station areas in combination with future actions could result in increased property values and corresponding increases in rents and real estate taxes. While all populations in the study area could experience these impacts, low-income populations are more likely to adversely experience them. This Project along with other transit improvements in the region would provide offsetting benefits such as affordable, accessible and equitable transportation for low-income and minority residents so that they have increased access to financial opportunities (jobs), educational opportunities, health services and recreational amenities.

7.3.8.3. Mitigation

The Project does not identify additional mitigation measures. The local communities along the corridor are already developing policies to preserve and increase affordable housing options in their communities and in the station areas. For example, the *Saint Paul Gold Line Station Area Plans* include policies on providing housing for a mix of incomes and Saint Paul's draft 2040 comprehensive plan encourages affordable housing development in areas well-served by transit and/or in proximity to employment centers. The Maplewood draft 2040 comprehensive plan includes an analysis of existing affordable housing and calls for an increase in the availability of affordable housing units. Landfall's 2040 comprehensive plan includes a policy that all housing units remain affordable to low and moderate-income households. Oakdale's *Helmo Station Bus Rapid Transit Oriented Development Plan* encourages mixed-income housing, and the Woodbury's draft 2040 comprehensive plan states the community should provide its fair share of the region's needed quality, affordable housing.

The Council's Livable Communities Program incentivizes affordable housing initiatives by providing grants to local communities that invest in economic revitalization, affordable housing initiatives, and development or redevelopment that connects different land uses and transportation. Ongoing station-area planning will continue to engage environmental justice communities to facilitate equitable outcomes.

7.3.9. Utilities

7.3.9.1. Indirect Effects

It is possible that the increased development density and intensity anticipated around new transit stations would affect utility providers. New planned concentrations of residential, commercial, and other uses could cause changes in the patterns and level of demand for utilities in the area. Typically, utility fees charged to users offset net new costs to provide more service. In some cases, such changes could be beneficial to providers because higher density land use typically results in more efficient distribution of services.

7.3.9.2. Cumulative Impacts

The continued development of transit and transportation facilities in the Project area over time, combined with future actions, natural population growth, and the direct and indirect effects of the Project, may cumulatively add to the demands on and customer base of utilities in the study area. The more compact development patterns anticipated in station areas locations would provide operating efficiencies to the utility providers over the long term.

7.3.9.3. Mitigation

To meet any increased demand on utilities from induced development and future actions, providers would plan appropriately through their regular planning processes that address population growth and service demand. The Project would not require additional mitigation measures.

7.3.10. Floodplains

7.3.10.1. Indirect Effects

Project-induced new development could adversely affect hydrology and floodplains if the actions do not include best management practices (BMPs).

7.3.10.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, may cumulatively affect hydrology and floodplains without the implementation of BMPs.

7.3.10.3. Mitigation

Applicable regulations including local floodplain ordinances would mitigate all permanent impacts to hydrology and floodplains caused by Project-induced development and future actions. The Project would not require additional mitigation measures.

7.3.11. Surface Waters (Wetlands, Waterbodies and Waterways)

7.3.11.1. Indirect Effects

Project-related indirect impacts to surface waters would be possible to the extent that any new development the Project induces results in impacts to wetlands. These impacts are less likely to occur if actions include typical BMPs.

7.3.11.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, could cumulatively affect surface waters, particularly if actions do not include BMPs.

7.3.11.3. Mitigation

Applicable regulations including Sections 404[11] and 401[12] of the Clean Water Act would mitigate all permanent impacts to surface waters caused by Project-induced new development and future actions. The Project would not require additional mitigation measures.

7.3.12. Stormwater and Water Quality

7.3.12.1. Indirect Effects

The anticipated development and redevelopment activities around station areas likely would involve temporary soil disturbance and possible increases in impervious surfaces, which could indirectly affect water resources. However, these activities would be subject to current water quality regulations, and installation of required BMPs would protect water quality.

7.3.12.2. Cumulative Impacts

Cumulative impacts from future actions in the Project area watersheds could include increased sediment and pollutant load. However, future actions are subject to the same water quality regulations as the Project and would use similar BMPs during construction and operation. Thus, no cumulative adverse impacts to water quality are anticipated.

7.3.12.3. Mitigation

Project impacts and potential impacts from induced development and future actions on stormwater and water quality would be addressed by implementing BMPs and following state and federal regulations including the Clean Water Act that regulates water quality through Sections 404 and Section 401 Water Quality Certification permitting processes and the National Pollutant Discharge Elimination System (NPDES) and State Disposal System (SDS) permits that regulate stormwater runoff from construction sites. The Project would not need to provide additional mitigation.

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[11] *"Permits for dredged or fill material," Title 33, USC, Sec. 1344 (Clean Water Act, Section 404), as amended. Available at:* https://www.epa.gov/cwa-404/clean-water-act-section-404*. Accessed November 2018.*

[12] *"State certification of water quality," Title 33 USC, Sec. 1341 (Clean Water Act, Section 401), as amended. Available at:* https://www.epa.gov/cwa-404/clean-water-act-section-401-certification*. Accessed November 2018.*

7.3.13. Geology, Groundwater and Soils

7.3.13.1. Indirect Effects

Project-related indirect impacts on geology, groundwater or soils would be possible to the extent that any new development the Project induces results in impacts to these resources. This is less likely to occur if actions include typical BMPs.

7.3.13.2. Cumulative Impacts

The Project would directly impact geology and soils solely during construction; the analysis does not anticipate long-term impacts. The Project would not produce direct impacts to groundwater. Given the lack of impact and/or temporary impact only, the Council does not anticipate cumulative impacts to these resources.

7.3.13.3. Mitigation

Given the lack of identified impacts, the Project would not require mitigation measures.

7.3.14. Hazardous Materials and Contamination

7.3.14.1. Indirect Effects

Anticipated development and redevelopment around transit stations could affect hazardous materials sites if actions do not employ the proper and legally required BMPs. Contaminated sites require cleanup as development occurs.

7.3.14.2. Cumulative Impacts

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect effects of the Project, would contribute to the remediation of hazardous materials sites, as such sites require cleanup as a condition of development or redevelopment.

7.3.14.3. Mitigation

Developers and agencies involved in future actions and induced development must follow all state and federal laws concerning hazardous materials. The Project would not require additional mitigation measures.

7.3.15. Noise and Vibration

7.3.15.1. Indirect Effects

Anticipated development around transit stations would expose more people to transit noise and noise potentially generated by park-and-ride facilities. Some reductions in automobile-related noise could occur from people using transit, walking or bicycling instead of using automobiles.

7.3.15.2. Cumulative Impacts

As population growth in the study area continues and the trend toward more density puts more people near transportation corridors, the number of people exposed to road and transit noise would increase. The Project could add a new noise source to the study area, but it would also allow for and encourage the use of alternative modes of transportation and might reduce total trip length (and thus transportation noise) through compact development.

7.3.15.3. Mitigation

Community development review processes and applicable federal and state laws require assessment on a project-by-project basis for noise impacts due to development or future actions. The Project would not require additional mitigation measures.

7.3.16. Biological Environment (Wildlife Habitat and Endangered Species)

7.3.16.1. Indirect Effects

The Project Build Alternatives could potentially produce indirect impacts to habitat and endangered species if they do not utilize proper BMPs; however, the planned use of BMPs and the limited amount of adjacent natural habitats in the resource study area would produce limited to no indirect impacts to animal and plant life or habitat.

Other indirect effects could occur if Project-induced development around station areas produces direct impacts to natural habitat; however, the magnitude of these effects would be limited because the station areas are located within urbanized and suburbanized areas, and the species present tend to be adapted to urban conditions. In addition, new development must follow applicable permitting and other regulatory requirements related to the protection of natural resources.

7.3.16.2. Cumulative Impacts

Future actions would have minor effects on habitat and endangered species – similar to the indirect effects from Project-induced development – because they are in urbanized and suburbanized areas with limited amounts of natural habitat. The planned projects would use BMPs during construction to limit indirect impacts to aquatic habitats, and the analysis does not anticipate adverse cumulative impacts.

7.3.16.3. Mitigation

Local land use plans that are consistent with the Council's *Thrive MSP 2040* regional plan would minimize indirect and cumulative effects to the biological environment. Also, a network of regional parks and open space where development is prohibited permanently protect most of the remaining wildlife habitat areas. As the Project advances through the Project Development and Engineering phases, minimization and avoidance of impacts to natural areas and compliance with *Thrive MSP 2040* will continue. This includes implementation of BMPs for habitat restoration and natural resource conservation.

7.3.17. Air Quality

7.3.17.1. Indirect Effects

The analysis anticipates the Project would result in shifts from single-occupant vehicles to transit, and an indirect impact of this shift would be a beneficial reduction in air pollutant emissions in the Project area and the region.

7.3.17.2. Cumulative Impacts

Continued transportation and land development in the Project area could result in increased air pollutant emissions. When combined with the Project, which the analysis anticipates would reduce the overall air pollutant load due to less automobile use, the cumulative impact on air quality could be an improvement over conditions without the Project. Also, the Metro Transit electric bus fleet plan would contribute to air quality improvements in the region as electric buses replace diesel-powered buses.

7.3.17.3. Mitigation

The Project would not require additional mitigation measures.

7.3.18. Energy

7.3.18.1. Indirect Effects

Project-induced new development in the station areas could result in greater demand for electricity in these locations; however, this type of new urban development is typically more energy efficient than existing or less dense development.

7.3.18.2. Cumulative Impacts

Continued transportation and land development in the Project area could result in increased energy use. When combined with the Project, which the analysis anticipates would use less energy than the No-Build Alternative, the cumulative impact on energy use would likely be an improvement over conditions without the Project.

7.3.18.3. Mitigation

The Project would not require additional mitigation measures.

7.3.19. Farmlands

7.3.19.1. Indirect Effects

Project-induced new development would indirectly affect farmland in the resource study area because only one parcel in the resource study area is identified as agricultural/rural/vacant land use.

7.3.19.2. Cumulative Impacts

The Project would not contribute to a cumulative effect on farmland because the Project would not produce direct or indirect impacts to farmland.

7.3.19.3. Mitigation

The Project would not require additional mitigation measures. The study areas are urban communities, and local land use plans anticipate all remaining agricultural lands would be converted to urban uses.

7.3.20. Cultural Resources

7.3.20.1. Indirect Effects

Development and redevelopment associated with the proposed transit stations could change the setting, context, and land use in the station areas (typically within a ½-mile radius or less from the station). Such changes could have indirect effects on existing cultural resources,[13] such as changing the integrity of the visual setting by adding a new (modern) building, adding a transportation facility, or increasing the density of the area. It is also possible the development induced by the Project could directly affect cultural resources through demolition, change in property values, or other impacts.

7.3.20.2. Cumulative Impacts

Over time, continued development of transit and transportation facilities in the Project area, combined with future actions and the direct and indirect effects of the Project including new development induced by the Project in the station areas, could result in changes that diminish the integrity of a cultural resource's or historic district's location, feeling, or association. Developers could convert or demolish some properties to take advantage of development or redevelopment opportunities.

7.3.20.3. Mitigation

The Council will minimize identified adverse effects to cultural resources through the Section 106 consultation process of the National Historic Preservation Act (NHPA) of 1966,[14] as applicable. If there are any adverse effects, FTA, with assistance from the Minnesota Department of Transportation (MnDOT) Cultural Resources Unit, will consult with the Minnesota State Historic Preservation Office (MnSHPO), other consulting parties, and the public to resolve the adverse effects. These agencies would resolve adverse effects in accordance with the terms in a Section 106 Programmatic Agreement (PA). The PA establishes roles and responsibilities for implementation and includes processes for identifying and evaluating properties for the National Register of Historic Places, assessing effects on historic properties, and resolving any adverse effects. The PA also spells out design development and review processes and requirements for protecting historic properties during Project construction (see the Project's PA in **Appendix C**).

Local communities along the Project corridor are also actively engaged in historic preservation, helping to minimize impacts to historic properties from private actions that do not have to adhere to Section 106 of the NHPA. The Heritage Preservation Commission and a Heritage Preservation Ordinance of Saint Paul protect historically designated properties from inappropriate changes or destruction. The City of Maplewood created has a Heritage Preservation Commission to help the city achieve its historic-preservation goals. Oakdale, Landfall and Woodbury coordinate with the Washington County Historical Society to document and educate the public about local historic resources.

7.4. Summary of Indirect Effects and Cumulative Impacts

7.4.1. Indirect Effects Summary

Anticipated new development near stations makes up most of the Project's indirect effects. Local communities generally would perceive positively Project-induced development that occurs in accordance with local plans because it would help meet long-range land use and transportation goals for the station areas. However, if not responsibly managed, new development that changes the transportation system, land use and the natural

[13] *For purposes of this analysis, the term "cultural resources" has the same meaning as "historic properties," which are buildings, structures, districts, objects and sites that the National Register of Historic Places (NRHP) lists or that are eligible for listing in the NRHP.*

[14] *"Protection of Historic Properties," Title 36, CFR, Sec. 800. Available at: https://www.ecfr.gov/cgi-bin/text-idx?SID=4908d84d9d15501f57c7d9bbb46147f1&mc=true&node=se36.3.800_116&rgn=div8. Accessed November 2018.*

environment can indirectly impact resources. Potential indirect effects from Project-induced development include: changes in community character; displacement of residents and businesses from rising property values; impacts to visual and historic resources; increases in traffic congestion; increased demand for parking and public services; floodplain encroachment; and increases in stormwater runoff.

Local, state and federal regulations and policies intended to manage growth and protect resources can minimize indirect effects to resources. Local governments along the corridor have the authority to regulate the use and development of land and already administer a range of growth management tools to promote orderly development of their communities including: comprehensive plans; zoning, subdivision and floodplain ordinances; capital improvement plans, access management plans, historic preservation commissions; affordable housing policies; and surface water and stormwater management plans. State and federal regulations are also in place to further minimize impacts to resources from development including the Clean Water Act that regulates water quality through Section 404[15] and Section 401[16] Water Quality Certification permitting processes; the NPDES and SDS permits that regulate stormwater runoff from construction sites; and the federal Endangered Species Act that regulates the taking, transport, possession, processing or selling of protected species.

7.4.2. Cumulative Impacts Summary

The Project's direct and indirect effects, when considered with the potential resource impacts of other past, present and reasonably foreseeable actions in the study area, may contribute to cumulative effects on the transportation system, land use and the natural environment. However, based on the cumulative impacts assessment, it is unlikely that the extent that the combined impacts to resources would reach a level of concern that would warrant special avoidance, minimization and mitigation measures for the Project other than those identified in **Section 3.9. Avoidance, Minimization and Mitigation Measures**. The Project's direct impacts would be mitigated in accordance with applicable state and federal regulations including Section 106 of the NHPA,[17] Sections 404 and 401 of the Clean Water Act, the NPDES/SDS permitting process for stormwater runoff at construction sites, the federal Endangered Species Act,[18] the Uniform Relocation Act[10] and MN Stat. 117.

The same local, state and federal regulations and policies that would manage the Project's indirect effects (see **Section 7.4.1**) would also apply to resource impacts from other past, present and reasonably foreseeable projects.

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[15] *"Clean Water Act: Permitting Discharges of Dredge or Fill Material", 33 U.S. Code 1344, Section 404, as amended. Available at:* https://www.epa.gov/cwa-404/clean-water-act-section-404 *. Accessed November 2018.*

[16] *"Clean Water Act: State Certification of Water Quality", 33 U.S. Code 1341, Section 401, as amended. Available at:* https://www.epa.gov/cwa-404/clean-water-act-section-401-certification *. Accessed November 2018.*

[17] *"Protection of Historic Properties", National Historic Preservation Act of 1966, as amended, 36 CFR Part 800, 16 U.S. Code 470 et seq., Section 106. Available at: https://www.ecfr.gov/cgi-bin/text-idx?SID=4908d84d9d15501f57c7d9bbb46147f1&mc=true&node=se36.3.800_116&rgn=div8. Accessed November 2018.*

[18] *"Interagency Cooperation – Endangered Species Act of 1973," Title 50, CFR, Part 401, as amended. October 2001. https://www.gpo.gov/fdsys/pkg/CFR-2017-title50-vol11/xml/CFR-2017-title50-vol11-part402.xml. Accessed November 2018.*