



# **DRAFT FINAL Ecosystems Technical Report**

Lane Transit District  
City of Eugene  
In cooperation with  
Lane Council of Governments  
Lane County  
Oregon Department of Transportation

**July 7, 2017**

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# DRAFT FINAL Ecosystems Technical Report

## *MovingAhead Project*

Prepared in accordance with the  
National Environmental Policy Act of 1969, as amended 42 U.S.C. 4322  
and the  
Federal Transit Act of 1964, as amended 49 U.S.C. 1601 et seq.

***July 7, 2017***

*Prepared for*  
Federal Transit Administration  
Lane Transit District  
City of Eugene

*Prepared by*  
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## Acronyms, Abbreviations, and Terms

Acronyms and Abbreviations	Definitions
--	Not listed
/WP	Waterside Protection
/WQ	Water Quality
AA	Alternatives Analysis
ADA	Americans with Disabilities Act
API	area of potential impact
BAT	Business Access and Transit
BMP	best management practice
BRT	Bus Rapid Transit
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DSL	Oregon Department of State Lands
EC	Eugene City Code
EFH	essential fish habitat
EmX	Emerald Express, Lane Transit District's Bus Rapid Transit System
ESA	Endangered Species Act or Environmental Site Assessment
ESH	essential indigenous anadromous salmonid habitat
ESU	evolutionarily significant unit
Draft Eugene 2035 TSP	DRAFT Eugene 2035 Transportation System Plan (City of Eugene, 2016)
FHWA	Federal Highway Administration
ft <sup>2</sup>	square foot (feet)
I-5	Interstate 5
LCC	Lane Community College
LE	Listed Endangered
LT	Listed Threatened
LTD	Lane Transit District
MBTA	Migratory Bird Treaty Act
Metro Plan	Eugene-Springfield Metropolitan Area General Plan
MPO	Metropolitan Planning Organization

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
NEPA	National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4347
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NR	Natural Resource
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
RTP	Regional Transportation Plan; Central Lane Metropolitan Planning Organization Regional Transportation Plan (adopted November 2007). (The RTP includes the Financially Constrained Roadway Projects List)
SC	Sensitive Critical
SMU	Species Management Unit
SOC	Species of Concern
SV	Sensitive Vulnerable
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

## Terms

<b>Terms</b>	<b>Definitions</b>
Accessibility	The extent to which facilities are barrier- free and useable for all persons with or without disabilities.
Alternatives Analysis (AA)	The process of evaluating the costs, benefits and impacts of a range of transportation alternatives designed to address mobility problems and other locally-defined objectives in a defined transportation corridor, and for determining which particular investment strategy should be advanced for more focused study and development. The AA process provides a foundation for effective decision making.
Area of Potential Impact	Alternative- specific corridor plus a 0.125-mile buffer area on either side of the corridor alternative centerline.
Boarding	Boarding is a term used in the transit industry to account for passengers of public transit systems. One person getting on a transit vehicle equals one boarding. In many cases individuals will have to transfer to an additional transit vehicle to reach their destination and may well use transit for the return trip. Therefore, a single rider may account for several transit boardings in one day.

<b>Terms</b>	<b>Definitions</b>
Bus Rapid Transit (BRT)	A transit mode that combines the quality of rail transit and the flexibility of buses. It can operate on bus lanes, HOV lanes, expressways, or ordinary streets. The vehicles are designed to allow rapid passenger loading and unloading, with more doors than ordinary buses.
Business Access and Transit Lane (BAT)	In general, a BAT lane is a concrete lane, separated from general-purpose lanes by a paint stripe and signage. A BAT lane provides BRT priority operations, but general-purpose traffic is allowed to travel within the lane to make a turn into or out of a driveway or at an intersecting street. However, only the BRT vehicle is allowed to use the lane to cross an intersecting street.
Capital Improvements Program	A Capital Improvement Plan or Program (CIP) is a short- to medium-range plan, usually four to 10 years, which identifies capital projects and equipment purchases, provides a planning schedule and identifies options for funding projects in the program.
Categorical Exclusion	A Categorical Exclusion (CE) means a category of actions which do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an Environmental Assessment nor an Environmental Impact Statement is required.
Charter Tree	A tree defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as "... (a living, standing, woody plant having a trunk 25 inches in circumference at a point 4-½ feet above mean ground level at the base of the trunk) of at least fifty years of age within publicly owned rights of way for streets, roads, freeways, throughways, and thoroughfares and within those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915, shall be designated historic street trees and recognized as objects of high historic value and significance in the history of the city and deserving of maintenance and protection." These trees have special historic importance to the City and require special processes be followed if their removal is proposed, including a public vote on the project proposing the removal.
Charter Tree Boundary	Defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as "...those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915." Trees within this boundary may, if they meet certain criteria, be granted the special title and protective status of a Charter Tree, defined above.
Corridor	A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways and transit route alignments.
Effects	Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Effects include: (1) direct effects that are caused by the action and occur at the same time and place, and (2) indirect effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
EmX	Lane Transit District's Bus Rapid Transit System, pronounced "MX", short for Emerald Express.

<b>Terms</b>	<b>Definitions</b>
Environmental Justice	<p>A formal federal policy on environmental justice was established in February 1994, with Executive Order 12898 (EO 12898), "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations." There are three fundamental environmental justice principles:</p> <ul style="list-style-type: none"> <li>• To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.</li> <li>• To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.</li> <li>• To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.</li> </ul>
Envision Eugene	The City of Eugene's Comprehensive Plan (latest draft or as adopted). Envision Eugene includes a determination of the best way to accommodate the community's projected needs over the next 20 years.
Evaluation Criteria	Evaluation criteria are the factors used to determine how well each of the proposed multimodal alternatives would meet the project's Goals and Objectives. The Evaluation Criteria require a mix of quantitative data and qualitative assessment. The resulting data are used to measure the effectiveness of proposed multimodal alternatives and to assist in comparing and contrasting each of the alternatives to select a preferred alternative.
Fatal Flaw Screening	The purpose of a Fatal Flaw Screening is to identify alternatives that will not work for one reason or another (e.g., environmental, economic, community) By using a Fatal Flaw Screening process to eliminate alternatives that are not likely to be viable, a project can avoid wasting time or money studying options that are not viable and focus on alternatives and solutions that have the greatest probably of meeting the community's needs (e.g., environmentally acceptable, economically efficient, implementable).
Fixed Route	Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers at set stops and stations; each fixed-route trip serves the same origins and destinations, unlike demand responsive and taxicabs.
Goals and Objectives	<p>Goals and objectives define the project's desired outcome and reflect community values. Goals and objectives build from the project's Purpose and Need Statement. Goals are overarching principles that guide decision making. Goals are broad statements.</p> <p>Objectives define strategies or implementation steps to attain the goals. Unlike goals, objectives are specific and measurable.</p>
Guideway	A transit right-of-way separated from general purpose vehicles.
Headway	Time interval between vehicles passing the same point while moving in the same direction on a particular route.
Hydrology	Refers to the flow of water including its volume, where it drains and how quickly it flows.
Impacts	A term to describe the positive or negative effects upon the natural or built environments as a result of an action (i.e., project).
Key Transit Corridors	Key Transit Corridors are mapped in Envision Eugene and are anticipated to be significant transit corridors for the City and the region.



<b>Terms</b>	<b>Definitions</b>
Landscape Tree	A living, standing, woody plant having a trunk that exists on private property.
Level of Service (LOS)	LOS is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways, but the concept has also been applied to intersections, transit, and water supply.
Metropolitan Planning Organization (MPO)	The organization designated by local elected officials as being responsible for carrying out the urban transportation and other planning processes for an area.
Mitigation	A means to avoid, minimize, rectify, or reduce an impact, and in some cases, to compensate for an impact.
Mode	A particular form or method of travel distinguished by vehicle type, operation technology and right-of-way separation from other traffic.
MovingAhead Project	<p>The City of Eugene and LTD are working with regional partners and the community to determine which improvements are needed on some of the most important transportation corridors for people using transit, and facilities for people walking and biking. MovingAhead will prioritize transit, walking and biking projects along these corridors so that they can be funded and built in the near-term.</p> <p>The project will focus on creating active, vibrant places that serve the community and accommodate future growth. During Phase 1, currently underway, the community will weigh in on preferred transportation solutions for each corridor and help prioritize corridors for implementation. When thinking about these important streets, LTD and the City of Eugene refer to them as corridors because several streets may work as a system to serve transportation needs.</p>
Multimodal	Multimodal refers to various modes. For the MovingAhead project, multimodal refers to Corridors that support various transportation modes including vehicles, buses, walking and cycling.
National Environmental Policy Act of 1969 (NEPA)	A comprehensive federal law requiring analysis of the environmental impacts of federal actions such as the approval of grants; also requiring preparation of an Environmental Impact Statement (EIS) for every major federal action significantly affecting the quality of the human environment.
No Action or No-Build Alternative	An alternative that is used as the basis to measure the impacts and benefits of the other alternative(s) in an environmental assessment or other National Environmental Policy Act (NEPA) action. The No-Build Alternative consists of the existing conditions, plus any improvements which have been identified in the Statewide Transportation Improvement Program (STIP).
Off-Peak Period	Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled. Also called "base period."
Park and Ride	Designated parking areas for automobile drivers who then board transit vehicles from these locations.
Peak Hour	The hour of the day in which the maximum demand for transportation service is experienced (refers to private automobiles and transit vehicles).
Peak Period	Morning and afternoon time periods when transit riding is heaviest.

<b>Terms</b>	<b>Definitions</b>
Preferred Alternative	An alternative that includes a major capital improvement project to address the problem under investigation. As part of the decision making process, the Preferred Alternative is compared against the No Action or No-Build Alternative from the standpoints of transportation performance, environmental consequences, cost-effectiveness, and funding considerations.
Purpose and Need	The project Purpose and Need provides a framework for developing and screening alternatives. The purpose is a broad statement of the project's transportation objectives. The need is a detailed explanation of existing conditions that need to be changed or problems that need to be fixed.
Ridership	The number of rides taken by people using a public transportation system in a given time period.
Right-of-Way	Publicly owned land that can be acquired and used for transportation purposes.
Street Tree	A living, standing, woody plant having a trunk that exists in the public right-of-way.
Study Area	The area within which evaluation of impacts is conducted. The study area for particular resources will vary based on the decisions being made and the type of resource(s) being evaluated.
Title VI	This title declares it to be the policy of the United States that discrimination on the ground of race, color, or national origin shall not occur in connection with programs and activities receiving Federal financial assistance and authorizes and directs the appropriate Federal departments and agencies to take action to carry out this policy.
Transit System	An organization (public or private) providing local or regional multi-occupancy-vehicle passenger service. Organizations that provide service under contract to another agency are generally not counted as separate systems.
Water Quality	Refers to the characteristics of the water, such as its temperature and oxygen levels, how clear it is, and whether it contains pollutants.

## Ecosystems Summary

This Ecosystems Technical Report presents the results of ecosystem analyses conducted for the Lane Transit District (LTD) and City of Eugene’s MovingAhead Project in Eugene, Oregon. The purpose of the MovingAhead Project is to determine which high-capacity transit corridors identified in the adopted Emerald Express (EmX) System Plan, *Lane Transit District Long-Range Transit Plan* (LTD, 2014) and the Frequent Transit Network (FTN) are ready to advance to capital improvements programming in the near term. LTD and the City of Eugene (City) initiated the MovingAhead Project in 2014 to identify and examine alternatives for improving multimodal safety, mobility, and accessibility in key transit corridors in the City. A main theme of the City’s vision is to concentrate new growth along and near the City’s key transit corridors and core commercial areas while protecting neighborhoods and increasing access to services for everyone. LTD and the City of Eugene are jointly conducting the project to facilitate a more streamlined and cost-efficient process through concurrent planning, environmental review, and design and construction of multiple corridors. Potential effects to ecosystems analyzed for this report include those related to fish and wildlife habitats, waterways, wetlands, designated critical habitat and species listed under the federal Endangered Species Act (ESA) and the Oregon ESA.

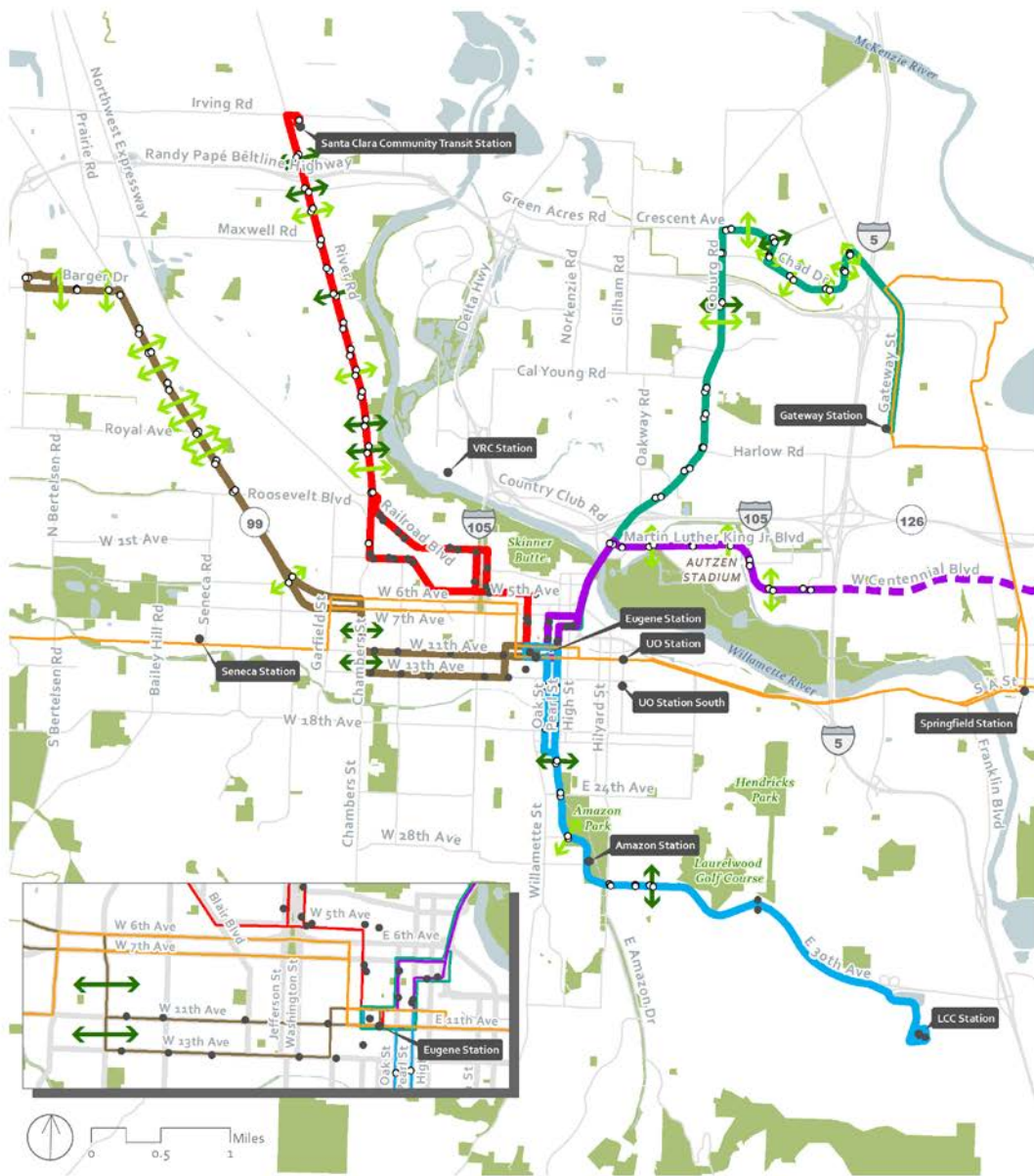
LTD and the City of Eugene examined multimodal transit alternatives in five key transit corridors identified in the *Draft Envision Eugene Comprehensive Plan* (Envision Eugene, 2016, July) and the *DRAFT Eugene 2035 Transportation System Plan* (City of Eugene, 2016a; Draft Eugene 2035 TSP), the region’s highest growth centers, and Downtown Eugene:

- Highway 99 Corridor
- River Road Corridor
- 30th Avenue to Lane Community College (LCC) Corridor
- Coburg Road Corridor
- Martin Luther King, Jr. Boulevard Corridor

No-Build, Enhanced Corridor, and EmX Alternatives were developed for each corridor, except the Martin Luther King, Jr. Boulevard Corridor, for which only No-Build and Enhanced Corridor Alternatives were developed. Each proposed corridor location is shown on Figures S.1-1 and S.1-2 for the Enhanced Corridor Alternatives and the EmX Alternatives, respectively. The *MovingAhead Level 2 Definition of Alternatives* (CH2M HILL, Inc. [CH2M] et al., 2016) contains a detailed description of the project alternatives. The following is a summary of the project alternatives evaluated.

- The **No-Build Alternatives** serve as a reference point to gauge the benefits, costs, and effects of the Enhanced Corridor and EmX Alternatives in each corridor. Each No-Build Alternative is based on the projected conditions in 2035. Capital projects are derived from the financially constrained project lists in the Draft Eugene 2035 TSP, the *Lane County Transportation System Plan* (Lane County Public Works, Engineering Division Transportation Planning, 2004, update in progress), the *Lane Transit District Capital Improvement Plan* (LTD, 2015), and the *Lane Transit District Long-Range Transit Plan* (LTD, 2014).
- **Enhanced Corridor Alternatives** are intended to address the project’s Purpose, Need, Goals, and Objectives without major transit capital investments, instead focusing on lower-cost capital improvements, operational improvements, and transit service refinements, including 15-minute service frequency. Features can include transit queue jumps (lanes for buses that allow the bus to “jump” ahead of other traffic at intersections using a separate signal phase), stop consolidation, and enhanced shelters. These features can improve reliability, reduce transit travel time, and increase passenger comfort, making transit service along the corridor more attractive.

Figure S.1-1. Enhanced Corridor Alternatives Overview



Locator Map



Legend

- 30th Avenue to Lane Community College Corridor
- Coburg Road Corridor
- Highway 99 Corridor
- River Road Corridor
- Martin Luther King Jr Blvd Corridor
- Martin Luther King, Jr Blvd Corridor continues east of I-5 as existing route #13
- 2035 No-Build EmX
- Road
- Park
- Water
- Stop/Station Locations
- Existing Without Improvements
- Proposed or Existing with Improvements
- ↔ New Pedestrian Crossing
- ↔ Enhanced Existing Pedestrian Crossing

Enhanced Corridor Alternatives Overview



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**Figure S.1-2. EmX Alternatives Overview**



**Locator Map**



**Legend**

- 30th Avenue to Lane Community College Corridor
  - Coburg Road Corridor
  - Highway 99 Corridor
  - River Road Corridor
  - Road
  - Park
  - Water
- 
- Stop/Station Locations**
- Existing Without Improvements
  - Proposed or Existing with Improvements
  - ↔ New Pedestrian Crossing
  - ↔ Enhanced Existing Pedestrian Crossing
  - 2035 No-Build EmX

**EmX Alternatives Overview**



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- **EmX Alternatives** are characterized by sections of exclusive guideway, branded multi-door 60-foot-long bus rapid transit vehicles, and enhanced stations with level boarding platforms instead of bus stops; off-board fare collection; transit signal priority; wider stop spacing; and 10-minute service frequencies. In general, EmX is a transit mode positioned between fixed-route bus service operating in mixed traffic and urban-rail service operating in a separate right-of-way. EmX service is intended to improve transit speed, reliability, and ridership.

This report, prepared to support the MovingAhead Project Alternatives Analysis (AA), addresses potential adverse and beneficial effects that the project alternatives would have on ecosystems, including habitat, waterways, wetlands, and federal and state threatened and endangered species. It describes how the proposed project alternatives would affect these resources in the five study corridors. It bases the assessments on how the alternatives would have potential adverse impacts to habitat, waterways, wetlands, and federal and state threatened and endangered species in the area of potential impact (API); how adverse impacts to habitat, waterways, wetlands, and federal and state threatened and endangered species; identifies potential mitigation measures to reduce impacts to habitat, waterways, wetlands, and federal and state threatened and endangered species; and describes beneficial effects to the habitat, waterways, wetlands, and federal and state threatened and endangered species found along the corridors.

This report was prepared in compliance with the National Environmental Policy Act (NEPA) and applicable state environmental policy legislation, as well as local and state planning and land use policies and design standards.

### **S.1. Affected Environment**

The MovingAhead Project's five corridors are primarily located within the City of Eugene, with portions of the River Road and 30th Avenue to LCC Corridors located within unincorporated Lane County, and a portion of the Coburg Road Corridor located in the City of Springfield.

The corridors are generally located within a highly urbanized area consisting of residential, commercial and industrial development. The highly developed areas do not possess substantial habitat features and generally lack sensitive ecosystem features. Street and landscape trees along the corridors provide limited habitat for urban avian species.

Waterways that would receive stormwater runoff from new impervious surfaces include the Willamette River, the Amazon Channel, Russel Creek, Spring Creek, Debrick Slough, Dodson Slough, and the Q Street Canal. The Coburg Road Corridor also crosses the North Beltline Floodway and construction is proposed at the crossing. Some alternatives propose construction immediately adjacent to the Amazon Channel. Construction is also proposed within Water Resources Conservation setbacks associated with the Amazon Channel and the Q Street Canal.

Wetlands are mapped in the project vicinity, including some that are immediately adjacent to proposed construction areas. Proposed construction encroaches into Water Resources Conservation overlay zone setbacks associated with certain wetlands. Prior to construction, detailed onsite wetland determination and delineation work would be required. It is possible that additional wetland areas may be identified at that time.

Designated critical habitat for two species is present in the project vicinity: Chinook salmon (*Oncorhynchus tshawytscha*) and Willamette daisy (*Erigeron decumbens*). Chinook salmon critical habitat is located in the Willamette River, which is crossed by some of the MovingAhead alternatives. No

construction is proposed within 100 feet of the Willamette River. The nearest critical habitat for Willamette daisy is located 1.4 miles from the nearest MovingAhead corridor alternative.

The Areas of Potential Impact for the Enhanced Corridor Alternatives are presented on Figure S.1-3 and the Areas of Potential Impact for the EmX Alternatives are shown on Figure S.1-4.

A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table S.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table S.1-2.

**Figure S.1-3. Enhanced Corridor Alternatives Areas of Potential Impact to Ecosystems**





**Figure S.1-4. EmX Alternatives Areas of Potential Impact to Ecosystems**



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**Table S.1-1. Listed Species Documented as Occurring in the Project Vicinity**

Scientific Name	Common Name	Federal Status	State Status
<i>Erigeron decumbens</i>	Willamette daisy	LE	LE
<i>Eucephalus vialis</i>	Wayside aster	SOC	LT
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly	LE	---
<i>Icaricia icarioides fender</i>	Fender's blue butterfly	LE	---
<i>Lomatium bradshawii</i>	Bradshaw's lomatium	LE	LE
<i>Lupinus oreganus</i>	Kincaid's lupine	LT	LT
<i>Oncorhynchus mykiss</i>	Steelhead (Upper Willamette ESU)	LT	SV
<i>Oncorhynchus tshawytscha</i>	Chinook (Upper Willamette ESU)	LT	SC
<i>Salvelinus confluentus</i>	Bull trout (Willamette SMU)	LT	SC
<i>Sericocarpus rigidus</i>	White-topped aster	SOC	LT

Source: U.S. Fish and Wildlife Service. (USFWS). (2016a).

--- = Not Listed

ESU = Evolutionarily Significant Unit

LE = Listed Endangered

LT = Listed Threatened

SC = Sensitive Critical

SMU = Species Management Unit

SOC = Species of Concern

SV = Sensitive Vulnerable

**Table S.1-2. U.S. Fish and Wildlife Service Lane County Listed Species**

Scientific Name	Common Name	Federal Status	State Status
<i>Brachyramphus marmoratus</i>	Marbled murrelet	LT	LT
<i>Caretta</i>	Loggerhead sea turtle	LE	---
<i>Castilleja levisecta</i>	Golden paintbrush	LT	LE
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	LT	LT
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	LT	SC
<i>Dermochelys coriacea</i>	Leatherback sea turtle	LE	---
<i>Eremophila alpestris strigata</i>	Streaked horned lark	LT	SC
<i>Erigeron decumbens</i>	Willamette daisy	LE	LE
<i>Eucephalus vialis</i>	Wayside aster	SOC	LT
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly	LE	---
<i>Gulo luscus</i>	North American wolverine	PT	LT
<i>Icaricia icarioides fender</i>	Fender's blue butterfly	LE	---

**Table S.1-2. U.S. Fish and Wildlife Service Lane County Listed Species**

Scientific Name	Common Name	Federal Status	State Status
<i>Lepidochelys olivacea</i>	Olive ridley sea turtle	LT	---
<i>Lomatium bradshawii</i>	Bradshaw's lomatium	LE	LE
<i>Lupinus oreganus</i>	Kincaid's lupine	LT	LT
<i>Oncorhynchus mykiss</i>	Steelhead (Upper Willamette ESU)	LT	SV
<i>Oncorhynchus tshawytscha</i>	Chinook (Upper Willamette ESU)	LT	SC
<i>Phoebastria albatrus</i>	Short-tailed albatross	LE	---
<i>Rana pretiosa</i>	Oregon spotted frog	LT	SC
<i>Salvelinus confluentus</i>	Bull trout (Willamette SMU)	LT	SC
<i>Sericocarpus rigidus</i>	White-topped aster	SOC	LT
<i>Speyeria zerene hippolyta</i>	Oregon silverspot butterfly	LT	---
<i>Strix occidentalis caurina</i>	Northern spotted owl	LT	LT

Source: USFWS. (2016b).

## S.2. Environmental Consequences

Potential impacts to street and landscape trees may occur with the build alternatives. Tree impacts would be mitigated by replacing them at a minimum 1:1 ratio, per City of Eugene regulation. In addition, any construction activity that would result in tree removal would need to comply with the Migratory Bird Treaty Act to ensure no impacts to nesting migratory bird species would occur. For additional information pertaining to tree impacts see the *MovingAhead Street and Landscape Trees Technical Report* (CH2M, 2017a).

The build alternatives would result in construction of new impervious surfaces. Stormwater runoff from new impervious surfaces could reach fish bearing waterways. The project would incorporate several protective measures that would minimize effects to fish. Stormwater treatment for new or reconstructed impervious surface would contribute to meeting the Oregon Department of Transportation's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff water quality would improve from the No Build Alternative with this additional treatment. For additional information pertaining to water quality, see the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b).

No direct wetland impacts are anticipated. Potential indirect impacts to wetlands could occur due to the proximity of construction to mapped wetlands. New construction, as currently designed, for some alternatives would encroach into Water Resources Conservation setbacks associated with both wetlands and waterways.

Potential impacts to designated critical habitat for Chinook salmon include those associated with runoff from construction areas and new impervious surfaces reaching the Willamette River. However, as described above, the project would incorporate several protective measures to minimize the effects. No other impacts to designated critical habitat are anticipated.

The MovingAhead Project would not result in a “take” of federal or state listed species. Construction is proposed immediately adjacent to habitat occupied by Bradshaw’s lomatium, which is listed as an endangered species. New construction would encroach into the Water Resources Conservation setback associated with the wetland habitat occupied by the species. While no direct impacts to the species are anticipated, any changes to hydrology or other adverse modification of the habitat could affect the species.

## **Highway 99 Corridor**

### ***No-Build Alternative***

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. Cumulative or indirect effects resulting from the No-Build Alternative cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

### ***Enhanced Corridor Alternative***

The Enhanced Corridor Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways, and impacts associated with runoff from increased impervious surface area. The Enhanced Corridor Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

### ***EmX Alternative***

The EmX Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat; potential increased sediment transport to waterways, and impacts associated with runoff from increased impervious surface area. The EmX Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

## **River Road Corridor**

### ***No-Build Alternative***

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. Cumulative or indirect effects resulting from the No-Build Alternative cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

### ***Enhanced Corridor Alternative***

The Enhanced Corridor Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways; and impacts associated with runoff from increased impervious surface area. The Enhanced Corridor

Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

#### ***EmX Alternative***

The EmX Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat; potential increased sediment transport to waterways, and impacts associated with runoff from increased impervious surface area. The EmX Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

### **30th Avenue to Lane Community College Corridor**

#### ***No-Build Alternative***

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. Cumulative or indirect effects resulting from the No-Build Alternative cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

#### ***Enhanced Corridor Alternative***

The Enhanced Corridor Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways, potential degradation of wetland quality / functions, impacts to Water Resource Conservation setbacks, potential impacts to listed species habitat, and impacts associated with runoff from increased impervious surface area. The Enhanced Corridor Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

#### ***EmX Alternative***

The EmX Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways, potential degradation of wetland quality / functions, impacts to Water Resource Conservation setbacks, potential impacts to listed species habitat, and impacts associated with runoff from increased impervious surface area. The EmX Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

### **Coburg Road Corridor**

#### ***No-Build Alternative***

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. Cumulative or indirect effects resulting

from the No-Build Alternative cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

#### ***Enhanced Corridor Alternative***

The Enhanced Corridor Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways, and impacts associated with runoff from increased impervious surface area. The Enhanced Corridor Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

#### ***EmX Alternative***

The EmX Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways, and impacts associated with runoff from increased impervious surface area. The EmX Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

### **Martin Luther King, Jr. Boulevard Corridor**

#### ***No-Build Alternative***

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. Cumulative or indirect effects resulting from the No-Build Alternative cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

#### ***Enhanced Corridor Alternative***

The Enhanced Corridor Alternative could result in temporary displacement of wildlife, tree removal resulting in temporary loss of urban avian habitat, potential increased sediment transport to waterways, potential degradation of wetland quality / functions, impacts to Water Resource Conservation setbacks, and impacts associated with runoff from increased impervious surface area. The Enhanced Corridor Alternative would result in a more efficient transit system and improvements to stormwater treatment compared to the No-Build Alternative, potentially resulting in less pollution loading.

### **S.3. Mitigation Options**

Mitigation for direct impacts to resources required by local regulations may include mitigation for street and landscape tree impacts. Local regulations may also require mitigation for direct impacts to the Water Resources Conservation setback associated with wetlands along the 30th Avenue to Lane Community College Corridor and the Martin Luther King, Jr. Boulevard Corridor. Other potential mitigation measures are likely to involve best management practices (BMPs) for avoiding and minimizing impacts. Required mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for any of the alternatives.



Tree impacts would be mitigated through replacement at a minimum 1:1 ratio. To comply with the Migratory Bird Treaty Act, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the act.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet Oregon Department of Transportation's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet Department of Environmental Quality standards.

To avoid and minimize impacts to wetland areas, onsite wetland delineation would be conducted prior to construction. The wetland delineation would identify any potentially jurisdictional wetland areas that are not included on current inventories. It would also accurately locate the boundaries of mapped wetlands adjacent to proposed new construction.

A new survey would be conducted for Bradshaw's lomatium prior to new construction adjacent to the known population of the species. The new survey would ensure that direct impacts would not occur in case the population expanded into proposed construction areas since the last survey. In addition, design and construction of the proposed new transit facilities adjacent to wetland and Bradshaw's lomatium habitat in Amazon Park would utilize BMPs to avoid impacting the wetland or the endangered species and its habitat.

### **Highway 99 Corridor**

Both the Enhanced Corridor Alternative and the EmX Alternative would include tree replacement mitigation. Tree impacts would either occur outside nesting season, or surveys for nests would be conducted prior to impact. BMPs would be implemented to avoid and minimize impacts to waterways, and wetland delineation or wetland determination would be conducted to avoid wetland impacts.

### **River Road Corridor**

Both the Enhanced Corridor Alternative and the EmX Alternative would include tree replacement mitigation. Tree impacts would either occur outside nesting season, or surveys for nests would be conducted prior to impact. BMPs would be implemented to avoid and minimize impacts to waterways, and wetland delineation or wetland determination would be conducted to avoid wetland impacts.

### **30th Avenue to Lane Community College Corridor**

Both the Enhanced Corridor Alternative and the EmX Alternative would include tree replacement mitigation. Tree impacts would either occur outside nesting season, or surveys for nests would be conducted prior to impact. BMPs would be implemented to avoid and minimize impacts to waterways, wetland delineation or wetland determination would be conducted to avoid wetland impacts, and new Bradshaw's lomatium surveys would be conducted to update mapping of the extent of occupied habitat prior to construction. Mitigation may be required if the project impacts Water Resource Conservation setbacks. Mitigation may also be required to avoid or offset potential impacts to listed species habitat.

### **Coburg Road Corridor**

Both the Enhanced Corridor Alternative and the EmX Alternative would include tree replacement mitigation. Tree impacts would either occur outside nesting season, or surveys for nests would be

conducted prior to impact. BMPs would be implemented to avoid and minimize impacts to waterways, and wetland delineation or wetland determination would be conducted to avoid wetland impacts.

#### **Martin Luther King, Jr. Boulevard Corridor**

The Enhanced Corridor Alternative would include tree replacement mitigation. Tree impacts would either occur outside nesting season, or surveys for nests would be conducted prior to impact. BMPs would be implemented to avoid and minimize impacts to waterways, and wetland delineation or wetland determination would be conducted to avoid wetland impacts. Mitigation may be required if the project impacts Water Resource Conservation setbacks.

#### **S.4. Conclusions**

The MovingAhead Project has the potential to affect ecosystems in the project vicinity. Some project corridors generally lack sensitive ecosystem resources. Other corridors in the vicinity of designated critical habitat, listed species, locally significant wetlands and waterways. BMPs and mitigation measures would minimize adverse effects to ecosystem resources.

Table S.4-1 presents a summary of ecosystems environmental consequences by corridor and alternative.



**Table S.4-1. Summary of Ecosystems Environmental Consequences by Corridor and Alternative**

Corridor	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
<b>Highway 99 Corridor</b>			
Temporary / Short-Term Construction-Related Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> </ul>
Long-Term Direct Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 171,124 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 215,198 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> </ul>
Indirect and Cumulative Effects	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• BMPs to minimize impacts to waterways.</li> <li>• Wetland determination/ delineation to avoid wetland impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• BMPs to minimize impacts to waterways</li> <li>• Wetland determination/ delineation to avoid wetland impacts</li> </ul>
Unavoidable Adverse Impacts	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Runoff from increased impervious surface</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Runoff from increased impervious surface</li> </ul>

**Table S.4-1. Summary of Ecosystems Environmental Consequences by Corridor and Alternative**

Corridor	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
<b>River Road Corridor</b>			
Temporary / Short-Term Construction-Related Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> </ul>
Long-Term Direct Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 109,573 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 748,850 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> </ul>
Indirect and Cumulative Effects	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• BMPs to minimize impacts to waterways</li> <li>• Wetland determination/ delineation to avoid wetland impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• BMPs to minimize impacts to waterways</li> <li>• Wetland determination/ delineation to avoid wetland impacts</li> </ul>
Unavoidable Adverse Impacts	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Runoff from increased impervious surface</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Runoff from increased impervious surface</li> </ul>

**Table S.4-1. Summary of Ecosystems Environmental Consequences by Corridor and Alternative**

Corridor	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
<b>30th Ave to Lane Community College Corridor</b>			
Temporary / Short-Term Construction-Related Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> <li>• Potential degradation of wetland quality / functions</li> <li>• Impacts to Water Resource Conservation setbacks</li> <li>• Potential impacts to listed species habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> <li>• Potential degradation of wetland quality / functions</li> <li>• Impacts to Water Resource Conservation setbacks</li> <li>• Potential impacts to listed species habitat</li> </ul>
Long-Term Direct Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 110, 801 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> <li>• Potential degradation of wetland quality / functions</li> <li>• Potential permanent encroachment into Water Resource Conservation setbacks</li> <li>• Potential impacts to listed species habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 209,323 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> <li>• Potential degradation of wetland quality / functions.</li> <li>• Potential permanent encroachment into Water Resource Conservation setbacks</li> <li>• Potential impacts to listed species habitat</li> </ul>
Indirect and Cumulative Effects	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> <li>• Potential effects to wetlands and listed species habitat (e.g. hydrology changes)</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> <li>• Potential effects to wetlands and listed species habitat (e.g. hydrology changes)</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• Potential Water Resources Conservation setback mitigation</li> <li>• BMPs to minimize impacts to waterways</li> <li>• Wetland determination/ delineation to avoid wetland impacts</li> <li>• Updated Bradshaw’s lomatium surveys to avoid impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• Potential Water Resources Conservation setback mitigation</li> <li>• BMPs to minimize impacts to waterways</li> <li>• Wetland determination / delineation to avoid wetland impacts</li> <li>• Updated Bradshaw’s lomatium surveys to avoid impacts</li> </ul>

**Table S.4-1. Summary of Ecosystems Environmental Consequences by Corridor and Alternative**

Corridor	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Unavoidable Adverse Impacts	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Temporary displacement of wildlife</li> <li>Tree removal resulting in temporary loss of urban avian habitat</li> <li>Runoff from increased impervious surface</li> <li>Potential degradation of wetland quality / functions</li> <li>Impacts to Water Resource Conservation setbacks</li> <li>Potential impacts to listed species habitat</li> </ul>	<ul style="list-style-type: none"> <li>Temporary displacement of wildlife</li> <li>Tree removal resulting in temporary loss of urban avian habitat</li> <li>Runoff from increased impervious surface</li> <li>Potential degradation of wetland quality / functions</li> <li>Impacts to Water Resource Conservation setbacks</li> <li>Potential impacts to listed species habitat</li> </ul>
<b>Coburg Road Corridor</b>			
Temporary / Short-Term Construction-Related Impacts / Benefits	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Temporary displacement of wildlife</li> <li>Tree removal resulting in temporary loss of urban avian habitat</li> <li>Potential to increase sediment transport to waterways</li> </ul>	<ul style="list-style-type: none"> <li>Temporary displacement of wildlife.</li> <li>Tree removal resulting in temporary loss of urban avian habitat</li> <li>Potential to increase sediment transport to waterways</li> </ul>
Long-Term Direct Impacts / Benefits	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Runoff from 358,576 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> </ul>	<ul style="list-style-type: none"> <li>Runoff from 812,922 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> </ul>
Indirect and Cumulative Effects	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> </ul>	<ul style="list-style-type: none"> <li>More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>Tree impacts to occur outside nesting season or surveys for nests</li> <li>BMPs to minimize impacts to waterways</li> <li>Wetland determination/ delineation to avoid wetland impacts</li> </ul>	<ul style="list-style-type: none"> <li>Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>Tree impacts to occur outside nesting season or surveys for nests</li> <li>BMPs to minimize impacts to waterways</li> <li>Wetland determination/ delineation to avoid wetland impacts</li> </ul>
Unavoidable Adverse Impacts	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Temporary displacement of wildlife</li> <li>Tree removal resulting in temporary loss of urban avian habitat</li> <li>Runoff from increased impervious surface</li> </ul>	<ul style="list-style-type: none"> <li>Temporary displacement of wildlife</li> <li>Tree removal resulting in temporary loss of urban avian habitat</li> <li>Runoff from increased impervious surface</li> </ul>

**Table S.4-1. Summary of Ecosystems Environmental Consequences by Corridor and Alternative**

Corridor	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
<b>Martin Luther King, Jr. Boulevard Corridor</b>			
Temporary / Short-Term Construction-Related Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Potential to increase sediment transport to waterways</li> <li>• Potential degradation of wetland quality / functions</li> <li>• Impacts to Water Resource Conservation setbacks</li> </ul>	
Long-Term Direct Impacts / Benefits	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Runoff from 325,299 ft<sup>2</sup> of new, reconstructed, and adjoining impervious surface</li> <li>• Potential degradation of wetland quality / functions</li> <li>• Potential permanent encroachment into Water Resource Conservation setbacks</li> </ul>	
Indirect and Cumulative Effects	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient transit system than No-Build, potentially resulting in less pollutant loading</li> <li>• Potential effects to wetlands</li> </ul>	Not applicable
Mitigation Measures	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Tree mitigation (see Street and Landscape Tree Technical Report)</li> <li>• Tree impacts to occur outside nesting season or surveys for nests</li> <li>• Potential Water Resources Conservation setback mitigation</li> <li>• BMPs to minimize impacts to waterways</li> <li>• Wetland determination/ delineation to avoid wetland impacts</li> </ul>	
Unavoidable Adverse Impacts	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary displacement of wildlife</li> <li>• Tree removal resulting in temporary loss of urban avian habitat</li> <li>• Runoff from increased impervious surface</li> <li>• Potential degradation of wetland quality / functions</li> <li>• Impacts to Water Resource Conservation setbacks</li> </ul>	

ft<sup>2</sup> = square foot (feet)

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# 1. Introduction

## 1.1. MovingAhead Technical Reports

A total of 20 technical reports have been prepared for the MovingAhead Project. The technical reports have been prepared to support the selection of preferred alternatives for the MovingAhead Project and subsequent environmental documentation. The technical reports assume that any corridors advanced for environmental review will require a documented categorical exclusion under the National Environmental Policy Act (NEPA). Any corridors requiring a higher level of environmental review would be supported by the technical evaluation but might not be fully covered by the technical evaluation.

Technical reports have been prepared for the following disciplines:

- Acquisitions and Displacements
- Air Quality
- Capital Cost Estimating
- Community Involvement, Agency and Tribal Coordination
- Community, Neighborhood, and Environmental Justice
- Cultural Resources
- Ecosystems (Biological, Fish Ecology, Threatened and Endangered Species, Wetlands and Waters of the U.S. and State)
- Energy and Sustainability
- Geology and Seismic
- Hazardous Materials
- Land Use and Prime Farmlands
- Noise and Vibration
- Operating and Maintenance Costs
- Parklands, Recreation Areas, and Section 6(f)
- Section 4(f)
- Street and Landscape Trees
- Transportation
- Utilities
- Visual and Aesthetic Resources
- Water Quality, Floodplain, and Hydrology

In general, each technical report includes the following information for identifying effects:

- Relevant laws and regulations
- Contacts and coordination
- Summary of data sources and analysis methods described in the *MovingAhead Environmental Disciplines Methods and Data Report* (CH2M HILL, Inc. [CH2M] et al., 2015)
- Affected environment
- Adverse and beneficial effects including short-term, direct, indirect and cumulative
- Mitigation measures
- Permits and approvals
- References

## 1.2. Ecosystems Technical Report and Purpose

This technical report presents the results of the Ecosystems assessment for the MovingAhead corridor alternatives. Potential effects to ecosystems analyzed for this report include those related to fish and wildlife habitats, waterways, wetlands, designated critical habitat and species listed under the federal Endangered Species Act and the Oregon Endangered Species Act. The potential effects to ecosystems and possible mitigation measures are considered in the selection of corridor preferred alternatives.

## 1.3. Discipline Experts

Table 1.3-1 identifies those discipline experts who contributed to the preparation of this report, including their area of expertise, affiliated organization, title and years of experience.

**Table 1.3-1. Discipline Experts**

Discipline	Technical Expert	Affiliated Organization	Title / Years of Experience
Ecosystems	Patrick Hendrix	ES&A	Senior Scientist / 21 years
	Wallace Leake	ES&A	Principal / 24 years
Editors	Lynda Wannamaker	Wannamaker Consulting	President / 33 years
	Scott Richman	CH2M	Senior Project Manager / 24 years
	Kelly Hoell	LTD	Transit Development Planner / 11 years
	Zach Galloway	City of Eugene	Senior Planner/ 10 years

Source: MovingAhead Project Team. (2017)

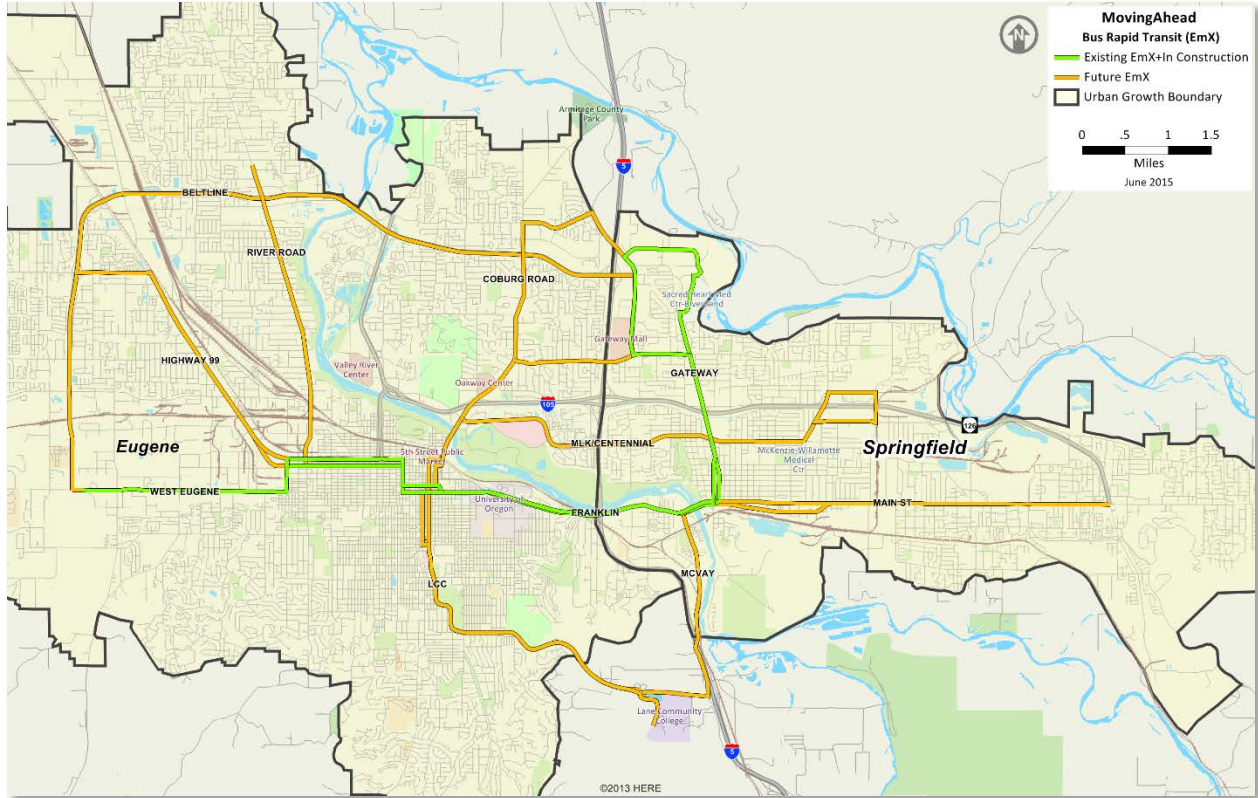
## 1.4. Study Background

The purpose of the MovingAhead Project is to determine which high-capacity transit corridors identified in the adopted *Central Lane Metropolitan Planning Organization Regional Transportation Plan* (Lane Council of Governments [LCOG], 2011, December; RTP) and the *Lane Transit District Long Range Transit Plan* (Lane Transit District [LTD], 2014) as part of the Frequent Transit Network (FTN) are ready to advance to capital improvements programming in the near term. The study is being conducted jointly with the City of Eugene and LTD to facilitate a streamlined and cost-efficient process through concurrent planning, environmental review, and design and construction of multiple corridors. The study area includes Eugene and portions of unincorporated Lane County.

The *Lane Transit District Long-Range Transit Plan* (LTD, 2014) identifies the full Martin Luther King, Jr. Boulevard / Centennial Boulevard Corridor as a future part of the FTN. Initially, MovingAhead considered options on Centennial Boulevard to serve Springfield as part of this corridor. Because Springfield does not have the resources available to consider transit enhancements on Centennial Boulevard at this time, MovingAhead will only develop Emerald Express (EmX) and Enhanced Corridor Alternatives within Eugene. Figure 1.4-1 presents LTD's existing and future bus rapid transit (BRT) system.



**Figure 1.4-1. Lane Transit District's Bus Rapid Transit (BRT) System**



Source: LTD. (2015, Amended 2015, June).

## 1.5. Screening and Evaluation of Multimodal Options

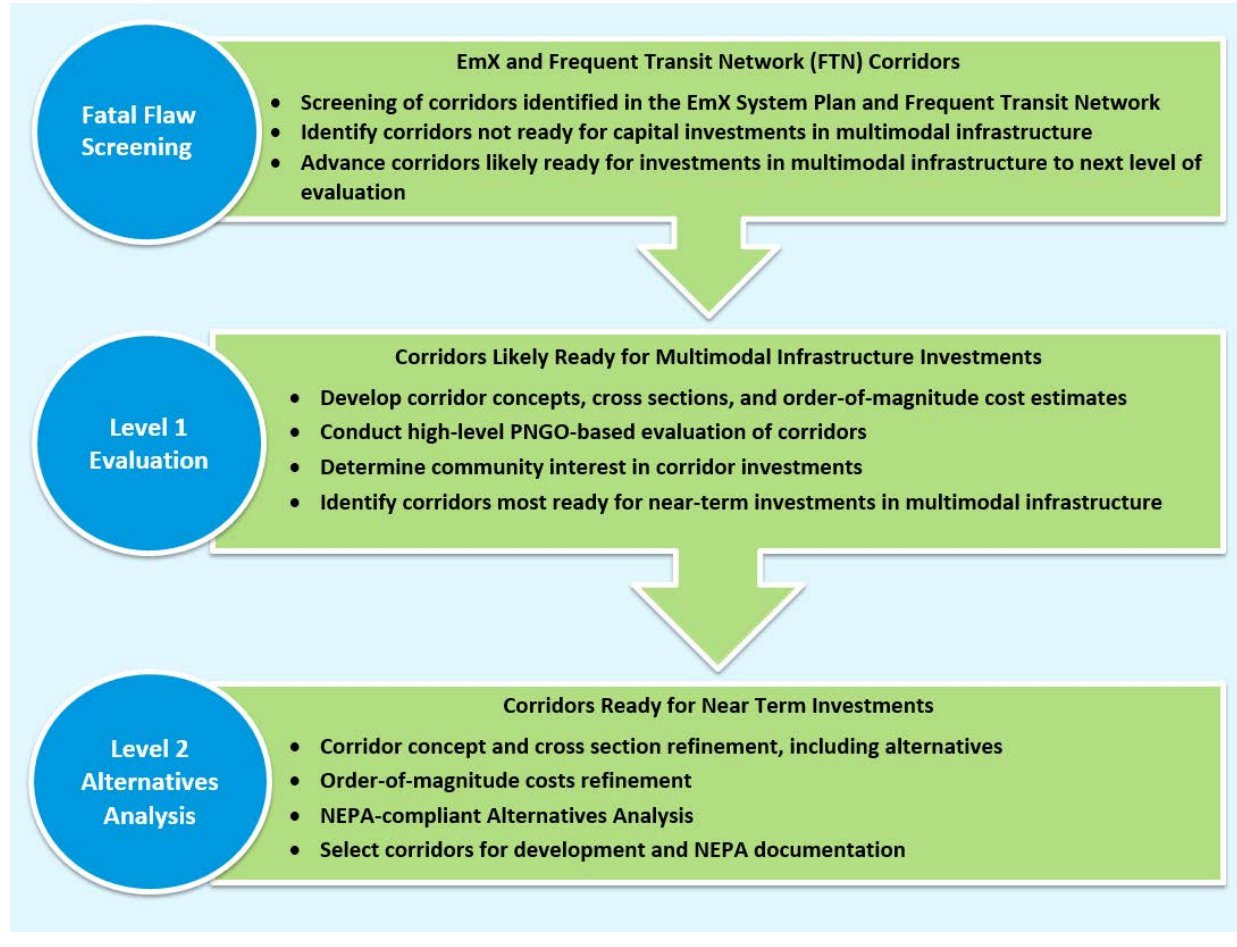
The MovingAhead Project process includes two phases. This first phase has three discrete but closely related tasks: identifying transit improvements; identifying improvements for bicyclists, pedestrians, and users of mobility devices; and preparing a NEPA-compliant evaluation of alternatives focused on the region's transportation system. Corridor options identified as part of the first phase were developed using multimodal cross sections that include variations on automobile, truck, and bus travel lanes; bicycle lanes; landscaping strips; and sidewalks. At the end of the first phase, the City of Eugene and LTD will select the corridors that are most ready for near-term capital improvements and prioritize improvements for funding. The selected corridors will be advanced to the second phase, which will focus on preparing NEPA environmental reviews (Documented Categorical Exclusions), and initiating the Federal Transit Administration (FTA) project development process.

### 1.5.1. Fatal Flaw Screening

The project team conducted a fatal flaw screening in February 2015 to identify which of the 10 corridors should not move forward to the Level 1 Screening Evaluation (Figure 1.5-1). This high-level evaluation used criteria based on MovingAhead's Purpose, Need, Goals, and Objectives (LTD, 2015, Amended 2015, June) and existing data to determine which corridors were not ready for capital investment in BRT or multimodal infrastructure in the next 10 years. The screening was conducted with local, regional, and state agency staff. Of the 10 corridors identified, the following three corridors were not advanced from

the fatal flaw screening to the Level 1 Screening Evaluation: 18th Avenue, Bob Straub Parkway, and Randy Papé Beltline Highway. Table 1.5-1 shows the results of the fatal flaw screening.

**Figure 1.5-1. MovingAhead Phase 1 Steps**



Source: Wannamaker Consulting. (2015).

Although originally advanced from the fatal flaw screening, the Main Street-McVay Highway Corridor was also not advanced to the Level 1 Screening Evaluation because the Springfield City Council (on May 18, 2015) and LTD Board (on May 20, 2015) determined that the corridor is ready to advance to a study to select a locally preferred transit solution. At the time (May 2015), the Main Street-McVay Highway Corridor was on a schedule ahead of the MovingAhead Project schedule. If the Main Street-McVay Highway Corridor study schedule is delayed and its progress coincides with this project, the corridor could be reincorporated back into MovingAhead.

**Table 1.5-1. Results of the Fatal Flaw Screening**

<b>Corridor</b>	<b>Advanced to Level 1</b>	<b>Consider Later</b>
Highway 99	✓	
River Road	✓	
Randy Papé Beltline		✓
18th Avenue		✓
Coburg Road	✓	
Martin Luther King Jr. Boulevard / Centennial Boulevard	✓	
30th Avenue to Lane Community College	✓	
Main Street-McVay Highway	✓	
Valley River Center	✓	
Bob Straub Parkway		✓

Source: LTD and City of Eugene. (2015, June).

The six remaining multimodal corridors were advanced to the Level 1 Screening Evaluation to determine how they compared with each other in meeting the Purpose, Need, Goals, and Objectives.

### 1.5.2. Level 1 Screening Evaluation

The Level 1 Screening Evaluation assessed how each corridor would perform according to the Purpose, Need, Goals, and Objectives of MovingAhead. The Level 1 Screening Evaluation used existing studies and readily available data to evaluate each corridor. Based on community input and technical analysis, the following corridors and alternatives were advanced from the Level 1 Screening Evaluation to the Level 2 Alternatives Analysis (AA) (Table 1.5-2):

- No-Build Alternatives: all corridors
- Enhanced Corridor and EmX Alternatives:
  - Highway 99 Corridor
  - River Road Corridor
  - 30th Avenue to Lane Community College (LCC) Corridor
  - Coburg Road Corridor
- Enhanced Corridor Alternative:
  - Martin Luther King Jr. Boulevard Corridor

The Valley River Center Corridor received the least public support during public outreach and was not carried forward to the Level 2 AA.

**Table 1.5-2. Corridors and Transit Alternatives Advanced to the Level 2 Alternatives Analysis**

Corridor	No-Build	Enhanced Corridor	EmX
Highway 99	✓	✓	✓
River Road	✓	✓	✓
30th Avenue to Lane Community College	✓	✓	✓
Coburg Road	✓	✓	✓
Martin Luther King, Jr. Boulevard	✓	✓	

Source: CH2M. (2016).

For a detailed discussion of alternatives and design options considered for each corridor, but not carried forward to the Level 2 AA, please refer to the *Alternatives and Design Options Considered but Eliminated Technical Memorandum* (CH2M, 2016).

### 1.5.3. Level 2 Alternatives Analysis

To guide the Level 2 AA, LTD prepared new ridership forecasts and related evaluation measures using the LCOG regional model. Base-year and future-year forecasts were prepared for corridor alternatives based upon updated inputs and transit networks specific to each corridor. The planning horizon year used for the Level 2 AA is 2035. The built and natural environments, transit operations, traffic, finance, historical resources, and other areas were also evaluated as part of the Level 2 AA. The findings from the Level 2 AA will aid LTD and the City of Eugene in determining how corridors should be prioritized for capital investments over the next 5 years. Selected corridors will be advanced to Phase 2.

## 1.6. Purpose and Need

The prioritization of capital investments in multimodal transit corridors is a powerful tool for implementing local and regional comprehensive land use and transportation plans, agency strategic plans, and other community planning documents. Capital investments in multimodal transit corridors can have a substantial impact on patterns of growth and development. By coordinating the timing of, and prioritizing the funding for, strategic multimodal capital investments, the MovingAhead Project (a multimodal transit corridor study) helps ensure that future development is consistent with our region's plans and vision.

The Purpose and Need Statement was refined based on public and agency input.

### 1.6.1. Purpose

The purpose of the MovingAhead Project is to:

- Develop a Capital Improvements Program that forecasts and matches projected revenues and capital needs over a 10-year period
  - Balance desired multimodal transit corridor improvements with the community's financial resources
  - Ensure the timely and coordinated construction of multimodal transit corridor infrastructure
  - Eliminate unanticipated, poorly planned, or unnecessary capital expenditures

- Identify the most economical means of financing multimodal transit corridor capital improvements
- Establish partnerships between LTD, City of Eugene, and other local agencies that prioritize multimodal transit infrastructure needs and promote interagency cooperation
- Ensure that multimodal transit corridor investments are consistent with local comprehensive land use and transportation plans

### 1.6.2. Need

The need for the MovingAhead Project is based on the following factors:

- LTD's and the region's commitment to implementing the region's vision for BRT in the next 20 years consistent with the RTP that provides the best level of transit service in a cost-effective and sustainable manner.
- Need for streamlined environmental reviews to leverage systemwide analysis.
- Need to build public support for implementation of the systemwide vision.
- Selection of the next EmX / FTN corridors is based on long-range operational and financial planning for LTD's service.

### 1.6.3. Goals and Objectives

#### **Goal 1: Improve multimodal transit corridor service**

- Objective 1.1: Improve transit travel time and reliability
- Objective 1.2: Provide convenient transit connections that minimize the need to transfer
- Objective 1.3: Increase transit ridership and mode share in the corridor
- Objective 1.4: Improve access for people walking and bicycling, and to transit
- Objective 1.5: Improve the safety of pedestrians and bicyclists accessing transit, traveling in and along the corridor, and crossing the corridor

#### **Goal 2: Meet current and future transit demand in a cost-effective and sustainable manner**

- Objective 2.1: Control the increase in transit operating cost to serve the corridor
- Objective 2.2: Increase transit capacity to meet current and projected ridership demand
- Objective 2.3: Implement corridor improvements that provide an acceptable return on investment
- Objective 2.4: Implement corridor improvements that minimize impacts to the environment and, where possible, enhance the environment
- Objective 2.5: Leverage funding opportunities to extend the amount of infrastructure to be constructed for the least amount of dollars

#### **Goal 3: Support economic development, revitalization, and land use redevelopment opportunities for the corridor**

- Objective 3.1: Support development and redevelopment as planned in other adopted documents
- Objective 3.2: Coordinate transit improvements with other planned and programmed pedestrian and bicycle projects
- Objective 3.3: Coordinate transit improvements with other planned and programmed roadway projects
- Objective 3.4: Minimize adverse impacts to existing businesses and industry
- Objective 3.5: Support community vision for high capacity transit in each corridor
- Objective 3.6: Improve transit operations on state facilities in a manner that is mutually beneficial to vehicular and freight traffic flow around transit stops and throughout the corridor
- Objective 3.7: Improve transit operations in a manner that is mutually beneficial to vehicular traffic flow for emergency service vehicles



#### 1.6.4. Evaluation Criteria

Evaluation criteria will be used during the Trade-off Analysis, which is part of the Level 2 AA, to aid in determining how well each of the corridor alternatives would meet the project’s Purpose, Need, Goals, and Objectives. The evaluation criteria require a mix of quantitative data and qualitative assessment. The resulting data will be used to measure the effectiveness of each proposed corridor alternative and to assist in comparing and contrasting the alternatives and options. In Table 1.6-1, evaluation criteria are listed for each of the project’s objectives. Some objectives have only one criterion for measuring effectiveness, while others require several criteria.

**Table 1.6-1. Evaluation Criteria**

Goals and Objectives		Evaluation Criteria
<b>Goal 1: Improve multimodal transit corridor service</b>		
Objective 1.1:	Improve transit travel time and reliability	<ul style="list-style-type: none"> <li>• Round trip p.m. peak transit travel time between select origins and destinations</li> <li>• On-time performance (no more than 4 minutes late) of transit service</li> </ul>
Objective 1.2:	Provide convenient transit connections that minimizes the need to transfer	<ul style="list-style-type: none"> <li>• Number of transfers required between heavily used origin-destination pairs</li> </ul>
Objective 1.3:	Increase transit ridership and mode share in the corridor	<ul style="list-style-type: none"> <li>• Average weekday boardings on corridor routes</li> <li>• Transit mode share along the corridor</li> <li>• Population within 0.5 mile of transit stop</li> <li>• Employment within 0.5 mile of transit stop</li> </ul>
Objective 1.4:	Improve access for people walking and bicycling, and to transit	<ul style="list-style-type: none"> <li>• Connectivity to existing pedestrian facilities</li> <li>• Connectivity to existing bicycle facilities</li> </ul>
Objective 1.5:	Improve the safety of pedestrians and bicyclists accessing transit, traveling in and along the corridor, and crossing the corridor	<ul style="list-style-type: none"> <li>• Opportunity to provide a safe and comfortable environment for pedestrians and bicyclists in the corridor</li> </ul>
<b>Goal 2: Meet current and future transit demand in a cost-effective and sustainable manner</b>		
Objective 2.1:	Control the increase in transit operating cost to serve the corridor	<ul style="list-style-type: none"> <li>• Cost per trip</li> <li>• Impact on LTD operating cost</li> <li>• Cost to local taxpayers</li> </ul>
Objective 2.2:	Increase transit capacity to meet current and projected ridership demand	<ul style="list-style-type: none"> <li>• Capacity of transit service relative to the current and projected ridership</li> </ul>
Objective 2.3:	Implement corridor improvements that provide an acceptable return on investment	<ul style="list-style-type: none"> <li>• Benefit / cost assessment of planned improvements</li> </ul>
Objective 2.4:	Implement corridor improvements that minimize impacts to the environment and, where possible, enhance the environment	<ul style="list-style-type: none"> <li>• Results of screening-level assessment of environmental impacts of transit solutions</li> </ul>

**Table 1.6-1. Evaluation Criteria**

Goals and Objectives		Evaluation Criteria
Objective 2.5:	Leverage funding opportunities to extend the amount of infrastructure to be constructed for the least amount of dollars	<ul style="list-style-type: none"> <li>• Number and dollar amount of funding opportunities that could be leveraged</li> <li>• Meet the FTA’s Small Starts funding requirements</li> </ul>
<b>Goal 3: Support economic development, revitalization and land use redevelopment opportunities for the corridor</b>		
Objective 3.1:	Support development and redevelopment as planned in other adopted documents	<ul style="list-style-type: none"> <li>• Consistent with the BRT System Plan and FTN concept</li> <li>• Consistent with the <i>Regional Transportation System Plan</i> (Central Lane Metropolitan Planning Organization [MPO], 2007)</li> <li>• Consistent with local comprehensive land use plans</li> </ul>
Objective 3.2:	Coordinate transit improvements with other planned and programmed pedestrian and bicycle projects	<ul style="list-style-type: none"> <li>• Capability of transit improvement to coordinate with other planned and programmed pedestrian and bicycle projects identified in adopted plans and Capital Improvements Programs</li> </ul>
Objective 3.3:	Coordinate transit improvements with other planned and programmed roadway projects	<ul style="list-style-type: none"> <li>• Capability of transit improvement to coordinate with other planned and programmed roadway projects identified in adopted plans and Capital Improvements Programs</li> </ul>
Objective 3.4:	Minimize adverse impacts to existing businesses and industry	<ul style="list-style-type: none"> <li>• Impacts to businesses along the Corridor measured in number and total acres of properties acquired, parking displacements, and access impacts.</li> <li>• Impact on freight and delivery operations for Corridor businesses</li> </ul>
Objective 3.5:	Support community vision for high capacity transit in corridor	<ul style="list-style-type: none"> <li>• Community vision includes high capacity transit in corridor</li> </ul>
Objective 3.6:	Improve transit operations on state facilities in a manner that is mutually beneficial to vehicular and freight traffic flow around transit stops and throughout the corridor	<ul style="list-style-type: none"> <li>• Impact on current and future year intersection level of service (LOS) on state facilities</li> <li>• Impact on current and future year p.m. peak hour auto / truck travel times on state facilities</li> </ul>
Objective 3.7:	Improve transit operations in a manner that is mutually beneficial to vehicular traffic flow for emergency service vehicles	<ul style="list-style-type: none"> <li>• Qualitative assessment of potential impacts to emergency service vehicle traffic flow and access</li> </ul>

Source: LTD and City of Eugene. (2015, June).

LOS = level of service

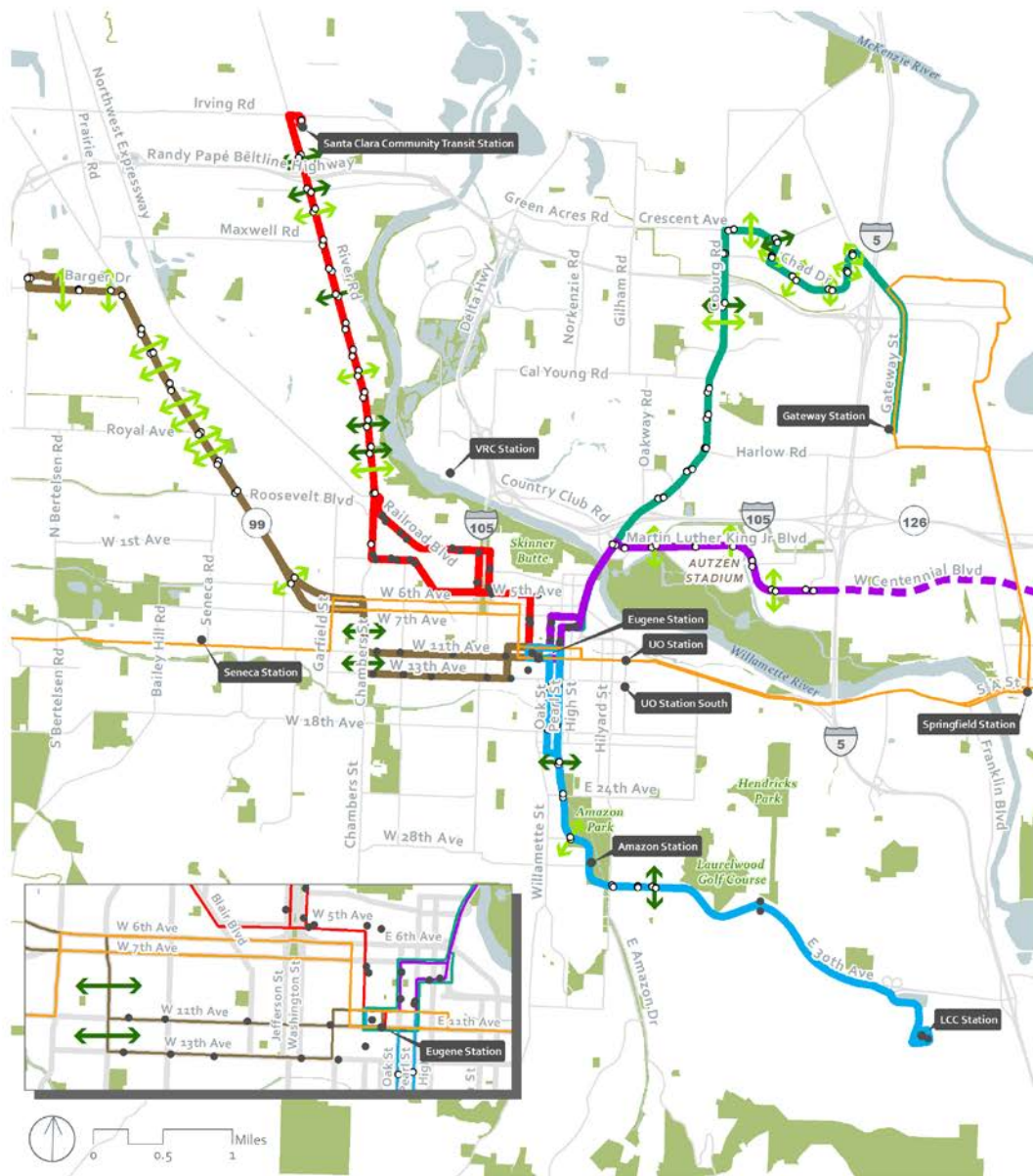
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## 2. Alternatives Considered

This section briefly reviews the major features of the alternatives considered in the Level 2 AA. For full details on each alternative and the five corridors described in this technical report – Highway 99, River Road, 30th Avenue to LCC, Coburg Road, and Martin Luther King, Jr. Boulevard – refer to the *MovingAhead Level 2 Definition of Alternatives* (CH2M et al., 2016). Each corridor location is shown on Figures 2.1-1 and 2.1-2 for the Enhanced Corridor Alternatives and the EmX Alternatives, respectively.

**Figure 2.1-1. Enhanced Corridor Alternatives Overview**



**Locator Map**



**Legend**

- 30th Avenue to Lane Community College Corridor
- Coburg Road Corridor
- Highway 99 Corridor
- River Road Corridor
- Martin Luther King Jr Blvd Corridor
- Martin Luther King, Jr Blvd Corridor continues east of I-5 as existing route #13
- 2035 No-Build EmX
- Road
- Park
- Water
- Stop/Station Locations
- Existing Without Improvements
- Proposed or Existing with Improvements
- ↔ New Pedestrian Crossing
- ↔ Enhanced Existing Pedestrian Crossing

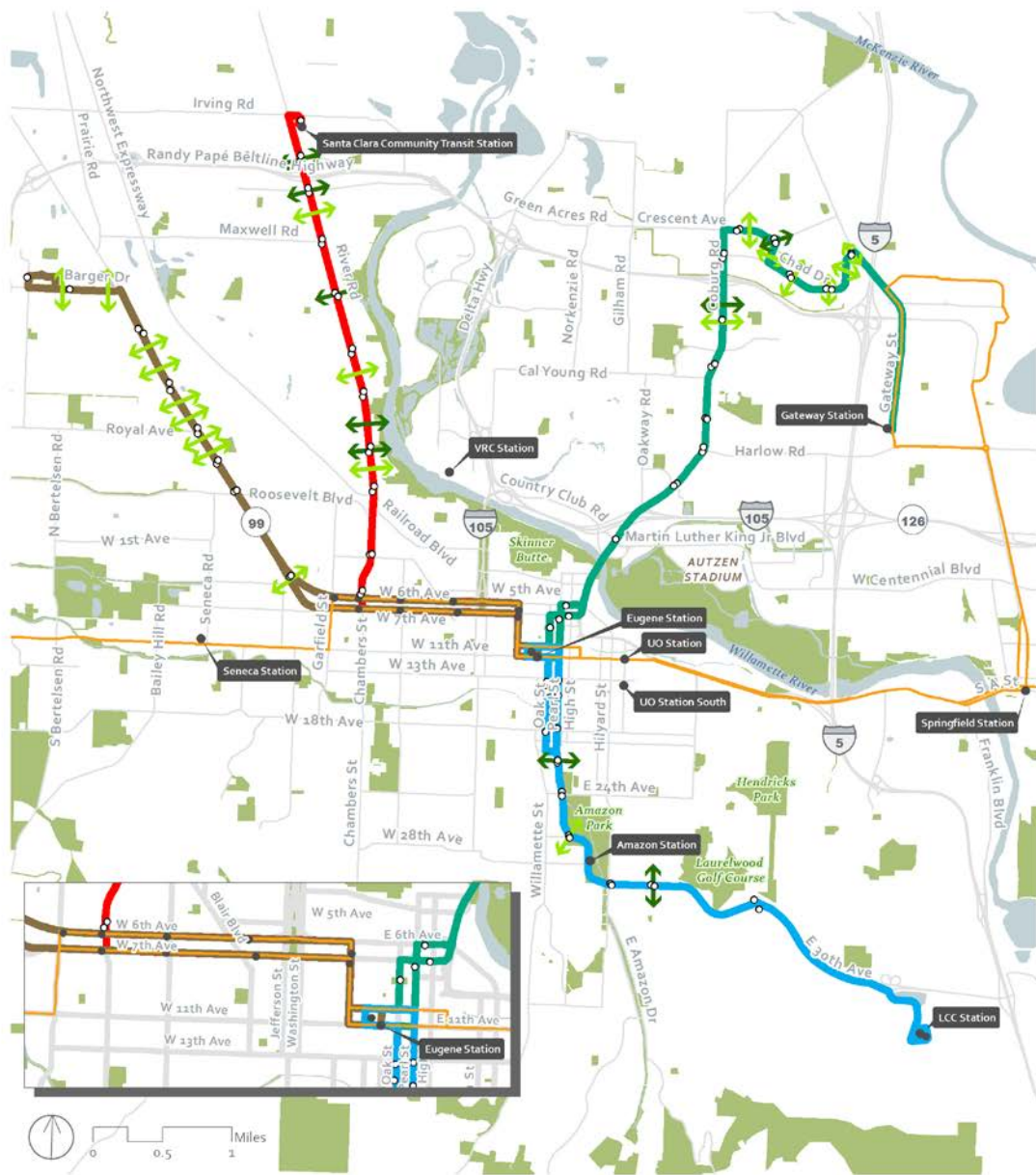
**Enhanced Corridor Alternatives Overview**



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**Figure 2.1-2. EmX Alternatives Overview**



**Locator Map**



**Legend**

- 30th Avenue to Lane Community College Corridor
  - Coburg Road Corridor
  - Highway 99 Corridor
  - River Road Corridor
  - Road
  - Park
  - Water
- 
- Stop/Station Locations**
- Existing Without Improvements
  - Proposed or Existing with Improvements
  - ↔ New Pedestrian Crossing
  - ↔ Enhanced Existing Pedestrian Crossing
  - 2035 No-Build EmX

**EmX Alternatives Overview**



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## 2.1. No-Build Alternative Transit Network

This section describes the No-Build Alternative transit network, which is based on projected conditions in the year 2035, the project's environmental forecast year. For each corridor, the No-Build Alternative serves as a reference point to gauge the benefits, costs, and effects of the build alternatives.

### 2.1.1. Capital Improvements

Under the No-Build Alternative, the following capital improvements are anticipated by 2035:

- **West Eugene EmX Extension.** Currently under construction, the West Eugene EmX Extension (WEEE) project and its associated capital improvements will be completed in 2017.
- **Santa Clara Community Transit Center.** The existing River Road Station is located at the southeast corner of the River Road / Randy Papé Beltline Highway interchange between the eastbound on-ramp and River Avenue. To meet growing demand and avoid the impacts of increasing congestion, LTD plans to relocate the River Road Station to a site north of the Randy Papé Beltline Highway at the southeast corner of River Road and Hunsaker Lane. Once relocated to the new site, the River Road Station would be renamed the Santa Clara Community Transit Center. This new transit center is planned to include a mix of uses including a park and ride lot, residential housing, community space, and commercial uses. The River Road Station relocation to the new site is anticipated to be completed by the end of 2018.
- **Main Street EmX Extension.** Included in the RTP and currently under study, the extension of the existing Franklin EmX line on Main Street from Springfield Station to Thurston Station and associated capital improvements (e.g., stations, bicycle and pedestrian facilities, and signal modifications) is anticipated to be completed within the 20-year planning horizon (2035). The No-Build Alternative transit network assumes EmX service on Main Street. However, the outcome of this study, and the ultimate improvements chosen, are uncertain at this time.
- **McVay Highway Enhanced Corridor.** Included in the RTP and currently under study, Enhanced Corridor service from Springfield Station on McVay Highway to LCC and associated capital improvements (e.g., improved stops, transit queue jumps, and improved bicycle and pedestrian crossings) is anticipated to be completed within the 20-year planning horizon (2035).

### 2.1.2. Transit Operations

The No-Build Alternatives for each corridor include changes to transit service anticipated as a result of the WEEE project, Main Street EmX Extension project, development of the Santa Clara Community Transit Center, and other changes to fixed route service. The following changes to the existing 2016 fixed route services are anticipated by 2035:

- Eliminated routes:
  - Route 11 (replaced by Main Street EmX service)
  - Route 32 (replaced by WEEE service)
  - Route 76 (replaced by WEEE service)
  - Route 85 (replaced by Enhanced Corridor service on the McVay Highway)
  - Route 43 (replaced by WEEE service)
- Other route modifications:
  - Add WEEE service (replaces Route 43 service on W. 11th Avenue) as extension of existing EmX service

- Add Main Street EmX service from Springfield Station to Thurston Station
- Add Route 2 with service from Barger Drive / Echo Hollow Road to Eugene Airport
- Add Route 16 to connect north and south of Main Street with EmX service
- Add Enhanced Corridor service on McVay Highway from Springfield Station to LCC (replaces Route 85)
- Reroute Route 33 and extend to Amazon Parkway
- Reroute Route 36 to extend north of W. 11th Avenue to Barger Drive (replaces Route 43)
- Reroute Route 41 via Highway 99 / Royal Avenue / W. 11th Avenue
- Reroute Route 40 via Royal Avenue / Elmira Road / Roosevelt Boulevard / Chambers Street / W. 2nd Avenue / Oak and Pearl Streets
- Add Route 44 paralleling Route 40 above to serve West Eugene
- Reroute Route 55 to extend to Santa Clara Community Transit Center
- Reroute Route 93 with service continuing to Eugene Station via Seneca Station and service terminating at the WEEE terminus
- Change in service frequencies:
  - Increase service on Route 24 from 30-minute peak frequencies to 15-minute peak frequencies
  - Increase service on Route 28 from approximately 30-minute peak frequencies (varying 20- to 30-minute intervals) to 15-minute peak frequencies
  - Increase service on Route 41 from 30- and 15-minute peak frequencies to 15-minute peak frequencies
  - Increase service on Route 51 from 60-minute off-peak frequencies to 30-minute off-peak frequencies
  - Increase service on Route 52 from 60-minute off-peak frequencies to 30-minute off-peak frequencies
  - Increase service on Route 66 from 30- and 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies to 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
  - Increase service on Route 67 from approximately 30-minute weekday a.m. peak, off-peak, and p.m. peak frequencies to 15-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
  - Increase service on Route 78 from approximately 60-minute frequencies from 8 a.m. to 6 p.m. to 30-minute weekday a.m. peak, off-peak, and p.m. peak frequencies
  - Increase service on Route 79x from 30-minute peak frequencies to 10-minute peak frequencies, and modify off peak frequencies to 15 minutes from between 10 and 30 minutes currently
  - Decrease a.m. peak service on Route 93 from 60-minute frequencies to 120-minute frequencies during a.m. peak hours, and increase from no service between Veneta and the WEEE terminus to 120-minute frequencies during p.m. peak hours (off-peak service is 120-minute frequencies between Veneta and the WEEE terminus)
  - Decrease a.m. peak service on Route 96 from 30-minute frequencies to 60-minute frequencies, and increase off-peak service from no service between 8:20 a.m. and 3:40 p.m. to 60-minute off-peak frequencies

Key transportation improvements specific to each corridor are described under each corridor's No-Build Alternative.

## 2.2. Enhanced Corridor Alternatives

Enhanced Corridor Alternatives are intended to address the project's Purpose, Need, Goals, and Objectives without major transit capital investments, instead focusing on lower-cost capital improvements, operational improvements, and transit service refinements. Features can include transit



queue jumps (lanes for buses that allow the bus to “jump” ahead of other traffic at intersections using a separate signal phase), bus stop consolidation, and enhanced shelters. These features improve reliability, reduce transit travel time, and increase passenger comfort.

Enhanced Corridor Alternative service would run from 6:45 a.m. to 11:30 p.m. weekdays, 7 a.m. to 11 p.m. Saturdays, and 8 a.m. to 8 p.m. Sundays. Service frequencies are assumed to be 15 minutes during all periods.

### **2.3. EmX Alternatives**

EmX (BRT) Alternatives are characterized by exclusive guideways (business access and transit (BAT) lanes or bus-only lanes); branded, multi-door 60-foot-long BRT vehicles; enhanced stations with level boarding platforms instead of stops; off-board fare collection; signal priority; wider stop spacing; and, frequent service.

EmX service would run from 6:45 a.m. to 11:30 p.m. weekdays, 7 a.m. to 11 p.m. Saturdays, and 8 a.m. to 8 p.m. Sundays. Service frequencies are assumed to be 10 minutes during all periods.

### **2.4. Highway 99 Corridor**

The Highway 99 Corridor begins at the Eugene Station, travels through downtown, then extends northwest along Highway 99 to Barger Drive, turning west at Barger Drive to terminate on Cubit Street north of the intersection of Barger Drive and Cubit Street east of the Randy Papé Beltline Highway. This corridor is approximately 10.5 round-trip miles.

#### **2.4.1. No-Build Alternative**

The Highway 99 Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft *Eugene 2035 Transportation System Plan* (City of Eugene, 2016; Draft Eugene 2035 TSP). The No-Build Alternative would not include capital improvements on Highway 99. As part of the Draft Eugene 2035 TSP, the following transportation improvements are planned along or adjacent to the corridor:

- Upgrade Bethel Drive, from Highway 99 to Roosevelt Boulevard, to a two-lane urban facility with sidewalks on both sides of the road, bicycle lanes, and planting strips
- Widen Barger Drive immediately west of the Randy Papé Beltline Highway interchange to include an additional travel lane in each direction
- Add a shared-use path on the west side of Highway 99 from Roosevelt Boulevard south to the intersection of W. 7th Avenue and Garfield Street (the section of this project from Roosevelt to W. 5th Avenue has been completed)
- Add bicycle lanes on Garfield Street from Roosevelt Boulevard south to W. 6th Avenue
- Add a bicycle lane on W. 6th Avenue from Garfield Street to W. 5th Avenue
- Complete the sidewalk network on Highway 99 from Roosevelt Boulevard south to Garfield Street
- Add a shared-use path on Roosevelt Boulevard from Maple Street to Highway 99
- Add a bicycle lane on Roosevelt Boulevard from Highway 99 east to railroad tracks

Under the No-Build Alternative, Highway 99 Corridor service would remain at 15-minute headways during peak periods and 30-minute headways during off-peak periods and evenings. Under the No-Build Alternative, a slight change is also made to Route 93, which would stop at the Pearl Buck Center in the absence of Route 44.

### **2.4.2. Enhanced Corridor Alternative**

Capital improvements under the Highway 99 Corridor Enhanced Corridor Alternative would include enhanced bicycle and pedestrian crossings; improvements to existing bus stops and the construction of new stops; a pedestrian bridge across the freight railroad line from Highway 99 to the Trainsong neighborhood; construction of queue jumps at some intersections; traffic signal reconstruction; construction of bus-only left turn lanes; and roadway widening at some locations in the corridor.

Existing conventional fixed-service routes would remain the same as with the No-Build Alternative, with the exception of the elimination of Route 41. Service west of WinCo would also remain the same or be improved.

### **2.4.3. EmX Alternative**

The Highway 99 Corridor EmX Alternative would include creating BAT lanes on segments of W. 7th Avenue and Highway 99; reconstructing the Highway 99 / Roosevelt Boulevard intersection (traffic signal, turn lanes, and queue jump); completing other intersection modifications in the corridor; roadway widening at some locations; and constructing nine new enhanced pedestrian and bicycle crossings, new sidewalks, and a pedestrian bridge across the railroad line from Highway 99 to the Trainsong neighborhood. Four existing bus stop locations would be improved to EmX stations, in addition to constructing new stations. Some existing EmX stations would be used for the Highway 99 Corridor EmX service.

Route 44 is a conventional service line added to this alternative only, providing coverage on 11th and 13th Avenues as well as service to the Pearl Buck Center on W. 1st Avenue, with 30-minute headways during all periods. This would be a decrease in service for the 11th and 13th Avenue corridors that currently have 15-minute peak service. Route 44 is primarily intended to replace conventional service lost with the removal of the existing Route 41. Route 41 would be replaced with the Highway 99 Corridor EmX service described in this alternative.

## **2.5. River Road Corridor**

The River Road Corridor begins at the Eugene Transit Center, travels through downtown and then north to the Santa Clara Community Transit Center (intersection of Hunsaker Lane and River Road). This corridor is approximately 10.3 round-trip miles.

### **2.5.1. No-Build Alternative**

The River Road Corridor No-Build Alternative would include existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major bus capital improvements under the No-Build Alternative.

As part of the Draft Eugene 2035 TSP, the following transportation improvements are planned adjacent to and along the River Road Corridor:

- Upgrade the Hunsaker Lane / Beaver Street intersection to urban collector standards, including two travel lanes, a center turn lane, bicycle lanes, sidewalks on both sides of the road, and planting strips from River Road to Division Avenue
- Provide bicycle boulevards on Ruby Avenue, Horn Lane, Arbor Drive, and Park Avenue
- Include sidewalks on Hunsaker Lane, Howard Avenue, and Hilliard Lane
- Provide protected bicycle lanes on River Road from the Northwest Expressway to Division Avenue

Under the No-Build Alternative, River Road Corridor service would remain at 30-minute headways for both Routes 51 and 52 (which together effectively provide 15-minute service during peak periods) and off-peak periods. After 6:15 p.m., there is no longer a combined 15-minute frequency, and headways return to 30 minutes.

### **2.5.2. Enhanced Corridor Alternative**

Capital improvements constructed as part of the River Road Corridor Enhanced Corridor Alternative would include BAT lanes on River Road approaching the Randy Papé Beltline Highway and other roadway improvements, like traffic signal reconstruction at certain locations along the corridor. Improvements to existing bus stops and the construction of new stops would also occur.

Routes 51 and 52 would be eliminated, and Enhanced Corridor service for River Road includes a split alignment in order to serve portions covered by those routes at 30-minute headways. In this arrangement, the area from Railroad Boulevard to W. 1st Avenue is served by one Enhanced Corridor service as a replacement for the Route 51 service, while the area along Blair Boulevard and W. 2nd Avenue is served by the other alignment to replace service lost with removal of Route 52. Those alignments meet at Railroad Boulevard and River Road to serve the River Road Corridor with consistent 15-minute headways.

### **2.5.3. EmX Alternative**

New construction under the River Road Corridor EmX Alternative would include lane repurposing on River Road for BAT lanes, constructing short sections of exclusive bus lanes near the Randy Papé Beltline Highway, reconstructing traffic signals and intersections at several locations, constructing new bicycle and pedestrian crossings, improving existing stops to EmX stations, and constructing new stations. Some existing EmX stations would be used with the River Road EmX service.

Transit service changes would also include modifying headways on Route 40 during the a.m. and p.m. peak hours to 15 minutes, developing a new Route 50 “River Road Connector” with 30-minute headways all day, and eliminating Routes 51, 52, and 55. These replacements ensure no loss in existing coverage or service.

## **2.6. 30th Avenue to Lane Community College Corridor**

The 30th Avenue to LCC Corridor begins at Eugene Station and travels south along Pearl Street (outbound) to Amazon Parkway, then on E. 30th Avenue to its terminus at the LCC Station. The return trip travels on Oak Street (inbound), which is the northbound couplet to Pearl Street. This corridor is approximately 10.2 round-trip miles.

### **2.6.1. No-Build Alternative**

The 30th Avenue to LCC Corridor No-Build Alternative would include existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major bus capital improvements to the 30th Avenue to LCC Corridor under the No-Build Alternative.

The Draft Eugene 2035 TSP identifies the following transportation improvements along or adjacent to the corridor:

- Bicycle boulevard on Alder Street



For the portion of E. 30th Avenue in unincorporated Lane County, Lane County does not plan to improve bicycle facilities along the road.

Under the No-Build Alternative, 30th Avenue to LCC Corridor service would remain at 30-minute headways on Route 81. The Route 82 service would remain at 10-minute headways during the a.m. peak, 15-minute headways during off-peak periods, and 20-minute headways during the p.m. peak, with no weekend service.

### **2.6.2. Enhanced Corridor Alternative**

Capital improvements as part of the 30th Avenue to LCC Corridor Enhanced Corridor Alternative would include the construction of new bus stops, capital improvements to some existing bus stops, a new traffic signal on Amazon Parkway at E. 20th Avenue, and new bike facilities on Oak and Pearl Streets.

Under the 30th Avenue to LCC Corridor Enhanced Corridor Alternative, service to LCC provided by Routes 81 and 82 would be eliminated and replaced by Enhanced Corridor service. The direct connection between LCC and the University of Oregon Station along Route 81 would be eliminated. It would be replaced by connecting the 30th Avenue to LCC Corridor Enhanced Corridor Alternative to the Franklin EmX line with a transfer at Eugene Station.

### **2.6.3. EmX Alternative**

The 30th Avenue to LCC Corridor EmX Alternative would include repurposing parking and general-purpose lanes to BAT lanes on Oak and Pearl Streets, constructing queue jumps, extending E. 20th Avenue, adding a new traffic signal on Amazon Parkway, and adding a new cycle track on High Street. In addition to constructing new EmX stations, existing bus stops would be improved to EmX stations in certain locations.

Service to LCC provided by Routes 81 and 82 would be replaced with EmX service. The direct connection between LCC and the University of Oregon Station along Route 81 would be eliminated. It would be replaced by connecting the 30th Avenue to LCC Corridor EmX Alternative to the Franklin EmX line with a transfer at Eugene Station.

## **2.7. Coburg Road Corridor**

The Coburg Road Corridor begins at Eugene Station and continues to Coburg Road using the Ferry Street Bridge. The corridor continues north on Coburg Road to Crescent Avenue, east on Crescent Avenue and Chad Drive to N. Game Farm Road, and south on N. Game Farm Road and Gateway Street to the existing Gateway Station at the Gateway Mall. Although service extends from N. Game Farm Road to the Gateway Station, capital improvements for the corridor terminate at Interstate 5 (I-5). This corridor is approximately 11.2 round-trip miles.

### **2.7.1. No-Build Alternative**

The Coburg Road Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. There would be no additional major transportation improvements to the Coburg Road Corridor under the No-Build Alternative.

Under the No-Build Alternative, the Coburg Road Corridor service would remain at 15-minute headways on Routes 66 and 67 at all weekday times, 30-minute headways on Saturdays, and 60-minute headways on Sundays.

### **2.7.2. Enhanced Corridor Alternative**

The Coburg Road Corridor Enhanced Corridor Alternative would include new traffic signal construction, intersection reconstruction at several locations on Coburg Road, the addition of queue jumps, and the addition of BAT lanes south of the Interstate 105 (I-105) interchange. New crossings for bicyclists and pedestrians would be constructed. Existing bus stops would be improved and new stops would also be constructed.

Route 12 would be altered to serve Valley River Center and Marcola Road. A new route (Route 60) would be added to serve Valley River Center, and Routes 66 and 67 would be eliminated. This change would provide new service and coverage to the Cal Young neighborhood and along Hayden Bridge Way in Springfield. It would require current passengers along Harlow Road to transfer in order to get downtown.

### **2.7.3. EmX Alternative**

Improvements to the corridor under the Coburg Road Corridor EmX Alternative would include construction of exclusive transit lanes at several locations on Coburg Road and intersection reconstruction at multiple locations. New bicycle and pedestrian crossings and EmX stations would be constructed, and some existing bus stops would be improved to EmX stations.

As in the Coburg Road Corridor Enhanced Corridor Alternative, Route 12 would be altered to serve Valley River Center and Marcola Road, and Route 60 would be added to serve Valley River Center, while Routes 66 and 67 would be eliminated. This change would provide new service and coverage to the Cal Young neighborhood and along Hayden Bridge Way in Springfield. It would require current passengers along Harlow Road to transfer in order to get downtown.

## **2.8. Martin Luther King, Jr. Boulevard Corridor**

The Martin Luther King, Jr. Boulevard Corridor begins at Eugene Station and travels through downtown Eugene on Oak and Pearl Streets and on 7th and 8th Avenues. The corridor uses the Ferry Street Bridge to reach Martin Luther King, Jr. Boulevard and continues east on Martin Luther King, Jr. Boulevard past Autzen Stadium to Centennial Boulevard. Although transit service continues along Centennial Boulevard, capital improvements for the corridor terminate at I-5. The corridor is approximately 6.0 round-trip miles.

### **2.8.1. No-Build Alternative**

The Martin Luther King, Jr. Boulevard Corridor No-Build Alternative includes existing roadway, bicycle, pedestrian, and transit facilities in the corridor, as well as planned improvements in the Draft Eugene 2035 TSP. The Draft Eugene 2035 TSP identifies the following transportation improvements along or adjacent to the Martin Luther King, Jr. Corridor:

- Add a center turn lane along sections of Martin Luther King, Jr. Boulevard from Club Road to Leo Harris Parkway

Under the No-Build Alternative, the Martin Luther King, Jr. Boulevard Corridor service would remain at 30-minute headways.

### **2.8.2. Enhanced Corridor Alternative**

Capital improvements associated with the Martin Luther King, Jr. Boulevard Corridor Enhanced Corridor Alternative would include reconstructing traffic signals at the intersections of Coburg Road and Martin Luther King, Jr. Boulevard and of Martin Luther King, Jr. Boulevard and Centennial Loop; repurposing existing outside general-purpose lanes to BAT lanes on Martin Luther King, Jr. Boulevard; adding a new traffic signal at the intersection of Martin Luther King, Jr. Boulevard and Leo Harris Parkway; enhancing pedestrian crossings; constructing new bus stops; and improving existing bus stops. Existing Route 13 would be eliminated.

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### 3. Methods and Data

This report summarizes the methods and data that are used to assess potential direct and indirect long-term effects of the alternatives under study in the MovingAhead Project.

#### 3.1. Biological, Fish Ecology, and Threatened and Endangered Species

The biological resources and listed species evaluation identified potential significant adverse impacts and beneficial effects of the various project alternatives and design options on wildlife habitat, wildlife corridors and riparian buffers, and listed (state and federal endangered, threatened, and proposed) wildlife and plant species. The data collection and evaluation supports the optimization of design concepts and the analysis and evaluation of alternatives for the project. The biological resources and listed species analysis was prepared in compliance with the NEPA, applicable state environmental policy legislation, and local and state planning and land use policies and design standards.

There are several federal, state, and local requirements for protecting wildlife, habitat, and listed plant species. The analysis identified these requirements as well as documented the presence of known biological resources and listed species. Coordination with resource agencies, review of existing databases, and field surveys were used to document the presence of relevant biological resources.

Potential adverse impacts and beneficial effects to biological resources, such as degradation of habitat, was identified in the analysis of alternatives.

Current fish distribution data was obtained from resource agencies. Applicable federal, state, and local regulatory requirements were reviewed concerning fish habitat, passage, and listed species. Potential impacts to fish resources were documented. Significant impacts include, but are not limited to, alternatives that result in a “take” of federally listed or state listed fish species, adverse modification of federally designated critical habitat, loss or degradation of essential fish habitat, and creation of obstructions to fish passage.

##### 3.1.1. Relevant Laws and Regulations

###### 3.1.1.1. Federal

###### **Endangered Species Act (ESA), 16 United States Code (U.S.C.) 1531-1544**

(<https://www.law.cornell.edu/uscode/text/16/chapter-35>). The ESA prohibits the take of any federally listed species. The law defines “take” as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct” (Section 3[18]). “Harm” includes any act that kills or injures members of the species, including acts that may modify or degrade habitat in a way that significantly impairs essential behavioral patterns of the species. Under Section 7 of the ESA, any federal agency that authorizes, funds, or carries out an action must ensure that the action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat.

“Critical habitat” refers to specific geographic areas that are essential to the conservation of a threatened or endangered species. The purpose of designating critical habitat is to require federal agencies (or their representatives) to consider the effects of actions they carry out, fund, or authorize on habitat that is essential to the conservation of a listed species. Critical habitat areas typically have special management considerations for actions taken within such areas or for any actions that could impact those areas.

If federally listed species or designated critical habitat are found within the project area, informal or formal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA may be required. Informal consultations occur for projects that likely would not adversely affect listed species, whereas formal consultation is required for projects that likely would adversely affect listed species.

**Magnuson-Stevens Fishery and Conservation Management Act of 1976, Public Law 94-265, as amended** (<http://www.nmfs.noaa.gov/sfa/magact/>). The Fishery Conservation and Management Act of 1976 (Magnuson Act) authorized NMFS to regulate the fisheries of the United States. The act also established eight regional fishery management councils. These councils prepared fishery management plans to govern their management activities, and submitted these plans to NMFS for approval. The Sustainable Fisheries Act of 1996 amended the Magnuson Act (and also renamed it to the Magnuson-Stevens Fishery and Conservation Management Act) to emphasize the sustainability of the nation's fisheries. The act requires cooperation between NMFS, the regional fishery management councils, and federal agencies to protect, conserve, and enhance "essential fish habitat (EFH)," defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

The act requires EFH descriptions to be included in federal fishery management plans, and requires federal agencies to consult with NMFS on activities that may adversely affect EFH. NMFS regulations implementing the EFH provisions require all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council amended the Pacific Coast Salmon Plan in 1999 (Amendment 14). This amendment covers EFH for all fisheries under NMFS jurisdiction that would potentially be affected by the proposed action. EFH includes all streams, lakes, ponds, wetlands, and other currently viable water bodies, and most of the habitat historically accessible to salmon. Under Section 305(b)(4) of the act, NMFS must provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH.

In 1999 and 2000, the Pacific Fishery Management Council added provisions for the protection of EFH to three fishery management plans (Coastal Pelagics, Groundfish, and Pacific Coast Salmonids) in the Pacific Northwest. Each federal agency must consult with NMFS on all activities or proposed activities authorized, funded, or undertaken by the agency that may adversely affect EFH. Compliance with this Act is typically handled by incorporating an impact analysis of the EFH within the Biological Assessment prepared in compliance with Section 7 of the ESA.

**Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703-712**

(<https://www.law.cornell.edu/uscode/text/16/chapter-7/subchapter-II>). The MBTA protects migratory bird species and prohibits unauthorized destruction of active nests and disturbances that lead to the abandonment of active nests. Under the MBTA, nests of migratory birds should not be destroyed during the breeding season (approximately March - August). The MBTA is administered by USFWS.

**Bald and Golden Eagle Protection Act, 16 U.S.C. 668a-d**

(<https://www.law.cornell.edu/uscode/text/16/668>). This law protects the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (*Aquila chrysaetos*) by prohibiting, except under certain specified conditions, the taking and possession of and placing into commerce such birds. "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.

**Fish and Wildlife Coordination Act, 16 U.S.C. 661-667e**

(<https://www.law.cornell.edu/uscode/text/16/chapter-5A/subchapter-I>). The federal Fish and Wildlife Coordination Act requires consultation with USFWS and the appropriate state wildlife agency when a project will impound, divert, channelize, or otherwise control or modify the waters of any stream or

other body of water. Such actions would also require compliance with Section 404 of the Clean Water Act (CWA). Consideration must be given to preventing damage or loss to wildlife and to mitigating any effects caused by a federal project. The environmental assessment must include an evaluation of how the actions may affect fish and wildlife resources, and must identify measures to reduce impacts to fish and wildlife.

**CWA, 33 U.S.C. 1251-1376** (<https://www.law.cornell.edu/uscode/text/33/chapter-26>). The CWA requires states to set water quality standards for all contaminants in surface waters, based on the "beneficial" or "designated" uses for the water body, and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit was obtained under its provisions. It also recognizes the need to address the problems posed by nonpoint source pollution. Some of the permitting processes that fall within the purview of the CWA include Section 402: National Pollutant Discharge Elimination System (NPDES) permits, Section 404: permits for the discharge of dredged or fill material into waters of the United States, and Section 401: Water Quality Certification.

The discharge of dredged and fill material into jurisdictional waters of the United States, including wetlands, requires a Section 404 permit from the U.S. Army Corps of Engineers (Corps). Section 401 of the CWA is triggered when an applicant for a federal license or permit plans to conduct an activity that may result in a discharge to waters of the state or U.S. The applicant must obtain a water quality certification attesting that the activity complies with state water quality requirements and standards. Applicants in Oregon submit a Joint Permit Application form to the Corps and the Oregon Department of State Lands (DSL), and the Corps forwards the application to the Oregon Department of Environmental Quality (DEQ) for water quality certification. DEQ then determines whether to certify that the project meets state water quality standards and does not endanger waters of the state/United States or wetlands.

### 3.1.1.2. State

#### **Oregon Revised Statutes (ORS) 496.171-192, ORS 564-100-135, Oregon Administrative Rules (OAR) 635-100, and OAR 603-073-0090, Oregon's Endangered Species Act**

([https://www.oregonlegislature.gov/bills\\_laws/Pages/ORS.aspx](https://www.oregonlegislature.gov/bills_laws/Pages/ORS.aspx)). The Oregon ESA applies to actions of non-federal public agencies and actions on non-federal public lands. In general, the Oregon ESA is much more limited in scope than the federal law. Once a species is placed on the state list as threatened or endangered, Oregon statutes regulate the "take" (collect, cut, damage, destroy, dig, pick, remove, or otherwise disturb, kill, obtain possession, or control) of the listed species. Under the Oregon ESA, the Oregon Department of Fish and Wildlife (ODFW) is responsible for fish and wildlife, and the Oregon Department of Agriculture (ODA) is responsible for plants. ODFW or ODA may issue a permit to any person for the incidental take of a state-listed threatened or endangered species if it determines that such take will not adversely impact the long-term conservation of the species or its habitat. The ODFW or ODA may issue the permit under such terms, conditions, and time periods as are necessary to minimize the impact on the species or its habitat. An incidental take permit may be issued for individuals of more than one state-listed species. ODFW may not issue incidental take permits for species listed under the federal ESA.

#### **Essential Indigenous Anadromous Salmonid Habitat, ORS 196.810, ORS 196.910**

([https://www.oregonlegislature.gov/bills\\_laws/Pages/ORS.aspx](https://www.oregonlegislature.gov/bills_laws/Pages/ORS.aspx)). Essential indigenous anadromous salmonid habitat (ESH) is defined as the habitat necessary to prevent the depletion of indigenous (native) anadromous salmonid species (chum, sockeye, Chinook and coho salmon; and steelhead, bull, and cutthroat trout) during their spawning and rearing life history stages. The designation applies only to those species that have been listed as sensitive, threatened, or endangered by a state or federal

authority. In areas designated as ESH, Oregon's Removal-Fill Law requires a permit from DSL for most removal and fill activities (OAR 141-085-0002 (<http://arcweb.sos.state.or.us/pages/rules/access/numerically.html>); ORS (196.810[1][b])). DSL, in consultation with ODFW, designates ESH based on field surveys and/or the professional judgment of ODFW's district biologist.

**Oregon's Removal-Fill Law, ORS 196.795-196.990**

([https://www.oregonlegislature.gov/bills\\_laws/Pages/ORS.aspx](https://www.oregonlegislature.gov/bills_laws/Pages/ORS.aspx)). Impacts to jurisdictional wetlands or other waters of the state (including some ditches) require a Removal-Fill permit from DSL. In most cases, the preparation of a Joint Permit Application will require completing a wetland delineation and particular resource plans, including a compensatory mitigation plan, an erosion and sediment control plan, and a stormwater management plan.

**Fish Passage; Fishways; Screen Devices; Hatcheries Near Dams, ORS 509.580-509.910**

([https://www.oregonlegislature.gov/bills\\_laws/Pages/ORS.aspx](https://www.oregonlegislature.gov/bills_laws/Pages/ORS.aspx)). Oregon's fish passage law requires the owner or operator of an artificial obstruction located in waters in which native migratory fish are currently or were historically present to address fish passage requirements before certain trigger events. All new culverts, bridges, and dams must meet ODFW's current fish passage criteria. Fish passage criteria and designs are normally based on the migration timing and swimming ability of the weakest individual of the weakest species and life history stage of native migratory fish that are present and require upstream access. Thus, it is important to identify this information for the location in question.

The law allows for waivers and exemptions in limited circumstances. All requests for waivers and exemptions must be approved by either the ODFW fish passage coordinator or the Oregon Fish and Wildlife Commission, depending on the amount of habitat that will be removed from fish usage. Waivers allow for mitigation if the applicant can show that the mitigation will provide a net benefit to native migratory fish over providing passage at the artificial obstruction in question. Exemptions may be allowed if a lack of fish passage has already been mitigated, a legal waiver has already been granted, or there is no appreciable benefit to native migratory fish by providing passage. Exemptions are reviewed at least every 7 years and are revocable. If an exemption is revoked, then passage must be provided immediately, independent of a trigger event. If required, the fish passage structure must be constructed within one in-water work period of the determination that fish passage is required.

**Statewide Planning Goals and Guidelines, Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces, OAR 660-015-0000(5)**

(<http://arcweb.sos.state.or.us/pages/rules/access/numerically.html>). Goal 5 protects natural resources and conserves scenic and historic areas and open spaces throughout the state. Goal 5 and its related administrative rules (OAR Chapter 660, Divisions 16 and 23) describe how cities and counties must plan and zone land to conserve resources listed in the goal. Local governments throughout Oregon have adopted programs to protect natural resources and conserve scenic, historic, and open space resources under Goal 5. Goal 5 planning related to biological resources within the project area includes the following:

- Fish and wildlife areas and habitats should be protected and managed in accordance with the Oregon Wildlife Commission's fish and wildlife management plans.
- Stream flow and water levels should be protected and managed at a level adequate for fish, wildlife, pollution abatement, recreation, aesthetics and agriculture.
- Significant natural areas that are historically, ecologically, or scientifically unique, outstanding or important, including those identified by the State Natural Area Preserves Advisory Committee, should be inventoried and evaluated.



- Plans should provide for the preservation of natural areas consistent with an inventory of scientific, educational, ecological, and recreational needs for significant natural areas.

### 3.1.1.3. Local

**City of Eugene Land Use Code. Natural Resource Zone (NR) (Eugene City Code [EC] 9.2500 to 9.2540).**

The NR zone is designed to implement the Eugene-Springfield Metropolitan General Plan (MetroPlan) by providing areas that will be preserved for long term protection of native vegetation, wetlands, waterways, wildlife habitat, rare plants, and surface and ground water quality. In general, this zone is intended to protect outstanding natural resource areas identified in adopted plans. The NR zone is also intended to address state and federal laws and policies that regulate development within jurisdictional wetlands, and to protect water quality including applicable provisions of the federal CWA and the State of Oregon’s wetland laws. The natural functions and values intended to be protected by this zone include all the following: habitat for federally listed rare, threatened or endangered plant and animal species, floodwater storage and conveyance, sediment and erosion control, natural pollution control, fish and wildlife habitat, aquifer recharge and water supply, and native plant communities.

**City of Eugene Land Use Code. Park, Recreation and Open Space Zone (EC 9.2600 to 9.2650).** The Park, Recreation and Open Space Zone is intended to implement the MetroPlan, Eugene Parks and Recreation Plan and other applicable plans by providing areas that will conserve and preserve a variety of parks, recreation areas and open spaces to maintain livability of the metropolitan area; provide a balance of active and passive recreation opportunities to meet neighborhood, community and metropolitan needs; efficiently implement plans and improvements to parks and open areas with appropriate reviews where compatibility issues may arise; and facilitate preservation of scenic and natural values and ecosystem management.

**City of Eugene Land Use Code. Tree Preservation and Removal Standards (EC 9.6880 to 9.6885).** The Tree Preservation and Removal Standards are designed to implement the MetroPlan and refinement plan policies related to vegetation preservation; maintain a minimum level of tree canopy cover throughout the city while addressing the city’s goals for a healthy economy, affordable housing, and reduced sprawl; mitigate the impacts of development on the essential functions of the urban forest through requirements for preservation and replacement of tree canopy cover; ensure a healthy future urban forest by encouraging protection of mixed age stands of trees and promoting a diversity of tree species; and maintain a safe and attractive environment for residents and workers by requiring the integration of urban forestry principles into the design of new development.

**City of Eugene Land Use Code. Willamette Greenway Permits (EC 9.8800 to 9.8825).** Willamette Greenway Permits implement the Oregon Statewide Planning Goal 15, Willamette River Greenway, which is designed to protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River. Changes in land use, intensification of uses, or developments require special consideration before being permitted within the Willamette River Greenway boundaries.

### 3.1.2. Analysis Area

A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table 3.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table 3.1-2.

The analysis area is located along the five corridors and the associated Enhanced Corridor Alternative areas of potential impact (APIs) are shown on Figure 3.1-1, and the EmX Alternative APIs are shown on Figure 3.1-2. The APIs are defined in the Level 2 AA.

**Table 3.1-1. Listed Species Documented as Occurring in the Project Vicinity**

Scientific Name	Common Name	Federal Status	State Status
<i>Erigeron decumbens</i>	Willamette daisy	LE	LE
<i>Eucephalus vialis</i>	Wayside aster	SOC	LT
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly	LE	---
<i>Icaricia icarioides fender</i>	Fender's blue butterfly	LE	---
<i>Lomatium bradshawii</i>	Bradshaw's lomatium	LE	LE
<i>Lupinus oreganus</i>	Kincaid's lupine	LT	LT
<i>Oncorhynchus mykiss</i>	Steelhead (Upper Willamette ESU)	LT	SV
<i>Oncorhynchus tshawytscha</i>	Chinook (Upper Willamette ESU)	LT	SC
<i>Salvelinus confluentus</i>	Bull trout (Willamette SMU)	LT	SC
<i>Sericocarpus rigidus</i>	White-topped aster	SOC	LT

Source: USFWS. (2016b).

--- = Not Listed

ESU = Evolutionarily Significant Unit

LE = Listed Endangered

LT = Listed Threatened

SC = Sensitive Critical

SMU = Species Management Unit

SOC = Species of Concern

SV = Sensitive Vulnerable

**Table 3.1-2. U.S. Fish and Wildlife Service Lane County Listed Species**

Scientific Name	Common Name	Federal Status	State Status
<i>Brachyramphus marmoratus</i>	Marbled murrelet	LT	LT
<i>Caretta</i>	Loggerhead sea turtle	LE	---
<i>Castilleja levisecta</i>	Golden paintbrush	LT	LE
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	LT	LT
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	LT	SC
<i>Dermochelys coriacea</i>	Leatherback sea turtle	LE	---
<i>Eremophila alpestris strigata</i>	Streaked horned lark	LT	SC
<i>Erigeron decumbens</i>	Willamette daisy	LE	LE
<i>Eucephalus vialis</i>	Wayside aster	SOC	LT
<i>Euphydryas editha taylori</i>	Taylor's checkerspot butterfly	LE	---
<i>Gulo luscus</i>	North American wolverine	PT	LT
<i>Icaricia icarioides fender</i>	Fender's blue butterfly	LE	---
<i>Lepidochelys olivacea</i>	Olive ridley sea turtle	LT	---
<i>Lomatium bradshawii</i>	Bradshaw's lomatium	LE	LE
<i>Lupinus oregonus</i>	Kincaid's lupine	LT	LT
<i>Oncorhynchus mykiss</i>	Steelhead (Upper Willamette ESU)	LT	SV
<i>Oncorhynchus tshawytscha</i>	Chinook (Upper Willamette ESU)	LT	SC
<i>Phoebastria albatrus</i>	Short-tailed albatross	LE	---
<i>Rana pretiosa</i>	Oregon spotted frog	LT	SC
<i>Salvelinus confluentus</i>	Bull trout (Willamette SMU)	LT	SC
<i>Sericocarpus rigidus</i>	White-topped aster	SOC	LT
<i>Speyeria zerene hippolyta</i>	Oregon silverspot butterfly	LT	---
<i>Strix occidentalis caurina</i>	Northern spotted owl	LT	LT

Source: USFWS. (2016a).

**Figure 3.1-1. Enhanced Corridor Alternatives Areas of Potential Impact to Ecosystems**

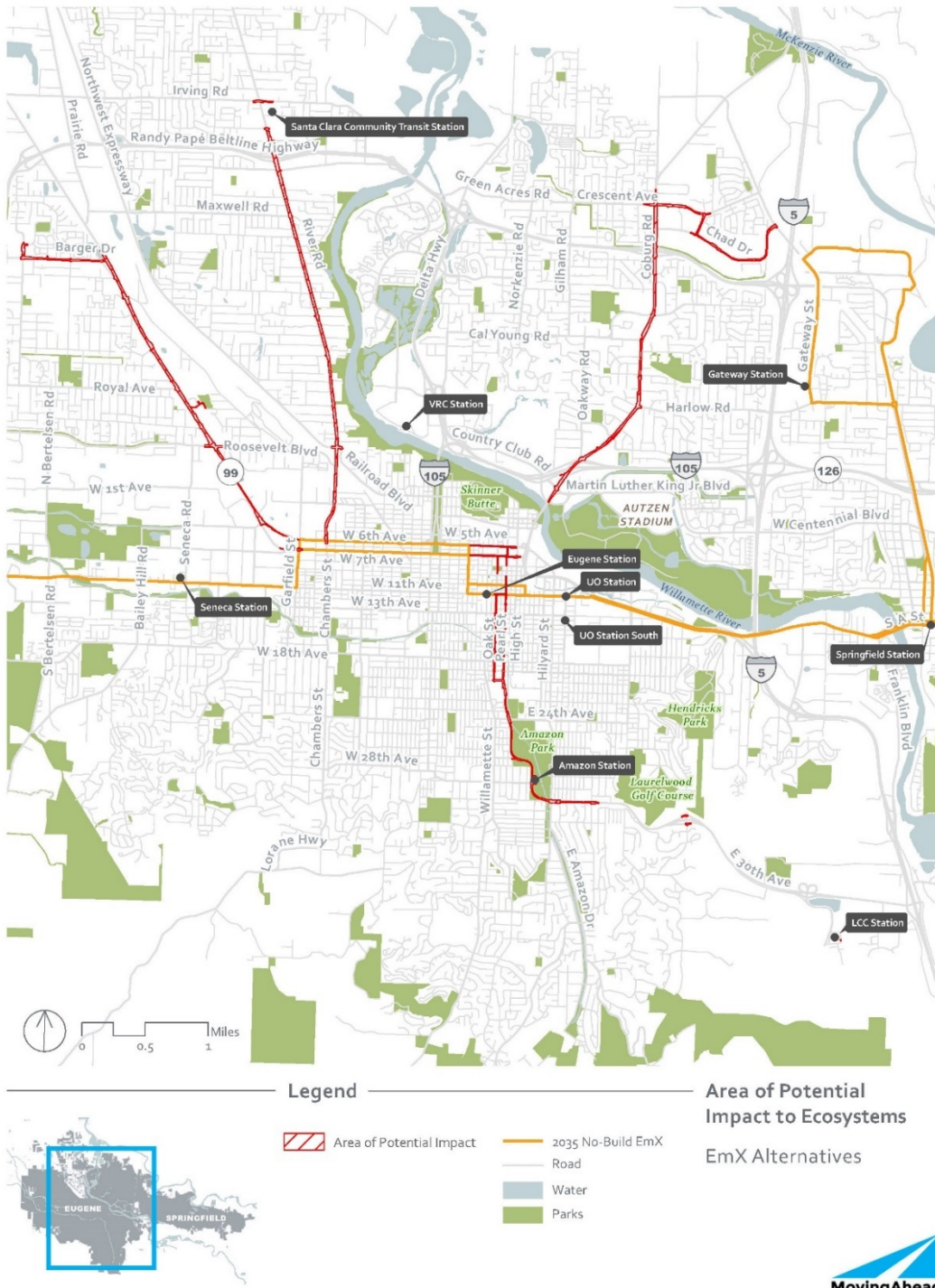


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**Figure 3.1-2. EmX Alternatives Areas of Potential Impact to Ecosystems**



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### 3.1.3. Contacts and Coordination

Project staff used previous planning efforts as guiding documents to help scale the level of analysis. Information sources included the following:

#### 3.1.3.1. Federal

- USFWS
- National Marine Fisheries Service

#### 3.1.3.2. State

- ODFW
- ODA
- Oregon Biodiversity Information Center
- DSL

#### 3.1.3.3. Local

- Lane County
- City of Eugene
- Lane Council of Governments

### 3.1.4. Level 2 Alternatives Analysis

#### 3.1.4.1. Data Collection

Specific tasks included:

- Defined the biological resources API for the project alternatives.
- Obtained and analyzed data from the Oregon Biodiversity Information Center (ORBIC) pertaining to records of species listed under the federal or state ESA. Reviewed the USFWS county species list.
- Contacted federal, state, and local agencies and non-governmental sources to obtain data on the presence of listed wildlife and botanical species in the project area as appropriate/applicable. Compiled a list of state and federally listed species known to occur in the vicinity and identified their habitats. Determined if critical habitat has been designated for listed species in the project area. Examined primary constituent elements for species with designated critical habitat.
- Obtained current fish distribution information from NMFS, USFWS, ORBIC, and ODFW and determined if listed species (state and federal endangered, threatened and proposed) occur within the project area. Determined if critical habitat, essential fish habitat, or essential salmonid habitat has been designated within the project area. Examined primary constituent elements for species with designated critical habitat. Determined listed species habitat requirements within the project area.
- Reviewed United States Geological Survey topographic maps, ODFW StreamNet species distribution maps, and digital aerial photos.
- Conducted a habitat overview to characterize habitats and determine potential impacts to wildlife species. The approach involved: using aerial photos to locate major habitat types, evaluating habitats based on existing studies and literature to characterize existing conditions, conducting reconnaissance-level surveys of the alignment alternatives, and analyzing potential impacts to habitats. Important habitat characteristics of interest included habitat distribution, structure, composition, fragmentation, and connectivity.

- Conducted reconnaissance-level field surveys of stream crossings within the proposed project area. Conducted stream surveys to evaluate instream and riparian habitat conditions.
- Identified sensitive area locations and general locations of federal and state listed species within the API of the alignment alternatives including stream crossings, and known locations of listed fish species within the API.

Additional analysis included a review of the following information for relevance and applicability:

- National Environmental Policy Act of 1969.
- National Marine Fisheries Service. Endangered Species Act Status Reviews and Listing Information. Accessed at: [http://www.nmfs.noaa.gov/pr/species/esa\\_species.htm](http://www.nmfs.noaa.gov/pr/species/esa_species.htm).
- National Marine Fisheries Service. ESA Critical Habitat Designations for West Coast Salmon and Steelhead. Accessed at: <http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/Index.cfm>.
- National Marine Fisheries Service, Essential Fish Habitat. Accessed at: <http://www.psmfc.org/efh/efh.html>.
- Oregon Department of Fish and Wildlife. Oregon List of Threatened and Endangered Fish and Wildlife Species. Accessed at: [http://www.dfw.state.or.us/threatened\\_endangered/t\\_e.html](http://www.dfw.state.or.us/threatened_endangered/t_e.html).
- Oregon Department of Fish and Wildlife. Fish passage requirements.
- Oregon Department of State Lands. Removal-Fill permit requirements.
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- Isaacs, F.B. and R.G. Anthony. 2007. Bald eagle nest locations and history of use in Oregon and the Washington portion of the Columbia River Recovery Zone, 1971 through 2006. Oregon Cooperative Fish and Wildlife Research Unit, Oregon State University. Corvallis, Oregon.
- Hitchcock, C. L and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, Washington.
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- Oregon Flora Project. Oregon Plant Atlas. Accessed at: <http://www.oregonflora.org/>.
- Oregon Department of Fish and Wildlife. Oregon List of Threatened and Endangered Fish and Wildlife Species. Accessed at: [http://www.dfw.state.or.us/threatened\\_endangered/t\\_e.html](http://www.dfw.state.or.us/threatened_endangered/t_e.html).
- Oregon Biodiversity Information Center. 2016. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon. 130 pp.
- U.S. Department of the Interior, Fish and Wildlife Service. List of Threatened, Endangered, and Proposed Species information for Oregon and Washington. Accessed at: [http://ecos.fws.gov/tess\\_public/servlet/gov.doi.tess\\_public.servlets.UsaLists?state=all](http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets.UsaLists?state=all).

### 3.1.4.2. Significance Thresholds

For the impact analysis, staff used existing guidance to determine significance thresholds, including Federal Highway Administration (FHWA) Technical Advisory T 6640.8A (1987). Staff used the criteria listed below as a guide to determine significance thresholds.

Impacts to fish, wildlife or botanical resources would be considered significant if:

- An alternative may result in a “take” of a federally or state-listed species.
- An alternative may result in an adverse modification of federally designated critical habitat.
- An alternative may result in the direct loss of habitat and the loss would result in the habitat’s inability to provide vital functions for species to the extent that populations may decline.
- An alternative may result in the direct loss of a listed species, as defined under the MBTA.
- An alternative may adversely affect EFH under the Magnuson-Stevens Act.
- An alternative results in the loss or degradation of ESH to the point where the species’ ability to use the habitat is impaired.
- An alternative creates an obstruction in fish passage and is noncompliant with the Oregon Fish Passage law.

In addition to adverse impacts, beneficial effects could have been determined to be significant. Examples include removal of obstructions to fish passage or substantial habitat enhancement.

### **3.1.4.3. Impact Analysis**

Methods used to determine potential impacts to biological resources and protected species are described in this section.

#### **Long-Term Impacts Analysis Approach**

The data gathered for this study was used to evaluate potential long-term impacts of the project alternatives, such as loss of habitat connectivity or degraded habitat. Staff applied the following process to determine long-term impacts on fish and wildlife and botanical resources:

1. Analyzed the potential for destruction or adverse modification of critical habitat, suitable habitat, and/or “take” of listed species.
2. Evaluated impacts to species and resources not listed under the ESA, based on levels of habitat modification or destruction or increased levels of disturbance from project operations.
3. Evaluated impacts based on the significance thresholds.
4. Identified and evaluated opportunities to mitigate for long-term operation impacts, as described below.
5. In addition to adverse impacts, potential beneficial effects were evaluated based on the potential to enhance, restore, or create habitat.

#### **Short-Term Impacts Approach**

Similar to the long-term impact approach, staff used the following process to determine short-term impacts on fish and wildlife and botanical resources:

1. Analyzed the potential for destruction of or adverse modification to critical habitat, suitable habitat, and/or “take” of listed wildlife and plants.
2. Evaluated impacts to species and resources not listed under the ESA, based on levels of habitat modification or destruction or increased levels of disturbance from project construction.
3. Evaluated impacts based on significance thresholds.
4. Identified and evaluated opportunities to mitigate for short-term construction impacts.
5. In addition to adverse impacts, potential beneficial effects were evaluated based on the potential to enhance, restore, or create habitat.



### **Indirect Impact Analysis Approach**

The indirect impacts analysis focused on those impacts that are later in time or farther removed in distance but that are still reasonably foreseeable. Impacts to fish and wildlife and botanical resources from indirect effects include those that relate to destruction or adverse modification of habitats or the individual loss of special-status species. Indirect impacts were analyzed by their short and long-term impacts on fish and wildlife and botanical resources.

### **Cumulative Impact Analysis Approach**

The cumulative impact analysis focused on those impacts resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over time. Impacts to fish and wildlife and botanical resources from cumulative effects include those that relate to destruction or adverse modification of habitats and habitats of federally and state-listed species and other special-status species, or the individual loss of these species.

Cumulative impacts were analyzed by looking at long-term trajectories of ecosystem function and determining how the project would change the current trajectory. To conduct this analysis, staff collected data, as described above, on species and habitat types present within the project area and compared these to historical species and habitat types. Staff examined species and habitat protections put into place by local, state, and federal agencies to determine how species and habitat presence are likely to change in the future, with and without the project. Growth and planned urbanization of the region was analyzed for their potential future impacts to fish and wildlife and botanical resources in the project area.

#### **3.1.4.4. Mitigation Measures Approach**

Mitigation for impacts to biological resources may be necessary to comply with local, state, and federal laws. For significant impacts that require mitigation, staff identified project-specific mitigation directly related to impacted resources. Staff also analyzed long-term operational and short-term construction impacts to biological resources to identify impacts that would require mitigation. Staff identified mitigation measures according to the effectiveness and benefit of the measure on the affected resource and the ability to monitor and evaluate the measure. In addition to identifying resources that may be impacted and require mitigation, data collected on species and habitats helped identify appropriate mitigation opportunities. Mitigation measures are based on the level of impact to the resource and on local, state, and federal regulations that guide when mitigation is necessary and the appropriate measures required. Measures could include providing on-site or off-site mitigation, as well as committed advanced mitigation opportunities via mitigation banks. Mitigation measures may also include best management practices (BMPs).

### **3.2. Wetlands and Waters of the U.S. and State**

The wetlands evaluation identified potential significant adverse impacts and beneficial effects of the various project alternatives and design options on wetlands and jurisdictional waters. Wetlands and waterways are regulated at the local, state, and federal levels, and the presence of jurisdictional resources could affect the permitting process. Alternatives that require placing obstructions, stream diversion, or flow reductions require an extensive permitting process. The wetland and waterways evaluation focused on avoiding or minimizing impacts to reduce permitting efforts and mitigation requirements. This analysis

was also prepared in compliance with NEPA, applicable state environmental policy legislation, and local and state planning and land use policies and design standards.

### 3.2.1. Relevant Laws and Regulations

#### 3.2.1.1. Federal

**CWA, 33 U.S.C. 1251-1376** (<https://www.law.cornell.edu/uscode/text/33/chapter-26>). The federal CWA requires states to set water quality standards for all contaminants in surface waters, based on the "beneficial" or "designated" uses for the water body, and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit was obtained under its provisions. It also recognizes the need to address the problems posed by nonpoint source pollution. Some of the permitting processes that fall within the purview of the CWA include Section 402: NPDES permits, Section 404: permits for the discharge of dredged or fill material into waters of the United States, and Section 401: Water Quality Certification.

The discharge of dredged and fill material into jurisdictional waters of the United States, including wetlands, requires a Section 404 permit from the Corps. Section 401 of the CWA is triggered when an applicant for a federal license or permit plans to conduct an activity that may result in a discharge to waters of the state or United States. The applicant must obtain a water quality certification attesting that the activity complies with state water quality requirements and standards. Applicants in Oregon submit a Joint Permit Application form to the Corps and DSL, and the Corps forwards the application to DEQ for water quality certification. DEQ then determines whether to certify that the project meets state water quality standards and does not endanger waters of the state/United States or wetlands.

#### 3.2.1.2. State

##### **Oregon's Removal-Fill Law, ORS 196.795-196.990**

([https://www.oregonlegislature.gov/bills\\_laws/Pages/ORS.aspx](https://www.oregonlegislature.gov/bills_laws/Pages/ORS.aspx)). Impacts to jurisdictional wetlands or other waters of the state (including some ditches) require a Removal-Fill permit from DSL. In most cases, the preparation of a Joint Permit Application will require completing a wetland delineation and particular resource plans, including a compensatory mitigation plan, an erosion and sediment control plan, and a stormwater management plan.

##### **Compensatory Mitigation and Wetland Mitigation, OAR 141-085-0115 to 141-085-0176**

(<http://arcweb.sos.state.or.us/pages/rules/access/numerically.html>). These administrative rules govern the issuance and enforcement of removal-fill authorizations within waters of Oregon, including wetlands. DSL may require mitigation as a condition of an authorization to compensate for reasonably expected adverse impacts to water and wetland resources. Compensatory mitigation may include off-site or onsite restoration, enhancement or improvements, wetland creation, and/or monetary compensation for the purpose of watershed health, as approved by DSL. DSL may approve compensatory mitigation for impacts to waters of the state other than freshwater wetlands or estuarine areas, when the applicant demonstrates in writing that the compensatory mitigation plan will replace or provide a comparable substitute for water resources of the state and/or navigation, fishing, and public recreation uses lost by project development.

##### **Section 401 Water Quality Certification, OAR 340-048-0005 to 304-048-0055**

(<http://arcweb.sos.state.or.us/pages/rules/access/numerically.html>). As described in the section addressing the federal CWA, Section 401 of the CWA is triggered when an applicant for a federal license or permit plans to conduct an activity that may result in a discharge to waters of the state or United

States. The applicant must obtain a water quality certification attesting that the activity complies with state water quality requirements and standards. DEQ determines whether to certify that a project meets state water quality standards and does not endanger waters of the state/United States or wetlands.

**NPDES, OAR 340-045-0005 to 340-045-0080**

(<http://arcweb.sos.state.or.us/pages/rules/access/numerically.html>). An NPDES permit is required for construction activities such as clearing, grading, or excavating that disturb 1 or more acres of land. An NPDES General Construction 1200-C Stormwater Permit from DEQ, including a Temporary Erosion and Sediment Control Plan may be required.

**Statewide Planning Goals and Guidelines, Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces, OAR 660-015-0000(5)**

(<http://arcweb.sos.state.or.us/pages/rules/access/numerically.html>). Goal 5 protects natural resources and conserves scenic and historic areas and open spaces throughout the state. Goal 5 and its related administrative rules (OAR Chapter 660, Divisions 16 and 23) describe how cities and counties must plan and zone land to conserve resources listed in the goal. Local governments throughout Oregon have adopted programs to protect natural resources and conserve scenic, historic, and open space resources under Goal 5. Goal 5 planning related to biological resources within the project area includes the following:

- Fish and wildlife areas and habitats should be protected and managed in accordance with the Oregon Wildlife Commission's fish and wildlife management plans.
- Stream flow and water levels should be protected and managed at a level adequate for fish, wildlife, pollution abatement, recreation, aesthetics and agriculture.
- Significant natural areas that are historically, ecologically, or scientifically unique, outstanding or important, including those identified by the State Natural Area Preserves Advisory Committee, should be inventoried and evaluated.
- Plans should provide for the preservation of natural areas consistent with an inventory of scientific, educational, ecological, and recreational needs for significant natural areas.

**3.2.1.3. Local**

**City of Eugene Land Use Code. Natural Resource Zone (EC 9.2500 to 9.2540).** The NR zone is designed to implement the MetroPlan by providing areas that will be preserved for long term protection of native vegetation, wetlands, waterways, wildlife habitat, rare plants, and surface and ground water quality. In general, this zone is intended to protect outstanding natural resource areas identified in adopted plans. The NR zone is also intended to address state and federal laws and policies that regulate development within jurisdictional wetlands, and to protect water quality including applicable provisions of the federal CWA and the State of Oregon's wetland laws. The natural functions and values intended to be protected by this zone include all of the following: habitat for federally listed rare, threatened or endangered plant and animal species; floodwater storage and conveyance; sediment and erosion control; natural pollution control; fish and wildlife habitat; aquifer recharge and water supply; and native plant communities.

**City of Eugene Land Use Code. Waterside Protection Overlay Zone (/WP) (EC 9.4700 to 9.4760).** The purpose of the /WP overlay zone is to protect water quality in designated waterways, riparian areas, and adjacent wetlands. This is accomplished by maintaining an undeveloped setback area between these features and adjacent development. The setback is also intended to protect wildlife habitat and prevent property damage from flooding. The /WP overlay zone is designed to implement policies in the MetroPlan and refinement plans calling for protection of riparian vegetation, wetlands, waterways, wildlife habitat, and surface and groundwater quality.

**City of Eugene Land Use Code. Water Quality Overlay Zone (/WQ) (EC 9.4770 to 9.4790).** The /WQ overlay zone is designed to protect and improve the physical integrity and water quality function within and adjacent to otherwise unprotected waterways. It applies to waterways identified pursuant to section 303(d) of the CWA, as well as tributaries to those waterways and headwater streams. The City of Eugene Land Use Code establishes allowed uses, uses subject to standards review, and prohibited uses within the /WQ Management Area. Examples of standards that could apply to this section include standards that address stream and channel crossings, maintaining existing hydrology, and repair and reconstruction of stream banks and channels.

**City of Eugene Land Use Code. Wetland Buffer Overlay Zone (/WB) (EC 9.4800 to 9.4860).** The purpose of the Wetland Buffer overlay zone is to maintain or improve water quality within protected wetland sites identified in the West Eugene Wetlands Plan by maintaining an undeveloped setback area between the wetland and developed areas. Secondary benefits of buffers and setbacks include creating open space between the resource and adjacent uses, helping to maintain or improve wildlife habitat values and wetland hydrology, protecting the aesthetic value of the site and minimizing property damage from floods. The provisions of this overlay zone are also intended to address state and federal laws and policies that regulate development within jurisdictional wetlands to protect water quality, including applicable provisions of the federal CWA and the State of Oregon's wetland laws.

**City of Eugene Land Use Code. Water Resources Conservation Overlay Zone (/WR) (EC 9.4900 to 9.4980).** The purpose of the Water Resources Conservation overlay zone is to provide conservation of significant riparian areas, wetlands and other water-related wildlife habitat areas included on the city's adopted Goal 5 inventory. To conserve these resources and the biological systems they contain and support, the overlay zone not only conserves the physical resources but also protects the water quality within the resource areas as a fundamental and essential requirement for continued survival of these biological systems.

**West Eugene Wetlands Plan, 2004.** This document addresses wetlands and economic development as critical parts of a healthy, livable community, providing detailed goals, policies, and recommended actions. The document addresses resource protection; development and mitigation; operating, maintaining, and monitoring the West Eugene Wetlands; financing; and future studies.

### 3.2.2. Analysis Area

The analysis area is located along the five corridors and the associated Enhanced Corridor Alternative APIs shown on Figure 3.1-1 and the EmX Alternative APIs shown on Figure 3.1-2. The APIs are defined in the Level 2 AA.

### 3.2.3. Contacts and Coordination

Project staff used previous planning efforts as guiding documents for regulatory agencies to help scale the level of analysis. Information sources included the following:

#### 3.2.3.1. Federal

- USFWS
- The Corps

### 3.2.3.2. State

- Oregon Department of Fish and Wildlife
- DSL
- DEQ

### 3.2.3.3. Local

- Lane County
- City of Eugene
- Lane Regional Council of Governments

## 3.2.4. Level 2 Alternatives Analysis

### 3.2.4.1. Data Collection

Specific tasks included:

- Defined the wetlands and other jurisdictional water resources API for the project alternatives.
- Examined relevant data including topographic maps, aerial photographs, USFWS National Wetland Inventory maps, Local Wetland Inventory maps, and the Natural Resources Conservation Service Soil Survey data and other available mapping and data sources to identify documented wetland locations in the project area.
- Conducted reconnaissance-level field surveys of the project corridors.
- Evaluated mapped potential wetland areas identified through the existing data review. No formal wetland delineations were conducted as part of the Level 2 AA.

Additional analysis included a review of the following information for relevance and applicability:

- NEPA of 1969.
- Geographic information system layers of the project area.
- ODSL, Removal-Fill permit requirements.
- Goal 5. Natural Resources, Scenic and Historic Areas, and Open Spaces. Oregon's Statewide Planning Goals & Guidelines. OAR 660-015-0000(5). Amendments Effective 08/30/96.

### 3.2.4.2. Significance Thresholds

For the impact analysis, staff used existing guidance to determine significance thresholds, including FHWA Technical Advisory T 6640.8A (1987). Staff used the criteria listed below as a guide to determine significance thresholds.

Impacts to wetland resources were considered significant if they would result in modification of wetland hydrologic regimes, destruction of wetland vegetation, and/or destruction or fill of the wetland that would result in:

- An adverse change in wetland function.
- Degradation in wetland quality.
- Disturbance to wetlands providing listed species habitat.

Impacts to waterways would be considered significant if an alternative requires placement of fill or any part of a structure within a jurisdictional waterway as defined by the Corps. Restriction of flows or revisions to the stream path would also be considered significant impacts.

### 3.2.4.3. Impact Analysis

Methods used to determine potential impacts to wetlands and jurisdictional waters are described in this section.

#### Long-Term Impacts Analysis Approach

Using the data collected, project staff evaluated the potential long-term impacts of the project, such as permanently altered hydrology, wetland loss or disturbance, or degraded habitat. The following process was applied to determine long-term impacts to wetland and other jurisdictional water resources:

1. Evaluated impacts to wetlands and other waters based on the significance thresholds described above.
2. Identified and evaluated opportunities for mitigating long-term impacts.
3. In addition to adverse impacts, beneficial effects from the project would be identified and evaluated based on the potential to enhance, restore, or create wetlands or waterways.

The impact analyses placed emphasis on impacts to wetlands and other waters associated with floodplains and their respective riparian zones and wildlife habitat functions. Emphasis was also placed on wetlands and other waters that provide high level functions and values, provide habitat for listed species, or wetland types that are rare or declining in abundance and acreage.

#### Short-Term Impacts Approach

Similar to the long-term impact approach, staff used the following process to determine short-term impacts on wetland and other jurisdictional water resources:

1. Evaluated impacts to wetlands and other waters based on the significance thresholds described above.
2. Identified and evaluated opportunities for mitigating short-term impacts.
3. In addition to adverse impacts, beneficial effects from the project would be identified and evaluated based on the potential to enhance, restore, or create wetlands or waterways.

#### Indirect Impact Analysis Approach

The indirect impacts analysis focused on those impacts that are later in time or farther removed in distance but that are still reasonably foreseeable. Impacts to wetlands and other jurisdictional water resources from indirect effects include those that relate to increases in pollution loads, sedimentation, and erosion, or alteration of hydrologic regimes. Indirect impacts were analyzed by their short and long-term impacts on wetlands and other jurisdictional water resources.

#### Cumulative Impact Analysis Approach

The cumulative impact analysis focused on those impacts resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over time. Impacts to wetlands and other jurisdictional water resources from cumulative effects include those that relate to losses of wetlands at a larger geographic scale, destruction of wetland vegetation, increases in pollution loads, sedimentation, and erosion, or altered hydrologic regimes.

Cumulative impacts were analyzed by looking at long-term trajectories of ecosystem function and determining how the project will change the current trajectory. To conduct this analysis, staff collected data,

as described above, on wetlands and other jurisdictional waters present within the project area and compared these to historical conditions. Staff examined wetland and other jurisdictional waters protections put into place by local, state, and federal agencies to determine how conditions are likely to change in the future, with and without the project. Growth and planned urbanization of the region was analyzed for their potential future impacts to wetlands and other jurisdictional water resources in the project area.

### **Mitigation Measures Approach**

Mitigation for impacts to wetlands and other jurisdictional water resources may be necessary to comply with local, state, and federal laws. For significant impacts that require mitigation, staff identified conceptual mitigation options. Staff identified mitigation measures according to the effectiveness and benefit of the measure on the affected resource and the ability to monitor and evaluate the measure. In addition to identifying resources that may be impacted and require mitigation, data collected on wetlands and other jurisdictional water resources helped identify appropriate mitigation opportunities. Mitigation measures were based on the level of impact to the resource and on local, state, and federal regulations that guide when mitigation is necessary and the appropriate measures required. Measures could include providing on- or offsite mitigation, as well as payment to mitigation banks. Mitigation measures may also include BMPs.



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## 4. Highway 99 Corridor Environmental Consequences

### 4.1. Affected Environment

The API for this evaluation is located along the Highway 99 Corridor where construction activities would occur. The APIs for the build alternatives are presented on Figures 4.1-1 and 4.1-2. The Highway 99 Corridor is located within a highly urbanized area consisting of residential, commercial and industrial development. The highly developed areas do not possess substantial habitat features and generally lack sensitive ecosystem features. Street and landscape trees along the corridor provide limited habitat for urban avian species.

There are no waterways located within the API. The project corridor is located a minimum of 0.10 mile from the Amazon Channel and 0.60 mile from the Willamette River. The nearest construction areas are located 0.22 mile from the Amazon Channel and over 1 mile from the Willamette River.

Wetlands are mapped adjacent to the corridor, but not within areas where construction would occur. Prior to construction, detailed onsite wetland determination and delineation work would occur. It is possible that additional wetland areas may be identified at that time.

There is no designated critical habitat within the API. The nearest designated critical habitat is for Chinook salmon (*Oncorhynchus tshawytscha*) located at the Willamette River. The minimum distance from the corridor to designated critical habitat for Willamette daisy (*Erigeron decumbens*) is approximately 1.4 miles. No other designated critical habitat is located in the project vicinity.

A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table 3.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table 3.1-2. None of these species are known to occur within the API.

### 4.2. Effects Common to Most or All Build Alternatives

Potential impacts to street and landscape trees may occur under the build alternatives. Potential tree impacts were evaluated based on the linear feet of the alternative to have high, moderate, low, or no probability of impact. The portions of alternatives with a high probability of impact were then evaluated further to quantify potential impacts in those areas. A City of Eugene Street Tree Removal Permit may be required and/or permits from the Building Permit Services Division of the Planning and Development Department for landscape trees. Tree impacts would be mitigated by replacing them at a minimum 1:1 ratio, per City of Eugene regulation. In addition, any construction activity that would result in tree removal would need to comply with the MBTA to ensure no impacts to nesting migratory bird species would occur.

The build alternatives would result in construction of new impervious surfaces. Stormwater runoff from new impervious surfaces could reach fish bearing waterways. The project would incorporate a number of protective measures that would minimize effects to fish. Runoff from the increase in impervious surface would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. Collectively, these would minimize if not avoid impacts on aquatic species.

**Figure 4.1-1. Highway 99 Corridor Enhanced Corridor Alternative Areas of Potential Impact to Ecosystems**








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**Figure 4.1-2. Highway 99 Corridor EmX Alternative Areas of Potential Impact to Ecosystems**



**Legend**

-  Area of Potential Impact
-  2035 No-Build EmX
-  Road
-  Water
-  Park

**Area of Potential Impact to Ecosystems**  
 Highway 99 Corridor  
 EmX Alternative



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### 4.3. Long-Term Direct Impacts

#### 4.3.1. No-Build Alternative

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. As a result, there would be no injury, loss, or change in biological resources and, therefore, the No-Build Alternative would have no effect on species listed under the Endangered Species Act or designated critical habitat. The No-Build Alternative would not result in any long-term direct impacts to wetlands or waterways.

#### 4.3.2. Enhanced Corridor Alternative

##### 4.3.2.1. Ecosystems

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Table 4.3-1. Based on the assessment of potential impacts to street and landscape trees, 3 percent of the Enhanced Corridor Alternative would have a high probability of impacts to trees. Within the high impact potential areas, a total of approximately 14 medium and large trees would be removed. Any tree removal would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 4.3-1. Highway 99 Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees)**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	2,280 (3)
Moderate	2,760 (3)
Low	11,610 (13)
No Impact	69,634 (81)
Corridor Length	86,284 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	14 street and 0 landscape trees

Source: CH2M. (2017a).

The Enhanced Corridor Alternative would result in 171,124 square feet (ft<sup>2</sup>) of new, reconstructed, and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). All the new impervious surface would drain to the Amazon Channel. The runoff would travel over 25 miles before reaching the Willamette River where listed fish and designated critical habitat are located. Runoff from the increase in impervious surface would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The Enhanced Corridor Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is highly urbanized and

existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Areas that are not currently developed with hard structures or pavement are either landscaped or consist of small fields that are vegetated with weedy plant species.

#### 4.3.2.2. Wetlands and Waters of the U.S. and State

The Enhanced Corridor Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. While the project corridor passes close to documented wetlands, construction is not proposed near the mapped wetlands. Construction of the Enhanced Corridor Alternative would not cause any changes to the hydrology of mapped wetlands or encroach on any wetland buffers or conservation setbacks.

#### 4.3.3. EmX Alternative

##### 4.3.3.1. Ecosystems

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Table 4.3-2. Based on the assessment of potential impacts to street and landscape trees, 3 percent of the EmX Alternative would have a high probability of impact to trees. Within the high impact potential areas, a total of approximately 40 medium and large trees could be removed. Any tree removal would be done in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 4.3-2. Highway 99 Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	2,360 (3)
Moderate	2,880 (3)
Low	10,250 (12)
No Impact	67,147 (81)
Corridor Length	82,637 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	<b>31 street and 7 to 9 landscape trees</b>

Source: CH2M. (2017a).

The EmX Alternative would result in 215,198 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). All the new impervious surface would drain to the Amazon Channel. The runoff would travel over 25 miles before reaching the Willamette River where listed fish and designated critical habitat are located. Runoff from the increase in impervious surface would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The EmX Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is highly urbanized and existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Areas that are not currently developed with hard structures or pavement are either landscaped or consist of small fields that are vegetated with weedy plant species.



#### **4.3.3.1. Wetlands and Waters of the U.S and State**

The EmX Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. While the project corridor passes close to documented wetlands, construction is not proposed near the mapped wetlands. However, additional wetland areas may be identified during the onsite wetland determination that would occur prior to construction. Construction of the EmX Alternative would not cause any changes to the hydrology of mapped wetlands or encroach on any wetland buffers or conservation setbacks.

#### **4.4. Indirect and Cumulative Effects**

##### **4.4.1. No-Build Alternative**

Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. The City of Eugene is proposing standards that would preclude increases in transportation infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would occur over time under the No-Build Alternative. The specific extent of these effects cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

##### **4.4.2. Enhanced Corridor Alternative**

###### **4.4.2.1. Ecosystems**

The improvements proposed under the Enhanced Corridor Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure, therefore the associated impacts would be limited to current roadways. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the Enhanced Corridor Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to the Amazon Channel and downstream designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to designated critical habitat.

###### **4.4.2.1. Wetlands and Waters of the U.S and State**

Indirect impacts to mapped wetlands are unlikely to occur. While the project corridor passes close to documented wetlands, construction is not proposed near the mapped wetlands and storm-water management regulations and requirements would prevent indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes would occur to the mapped wetlands.



### **4.4.3. EmX Alternative**

#### **4.4.3.1. Ecosystems**

The improvements proposed under the EmX Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the EmX Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to the Amazon Channel and downstream designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to designated critical habitat.

#### **4.4.3.1. Wetlands and Waters of the U.S and State**

Indirect impacts to currently documented wetlands are unlikely to occur. While the project corridor passes close to documented wetlands, construction is not proposed near the mapped wetlands and storm-water management regulations and requirements would prevent indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes would occur to the mapped wetlands.

### **4.5. Short-Term Construction-Related Impacts**

#### **4.5.1. No-Build Alternative**

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any short-term construction-related impacts to the environment.

#### **4.5.2. Enhanced Corridor Alternative**

##### **4.5.2.1. Ecosystems**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed species are known to occur within the API, no displacement of listed species is anticipated.

Before beginning construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the Enhanced Corridor Alternative. The work could increase the potential for sediment transport to waterways. Because

erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no designated critical habitat or listed species documented within the API.

#### **4.5.2.1. Wetlands and Waters of the U.S and State**

Construction is not proposed near currently documented wetlands, so there is no potential for short-term construction-related degradation of wetland quality or adverse changes in wetland functions at those locations.

#### **4.5.3. EmX Alternative**

##### **4.5.3.1. Ecosystems**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed species are known to occur within the API, no displacement of listed species is anticipated.

Before beginning construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur in compliance with the MBTA. Tree impacts would either occur outside the nesting season or trees would be surveyed for occupied nests prior to impact. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the EmX Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no designated critical habitat or listed species documented within the API.

##### **4.5.3.1. Wetlands and Waters of the U.S and State**

Construction is not proposed near currently documented wetlands, so there is no potential for short-term construction-related degradation of wetland quality or adverse changes in wetland functions at those locations.

#### **4.6. Potential Mitigation Measures**

##### **4.6.1. No-Build Alternative**

Because the No-Build Alternative would not involve any construction or any direct impacts associated with this project, no mitigation measures are required.

##### **4.6.2. Enhanced Corridor Alternative**

###### **4.6.2.1. Ecosystems**

Mitigation for direct impacts to resources required by local regulations may include mitigation for street and landscape tree impacts. Other potential mitigation measures are likely to involve BMPs for avoiding

and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the Enhanced Corridor Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

#### **4.6.2.1. Wetlands and Waters of the U.S and State**

To avoid and minimize impacts to wetland areas, an onsite wetland determination would be conducted prior to construction. The wetland determination would identify any potentially jurisdictional wetland areas that are not included on current inventories. If wetlands are identified within areas that may be impacted by the project, a wetland delineation would be conducted to document and map the wetland boundaries. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

#### **4.6.3. EmX Alternative**

##### **4.6.3.1. Ecosystems**

Mitigation for direct impacts to resources as required by local regulations may include mitigation for street and landscape tree impacts. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the EmX Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

##### **4.6.3.1. Wetlands and Waters of the U.S and State**

To avoid and minimize impacts to wetland areas, an onsite wetland determination would be conducted prior to construction. The wetland determination would identify any potentially jurisdictional wetland areas that are not included on current inventories. If wetlands are identified within areas that may be impacted by the project, a wetland delineation would be conducted to document and map the wetland boundaries. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

#### **4.7. Permits and Approvals**

Permits and approvals that could potentially be required are presented in Table 4.7-1. Prior to construction, additional onsite analysis may be necessary to determine if certain permits are required. Specifically, a Wetland Determination or Delineation may be required to identify any potential wetland areas that are not currently documented.

**Table 4.7-1. Highway 99 Corridor Permits and Approvals that May Be Required**

<b>Permits and Approvals</b>	<b>No-Build Alternative</b>	<b>Enhanced Corridor Alternative</b>	<b>EmX Alternative</b>
Street Tree Removal Permit (R-6305-C3)		✓	✓
CWA Section 402: NPDES General Construction 1200-C Stormwater Permit		✓	✓
CWA Section 404: Permits for the discharge of dredged or fill material into waters of the United States		✓	✓
CWA Section 401: Water Quality Certification		✓	✓
Oregon Removal-Fill Permit		✓	✓

## 5. River Road Corridor Environmental Consequences

### 5.1. Affected Environment

The API for this evaluation is located along the River Road Corridor where construction activities would occur. The APIs for the build alternatives are presented on Figures 5.1-1 and 5.1-2. The River Road Corridor is located within a highly urbanized area consisting of residential, commercial and industrial development. The highly developed areas do not possess substantial habitat features and generally lack sensitive ecosystem features. Street and landscape trees along the corridor provide limited habitat for urban avian species.

There are no waterways located within the API. The project corridor is located a minimum of 0.12 mile from the Willamette River and 0.26 mile from the Amazon Channel. The nearest construction areas are located 0.12 mile from the Willamette River and 0.60 mile from the Amazon Channel.

There are no wetlands mapped adjacent to the River Road Corridor. Prior to construction, detailed onsite wetland determination and delineation work would occur. It is possible that additional wetland areas may be identified at that time.

There is no designated critical habitat within the API. The nearest critical habitat is for Chinook salmon (*Oncorhynchus tshawytscha*) located at the Willamette River. The minimum distance from the corridor to designated critical habitat for Willamette daisy (*Erigeron decumbens*) is approximately 1.8 miles. No other designated critical habitat is located in the project vicinity.

A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table 3.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table 3.1-2. None of these species are known to occur within the API.

### 5.2. Effects Common to Most or All Build Alternatives

Potential impacts to street and landscape trees may occur under the build alternatives. Potential tree impacts were evaluated based on the linear feet of the alternative to have high, moderate, low, or no probability of impact. The portions of alternatives with a high probability of impact to trees were then evaluated further to quantify potential impacts in those areas. A City of Eugene Street Tree Removal Permit may be required and/or permits from the Building Permit Services Division of the Planning and Development Department for landscape trees. Tree removal would be mitigated by replacing them at a minimum 1:1 ratio. In addition, any construction activity that would result in tree removal would comply with the MBTA to ensure no impacts to nesting migratory bird species would occur.

The build alternatives would result in construction of new impervious surfaces. Stormwater runoff from new impervious surfaces could reach fish bearing waterways. The project would incorporate several protective measures that would minimize effects to fish. Runoff from the increase in impervious surface would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

**Figure 5.1-1. River Road Corridor Enhanced Corridor Alternative Areas of Potential Impact to Ecosystems**





**Figure 5.1-2. River Road Corridor EmX Alternative Areas of Potential Impact to Ecosystems**



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### 5.3. Long-Term Direct Impacts

#### 5.3.1. No-Build Alternative

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. As a result, there would be no injury, loss, or change in biological resources and, therefore, the No-Build Alternative would have no effect on species listed under the Endangered Species Act or designated critical habitat. The No-Build Alternative would not result in any long-term direct impacts to wetlands or waterways.

#### 5.3.2. Enhanced Corridor Alternative

##### 5.3.2.1. Ecosystems

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Tables 5.3-1 and 5.3-2. Table 5.3-1 shows probabilities for tree impacts within the Charter Tree Boundary and Table 5.3-2 shows probabilities for tree impacts outside the Charter Tree Boundary. Based on the assessment of potential impacts to street and landscape trees, 1 percent of the Enhanced Corridor Alternative would have a high probability of impact within the Charter Tree Boundary and 9 percent would have a high probability of impact outside the Charter Tree Boundary. Within the areas where there is a high probability of impact to trees, a total of 9 to 13 medium and large trees would potentially be removed. All the identified potential tree removal would occur outside the Charter Tree Boundary. Any tree impacts would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 5.3-1. River Road Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees Within the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	300 (1)
Moderate	410 (1)
Low	0 (0)
No Impact	39,354 (98)
Corridor Length Within Charter Tree Boundary	40,064 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	None

Source: CH2M. (2017a).

**Table 5.3-2. River Road Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees Outside the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	2,940 (9)
Moderate	2,320 (7)
Low	17,740 (51)
No Impact	11,481 (33)
Corridor Length Outside the Charter Tree Boundary	34,481 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	9 to 13 street and 0 landscape trees

Source: CH2M. (2017a).

This alternative would result in 109,573 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). A portion of the total new impervious surface measuring 81,207 ft<sup>2</sup> would drain to Spring Creek and the remaining 28,366 ft<sup>2</sup> would drain to the Willamette River. Runoff from new impervious surfaces draining to Spring Creek would travel over 6 miles before reaching the Willamette River where listed fish species and designated critical habitat are located. Runoff from the project would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The Enhanced Corridor Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is highly urbanized and existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Areas that are not currently developed with hard structures or pavement are either landscaped or consist of small fields that are vegetated with weedy plant species.

**5.3.2.2. Wetlands and Waters of the U.S and State**

The Enhanced Corridor Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. The project corridor is not located close to documented wetlands. Construction of the Enhanced Corridor Alternative would not cause any changes to the hydrology of mapped wetlands or encroach on any wetland buffers or conservation setbacks.

**5.3.3. EmX Alternative**

**5.3.3.1. Ecosystems**

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Tables 5.3-3 and 5.3.4. Table 5.3-3 shows probabilities for tree impacts within the Charter Tree Boundary and Table 5.3-4 shows probabilities for tree impacts outside the Charter Tree Boundary. Based on the assessment of potential impacts to street and landscape trees, 2 percent of the EmX Alternative would have a high probability of impact to trees within the Charter Tree Boundary and 11 percent would have a high probability of impact to trees outside the Charter Tree Boundary. Within the areas where there is a high probability of impact to trees, a total of 112 to 132 medium and large trees would potentially be removed; 14 of which are within the Charter Tree Boundary, and 98 to 118 of which are outside the Charter Tree Boundary. Any tree removals would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 5.3-3. River Road Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees Within the Charter Tree Boundary**

<b>Potential Impacts Probability</b>	<b>Impact Length in Linear Feet (Percent of Corridor Impacted)</b>
High	600 (2)
Moderate	1,880 (5)
Low	700 (2)
No Impact	32,911 (91)
Corridor Length Within Charter Tree Boundary	36,091 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	14 street and 0 landscape trees

Source: CH2M. (2017a).

**Table 5.3-4. River Road Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees Outside the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	4,120 (11)
Moderate	5,260 (14)
Low	11,480 (32)
No Impact	15,507 (43)
Corridor Length Outside the Charter Tree Boundary	36,367 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	98 to 118 street and 0 landscape trees

Source: CH2M. (2017a).

The EmX Alternative would result in 748,850 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). A portion of the total new impervious surface measuring 557,646 ft<sup>2</sup> would drain to Spring Creek and the Willamette River. Additionally, 2,917 ft<sup>2</sup> of reconstructed, non-pollutant generating impervious area would drain to Amazon Creek. Runoff from new impervious surfaces draining to Spring Creek would travel over 6 miles before reaching the Willamette River where listed fish species and designated critical habitat are located. Runoff from the project would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The EmX Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is highly urbanized and existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Areas that are not currently developed with hard structures or pavement are either landscaped or consist of small fields that are vegetated with weedy plant species.

#### 5.3.3.2. Wetlands and Waters of the U.S. and State

The EmX Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. The project corridor is not located close to documented wetlands. Construction of the EmX Alternative would not cause any changes to the hydrology of mapped wetlands or encroach on any wetland buffers or conservation setbacks.

### 5.4. Indirect and Cumulative Effects

#### 5.4.1. No-Build Alternative

Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. The City of Eugene is proposing standards that would preclude increases in transportation infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would occur over time under the No-Build Alternative. The specific extent of these effects cannot be assessed at this

time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

#### **5.4.2. Enhanced Corridor Alternative**

##### **5.4.2.1. Ecosystems**

The improvements proposed under the Enhanced Corridor Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the Enhanced Corridor Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to Spring Creek and designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to designated critical habitat.

##### **5.4.2.2. Wetlands and Waters of the U.S. and State**

Indirect impacts to mapped wetlands are unlikely to occur. The project corridor is not close to documented wetlands and storm-water management regulations and requirements would prevent indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes would occur to mapped wetlands.

#### **5.4.3. EmX Alternative**

##### **5.4.3.1. Ecosystems**

The improvements proposed under the EmX Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the EmX Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to Spring Creek and designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to designated critical habitat.

#### **5.4.3.2. Wetlands and Waters of the U.S. and State**

Indirect impacts to currently documented wetlands are unlikely to occur. The project corridor is not close to documented wetlands and storm-water management regulations and requirements would prevent indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes would occur to mapped wetlands.

### **5.5. Short-Term Construction-Related Impacts**

#### **5.5.1. No-Build Alternative**

The No-Build Alternative would not involve any construction activities and, therefore, would not result in any short-term construction-related impacts to the environment.

#### **5.5.2. Enhanced Corridor Alternative**

##### **5.5.2.1. Ecosystems**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed species are known to occur within the API, no displacement of listed species is anticipated.

Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the Enhanced Corridor Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no designated critical habitat or listed species documented within the API.

##### **5.5.2.2. Wetlands and Waters of the U.S. and State**

Construction is not proposed near currently documented wetlands, so there is no potential for short-term construction-related degradation of wetland quality or adverse changes in wetland functions at those locations.

### 5.5.3. EmX Alternative

#### 5.5.3.1. Ecosystems

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed species are known to occur within the API, no displacement of listed species is anticipated.

Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or trees would be surveyed for occupied nests prior to impact. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the EmX Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no designated critical habitat or listed species documented within the API.

#### 5.5.3.2. Wetlands and Waters of the U.S. and State

Construction is not proposed near currently documented wetlands, so there is no potential for short-term construction-related degradation of wetland quality or adverse changes in wetland functions at those locations.

## 5.6. Potential Mitigation Measures

### 5.6.1. No-Build Alternative

Because the No-Build Alternative would not involve any construction or any direct impacts associated with this project, no mitigation measures are required.

### 5.6.2. Enhanced Corridor Alternative

#### 5.6.2.1. Ecosystems

Mitigation for direct impacts to resources required by local regulations may include mitigation for street and landscape tree impacts. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the Enhanced Corridor Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

**5.6.2.2. Wetlands and Waters of the U.S. and State**

To avoid and minimize impacts to wetland areas, an onsite wetland determination would be conducted prior to construction. The wetland determination would identify any potentially jurisdictional wetland areas that are not included on current inventories. If wetlands are identified within areas that may be impacted by the project, a wetland delineation would be conducted to document and map the wetland boundaries. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

**5.6.3. EmX Alternative**

**5.6.3.1. Ecosystems**

Mitigation for direct impacts to resources as required by local regulations may include mitigation for street and landscape tree impacts. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the EmX Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

**5.6.3.2. Wetlands and Waters of the U.S. and State**

To avoid and minimize impacts to wetland areas, an onsite wetland determination would be conducted prior to construction. The wetland determination would identify any potentially jurisdictional wetland areas that are not included on current inventories. If wetlands are identified within areas that may be impacted by the project, a wetland delineation would be conducted to document and map the wetland boundaries. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

**5.7. Permits and Approvals**

Permits and approvals that could potentially be required are presented in Table 5.7-1. Prior to construction, additional onsite analysis may be necessary to determine if certain permits are required. Specifically, a Wetland Determination or Delineation may be required to identify any potential wetland areas that are not currently documented.

**Table 5.7-1. River Road Corridor Permits and Approvals that May Be Required**

<b>Permits and Approvals</b>	<b>No-Build Alternative</b>	<b>Enhanced Corridor Alternative</b>	<b>EmX Alternative</b>
Street Tree Removal Permit (R-6305-C3)		✓	✓
NPDES General Construction 1200-C Stormwater Permit		✓	✓
CWA Section 404: Permits for the discharge of dredged or fill material into waters of the United States		✓	✓



**Table 5.7-1. River Road Corridor Permits and Approvals that May Be Required**

<b>Permits and Approvals</b>	<b>No-Build Alternative</b>	<b>Enhanced Corridor Alternative</b>	<b>EmX Alternative</b>
CWA Section 401: Water Quality Certification		✓	✓
Oregon Removal-Fill Permit		✓	✓

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## 6. 30th Avenue to Lane Community College Corridor Environmental Consequences

### 6.1. Affected Environment

The APIs for the build alternatives are presented on Figures 6.1-1 and 6.1-2. The northern part of the 30th Avenue to LCC Corridor is located within a highly urbanized area consisting of residential and commercial development. The southern part is located within a less developed and wooded corridor along E. 30th Avenue. The southern terminus is located within Lane Community College.

The highly developed areas do not possess substantial habitat features and generally lack sensitive ecosystem features. Proposed construction within the southern part of the corridor is limited to two areas: interchange improvements at E. 30th Avenue and Spring Boulevard, and a small area within LCC. The API for this evaluation is located along 30th Avenue to LCC Corridor where construction activities would occur.

Waterways within the API include the Amazon Channel and Russel Creek. The project corridor is located a minimum of 0.43 mile from the Willamette River. Construction is proposed immediately adjacent to the Amazon Channel and at a minimum of 0.43 mile from the Willamette River and 0.25 mile from Russel Creek. Portions of the Amazon Channel have a 60-foot City of Eugene Riparian Corridor setback.

Wetlands are mapped adjacent to 30th Avenue to LCC Corridor. Prior to construction, detailed onsite wetland determination and delineation work would occur. It is possible that additional wetland areas may be identified at that time.

There is no designated critical habitat within the API. The nearest critical habitat is for Chinook salmon (*Oncorhynchus tshawytscha*) located at the Willamette River. The minimum distance from the corridor to designated critical habitat for Willamette daisy (*Erigeron decumbens*) is approximately 3 miles. No other designated critical habitat is located in the project vicinity.

A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table 3.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table 3.1-2. Bradshaw's lomatium (*Lomatium bradshawii*) is documented as occurring immediately adjacent to the API. No other listed species are known to occur within or immediately adjacent to the API.

### 6.2. Effects Common to Most or All Build Alternatives

Potential impacts to street and landscape trees may occur under the build alternatives. Potential tree impacts were evaluated based on the linear feet of the alternative to have a high, moderate, low, or no probability of impact. The portions of alternatives with a high probability of impact were then evaluated further to quantify potential impacts in those areas. A City of Eugene Street Tree Removal Permit may be required and/or permits from the Building Permit Services Division of the Planning and Development Department for landscape trees. Tree removal would be mitigated by replacing trees at a minimum 1:1 ratio. In addition, any construction activity that would impact trees would need to comply with the MBTA to avoid impacts to nesting migratory bird species.






**Figure 6.1-1. 30th Avenue to Lane Community College Corridor Enhanced Corridor Alternative Areas of Potential Impact to Ecosystems**



**Figure 6.1-2. 30th Avenue to Lane Community College Corridor EmX Alternative Areas of Potential Impact to Ecosystems**



**Legend**

-  Area of Potential Impact
-  2035 No-Build EmX
-  Road
-  Water
-  Park

**Area of Potential Impact to Ecosystems**  
 30th Ave/Lane Community College Corridor  
 EmX Alternative



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The build alternatives would result in construction of new impervious surfaces. Stormwater runoff from new impervious surfaces could reach fish bearing waterways. The project would incorporate several protective measures that would minimize effects to fish. Runoff from the increase in impervious surface would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

### 6.3. Long-Term Direct Impacts

#### 6.3.1. No-Build Alternative

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. As a result, there would be no injury, loss, or change in biological resources and, therefore, the No-Build Alternative would have no effect on species listed under the Endangered Species Act or designated critical habitat. The No-Build Alternative would not result in any long-term direct impacts to wetlands or waterways.

#### 6.3.2. Enhanced Corridor Alternative

##### 6.3.2.1. Ecosystems/Wetlands of the U.S. and State

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Tables 6.3-1 and 6.3-2. Table 6.3-1 shows probabilities for tree impacts within the Charter Tree Boundary and Table 6.3-2 shows probabilities for tree impacts outside the Charter Tree Boundary. Based on the assessment of potential impacts to street and landscape trees, 7 percent of the Enhanced Corridor Alternative would have a high probability of impact to trees within the Charter Tree Boundary and less than 1 percent would have a high probability of impact to trees outside the Charter Tree Boundary. Within the areas with a high probability of impact to trees, a total of 49 to 54 medium and large trees inside the Charter Tree Boundary would potentially be removed and two to four medium and large trees outside the Charter Tree Boundary would potentially be removed. Any tree impacts would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 6.3-1. 30th Avenue to Lane Community College Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees Within the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	2,630 (11)
Moderate	700 (3)
Low	30 (less than 1)
No Impact	21,067 (86)
Corridor Length Within Charter Tree Boundary	24,427 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	49 to 54 street and 0 landscape trees

Source: CH2M. (2017a).

**Table 6.3-2. 30th Avenue to Lane Community College Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees Outside the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	40 (less than 1)
Moderate	720 (2)
Low	1,020 (2)
No Impact	39,887 (96)
Corridor Length Outside the Charter Tree Boundary	41,667 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	0 street and 2 to 4 landscape trees

Source: CH2M. (2017a).

The Enhanced Corridor Alternative would result in 110, 801 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). A portion of the total new impervious surface measuring 98,524 ft<sup>2</sup> would drain to the Amazon Channel and the remaining 12,277 ft<sup>2</sup> would drain to the Willamette River. Runoff from new impervious surfaces draining to the Amazon Channel would travel over 25 miles before reaching the Willamette River where listed fish and designated critical habitat are located. Runoff from the project would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

Construction adjacent to the Amazon Channel would utilize BMPs to avoid impacts to the waterway. Pedestrian improvements at Pearl Street and 17th Avenue would be designed to avoid potential impacts to the Amazon Channel where it crosses the intersection via a culvert.

As part of the Enhanced Corridor Alternative, transit facilities are proposed to be located adjacent to wetlands and a population of Bradshaw’s lomatium, which is listed as an endangered species. The wetland and endangered species habitat is located both in Amazon Park and across Amazon Parkway on other publicly owned lands. Formal wetland delineation would be conducted to definitively locate the wetland boundaries. Surveys for Bradshaw’s lomatium were conducted in 2016 during the appropriate season and follow up surveys would be required prior to construction to ensure no impacts to the species occur. The transit facility location would be analyzed for impacts to wetlands and listed species. The extent of construction would be tightly contained to avoid impacts. The facility would be designed and constructed to avoid long-term impacts to wetlands and listed species. It is critical that no changes to the hydrology of the wetland occur since that could impact the suitability of the existing rare plant habitat. No changes to wetland functions or quality are anticipated. However, long-term impacts could occur to the wetland and endangered species habitat due to the proposed station location. In addition to potential changes in habitat conditions, minor losses of potential habitat that could be occupied by endangered plants in the future could occur.

The wetlands described above that provide endangered plant habitat are subject to a City of Eugene Water Resources Conservation overlay zone. The wetlands are designated as Category A and have 50-foot conservation setbacks. Construction of the proposed transit facilities would likely encroach into



the conservation setbacks associated with the wetlands. Loss of conservation setback area would be a long-term impact.

The Enhanced Corridor Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. With the exception of the Bradshaw’s lomatium habitat described above, construction is primarily limited to highly urbanized areas with existing habitat conditions that are conducive to plant and wildlife species that are commonly found in urban areas. There is no construction proposed as part of the Enhanced Corridor Alternative that would occur in the less developed southern part of the corridor.

### 6.3.3. EmX Alternative

#### 6.3.3.1. Ecosystems/Wetlands and Waters of the U.S. and State

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Tables 6.3-3 and 6.3-4. Table 6.3-3 shows probabilities for tree impacts within the Charter Tree Boundary and Table 6.3-4 shows probabilities for tree impacts outside the Charter Tree Boundary. Based on the assessment of potential impacts to street and landscape trees, 17 percent of the EmX Alternative would have a high probability of impact to trees within the Charter Tree Boundary, while less than 1 percent would have a high probability of impact to trees outside the Charter Tree Boundary. Within the areas with a high probability of impact to trees, up to 98 medium and large trees inside the Charter Tree Boundary would potentially be removed, and 2 to 4 medium and large trees outside the Charter Tree Boundary would potentially be removed. Any tree impacts would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 6.3-3. 30th Avenue to Lane Community College Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees Within the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	5,440 (17)
Moderate	2,570 (8)
Low	1,620 (5)
No Impact	21,986 (70)
Corridor Length Within Charter Tree Boundary	31,616 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	<b>98 street and 0 landscape trees</b>

Source: CH2M. (2017a).

**Table 6.3-4. 30th Avenue to Lane Community College Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees Outside the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	40 (less than 1)
Moderate	1,340 (3)
Low	3,990 (10)
No Impact	36,269 (87)
Corridor Length Outside the Charter Tree Boundary	41,639 (100)
<b>Number a of Medium and Large Trees Potentially Removed</b>	0 street and 2 to 4 landscape trees

Source: CH2M. (2017a).

The EmX Alternative would result in 209,323 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). A portion of the total new impervious surface measuring 151,437 ft<sup>2</sup> would drain to the Amazon Channel, 56,162 ft<sup>2</sup> would drain to the Willamette River, and the remaining 1,724 ft<sup>2</sup> would drain to the Russel Creek. Runoff from new impervious surfaces draining to the Amazon Channel would travel over 25 miles before reaching the Willamette River where listed fish and designated critical habitat are located. Runoff from the project would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

Construction adjacent to the Amazon Channel would utilize BMPs to avoid impacts to the waterway. Pedestrian improvements at Pearl Street and 17th Avenue would be designed to avoid potential impacts to the Amazon Channel where it crosses the intersection via a culvert.

As part of the EmX Alternative, transit facilities are proposed to be located adjacent to wetlands and a population of Bradshaw’s lomatium, which is listed as an endangered species. The wetland and endangered species habitat is located both in Amazon Park and across Amazon Parkway. Formal wetland delineation would be conducted to definitively locate the wetland boundaries. Surveys for Bradshaw’s lomatium were conducted in 2016 during the appropriate season and follow up surveys would be required prior to construction to ensure no impacts to the species occur. The transit facility location would be analyzed for impacts to wetlands and listed species. The extent of construction would be tightly contained to avoid impacts. The facility would be designed and constructed to avoid long-term impacts to wetlands and listed species. It is critical that no changes to the hydrology of the wetland occur since that could impact the suitability of the existing rare plant habitat. No changes to wetland functions or quality are anticipated. However, long-term impacts could occur to the wetland and endangered species habitat due to the proposed station location. In addition to potential changes in habitat conditions, minor losses of potential habitat that could be occupied by endangered plants in the future could occur.

The wetlands described above that provide endangered plant habitat are subject to a City of Eugene Water Resources Conservation overlay zone. The wetlands are designated as Category A and have 50-foot conservation setbacks. Construction of the proposed transit facilities would likely encroach into

the conservation setbacks associated with the wetlands. Loss of conservation setback area would be a long-term impact.

The EmX Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. With the exception of the Bradshaw’s lomatium habitat described above, construction is primarily limited to highly urbanized areas with existing habitat conditions that are conducive to plant and wildlife species commonly found in urban areas. There is no construction proposed as part of the Enhanced Corridor Alternative that would occur in the less developed southern part of the corridor.

## **6.4. Indirect and Cumulative Effects**

### **6.4.1. No-Build Alternative**

Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. The City of Eugene is proposing standards that would preclude increases in transportation infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would occur over time under the No-Build Alternative. The specific extent of these effects cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

### **6.4.2. Enhanced Corridor Alternative**

#### **6.4.2.1. Ecosystems/Wetlands and Waters of the U.S. and State**

The improvements proposed under the Enhanced Corridor Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, however, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the Enhanced Corridor Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to waterways would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect impacts to wetlands and listed species may occur. Design and construction of the new station adjacent to Amazon Park would need to be analyzed to avoid and minimize indirect impacts to a wetland and a population of Bradshaw’s lomatium. Changes to wetland hydrology could adversely affect the endangered plant habitat. BMPs would be utilized to avoid indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes.

With the exception of the Bradshaw’s lomatium habitat, indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to designated critical habitat.

### **6.4.3. EmX Alternative**

#### **6.4.3.1. Ecosystems/Wetlands and Waters of the U.S. and State**

The improvements proposed under the EmX Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the EmX Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to waterways would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect impacts to wetlands and listed species could occur. Design and construction of the new station adjacent to Amazon Park would need to be analyzed to avoid and minimize indirect impacts to a wetland and a population of Bradshaw's lomatium. Changes to wetland hydrology could adversely affect the endangered plant habitat. BMPs would be utilized to avoid indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes.

With the exception of the Bradshaw's lomatium habitat, indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to designated critical habitat.

### **6.5. Short-Term Construction-Related Impacts**

#### **6.5.1. No-Build Alternative**

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any short-term construction-related impacts to the environment.

#### **6.5.2. Enhanced Corridor Alternative**

##### **6.5.2.1. Ecosystems/Wetlands and Waters of the U.S. and State**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed fish or wildlife species are known to occur within the API, no displacement of listed fish and wildlife species is anticipated.

Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the Enhanced Corridor Alternative. The work could increase the potential for sediment transport to waterways. Because

erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

Construction of new transit facilities at Amazon Parkway and E. 24th Avenue encroaches on a 60-foot City of Eugene Riparian Corridor setback adjacent to the Amazon Channel. While the footprint of the constructed facilities does not encroach into the setback area, plans show temporary disturbance to the area within the setback during construction, which could result in short-term construction-related impacts to the Riparian Corridor.

Construction of new transit facilities adjacent to Amazon Park would also likely result in short-term construction-related impacts to the 50-foot Water Resources Conservation setbacks associated with the wetlands that provide habitat for the population of endangered Bradshaw's lomatium.

Short-term construction-related degradation of wetland quality or adverse changes in wetland functions could occur due to the proximity of construction of a new station to wetlands at Amazon Park. Because BMPs would be utilized, none of these effects would be significant. In addition, construction of the proposed station is also likely to result in short-term construction-related impacts to the Water Resources Conservation setback associated with the wetland.

Short-term construction-related impacts to Bradshaw's lomatium habitat could occur. Design and construction of the proposed new station adjacent to the population would be analyzed to avoid short-term construction-related impacts. No short-term construction related impacts to other listed species or designated critical habitat are anticipated. There is no designated critical habitat within the API. There is no documentation of listed species other than Bradshaw's lomatium within or immediately adjacent to the API.

### **6.5.3. EmX Alternative**

#### **6.5.3.1. Ecosystems/Wetlands and Waters of the U.S. and State**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed fish or wildlife species are known to occur within the API, no displacement of listed fish and wildlife species is anticipated.

Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the EmX Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

Construction of new transit facilities at Amazon Parkway and E. 24th Avenue encroaches on a 60-foot City of Eugene Riparian Corridor setback adjacent to the Amazon Channel. While the footprint of the constructed facilities does not encroach into the setback area, plans show that temporary disturbance to area within the setback during construction, which could result in short-term construction-related impacts to the Riparian Corridor.

Construction of new transit facilities adjacent to Amazon Park would also likely result in short-term construction-related impacts to the 50-foot Water Resources Conservation setbacks associated with the wetlands that provide habitat for the population of endangered Bradshaw's lomatium.

Short-term construction-related degradation of wetland quality or adverse changes in wetland functions could occur due to the proximity of construction of a new station to wetlands at Amazon Park. Because BMPs would be utilized, none of these effects would be significant. In addition, construction of the proposed station is also likely to result in short-term construction-related impacts to the 50-foot Water Resources Conservation setback associated with the wetland.

Short-term construction-related impacts to Bradshaw's lomatium habitat could occur. Design and construction of the proposed new station adjacent to the population would be analyzed to avoid short-term construction-related impacts. No short-term construction related impacts to other listed species or designated critical habitat are anticipated. There is no designated critical habitat within the API. There is no documentation of listed species other than Bradshaw's lomatium within or immediately adjacent to the API.

## **6.6. Potential Mitigation Measures**

### **6.6.1. No-Build Alternative**

Because the No-Build Alternative would not involve any construction or any direct impacts associated with this project, no mitigation measures are required.

### **6.6.2. Enhanced Corridor Alternative**

#### **6.6.2.1. Ecosystems/Wetlands and Waters of the U.S. and State**

Mitigation for direct impacts to resources required by local regulations may include mitigation for street and landscape tree impacts. Local regulations may also require mitigation for direct impacts to the Water Resources Conservation setback associated with the wetland in Amazon Park. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the Enhanced Corridor Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

To avoid and minimize impacts to wetland areas, onsite wetland delineation would be conducted prior to construction. The wetland delineation would identify any potentially jurisdictional wetland areas that are not included on current inventories. It would also accurately locate the boundaries of the wetland in Amazon Park where a new station is proposed. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

Design and construction of the proposed new station adjacent to wetland and Bradshaw’s lomatium habitat in Amazon Park would utilize BMPs to avoid impacting the wetland or the endangered species and its habitat.

### 6.6.3. EmX Alternative

#### 6.6.3.1. Ecosystems/Wetlands and Waters of the U.S. and State

Mitigation for direct impacts to resources as required by local regulations may include mitigation for street and landscape tree impacts. Local regulations may also require mitigation for direct impacts to the Water Resources Conservation setback associated with the wetland in Amazon Park. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the EmX Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

To avoid and minimize impacts to wetland areas, onsite wetland delineation would be conducted prior to construction. The wetland delineation would identify any potentially jurisdictional wetland areas that are not included on current inventories. It would also accurately locate the boundaries of the wetland in Amazon Park where a new station is proposed. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

Design and construction of the proposed new station adjacent to wetland and Bradshaw’s lomatium habitat in Amazon Park would utilize BMPs to avoid impacting the wetland or the endangered species and its habitat.

### 6.7. Permits and Approvals

Permits and approvals that could potentially be required are presented in Table 6.7-1. Prior to construction, additional onsite analysis may be necessary to determine if certain permits are required. Specifically, a Wetland Determination or Delineation may be required to identify any potential wetland areas that are not currently documented.

**Table 6.7-1. 30th Avenue to Lane Community College Corridor Permits and Approvals that May Be Required**

Permits and Approvals	No-Build Alternative	Enhanced Corridor Alternative	EmX Alternative
Street Tree Removal Permit (R-6305-C3)		✓	✓
Standards Review Within / WR Conservation Areas		✓	✓
CWA Section 402: NPDES General Construction 1200-C Stormwater Permit		✓	✓



**Table 6.7-1. 30th Avenue to Lane Community College Corridor Permits and Approvals that May Be Required**

<b>Permits and Approvals</b>	<b>No-Build Alternative</b>	<b>Enhanced Corridor Alternative</b>	<b>EmX Alternative</b>
CWA Section 404: Permits for the discharge of dredged or fill material into waters of the United States		✓	✓
CWA Section 401: Water Quality Certification		✓	✓
Oregon Removal-Fill Permit		✓	✓

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## 7. Coburg Road Corridor Environmental Consequences

### 7.1. Affected Environment

The API for this evaluation is located along the Coburg Road Corridor where construction activities would occur. The APIs for the build alternatives are presented on Figures 7.1-1 and 7.1-2. The Coburg Road Corridor is mostly located within a highly urbanized area consisting of residential and commercial development. The highly developed areas do not possess substantial habitat features and generally lack sensitive ecosystem features. Street and landscape trees along the corridor provide limited habitat for urban avian species.

The corridor crosses the Willamette River. The nearest construction area is located over 100 feet from the Willamette River. The City of Eugene Riparian Corridor setback from the Willamette River is 100 feet. No construction is proposed within the Willamette Greenway, which is an area of variable width on either side of the Willamette River that implements Statewide Planning Goal 15. The Coburg Road Corridor also crosses the North Beltline Floodway, which does not have a setback requirement.

There are no wetlands mapped adjacent to the Coburg Road Corridor. Prior to construction, detailed onsite wetland determination and delineation work would occur. It is possible that additional wetland areas may be identified at that time.

Designated critical habitat for Chinook salmon (*Oncorhynchus tshawytscha*) is located at the Willamette River. The Coburg Road Corridor crosses the Willamette River and the nearest construction area is approximately 150 feet from the river. The minimum distance from the corridor to designated critical habitat for Willamette daisy (*Erigeron decumbens*) is approximately 3 miles. No other designated critical habitat is located in the project vicinity.

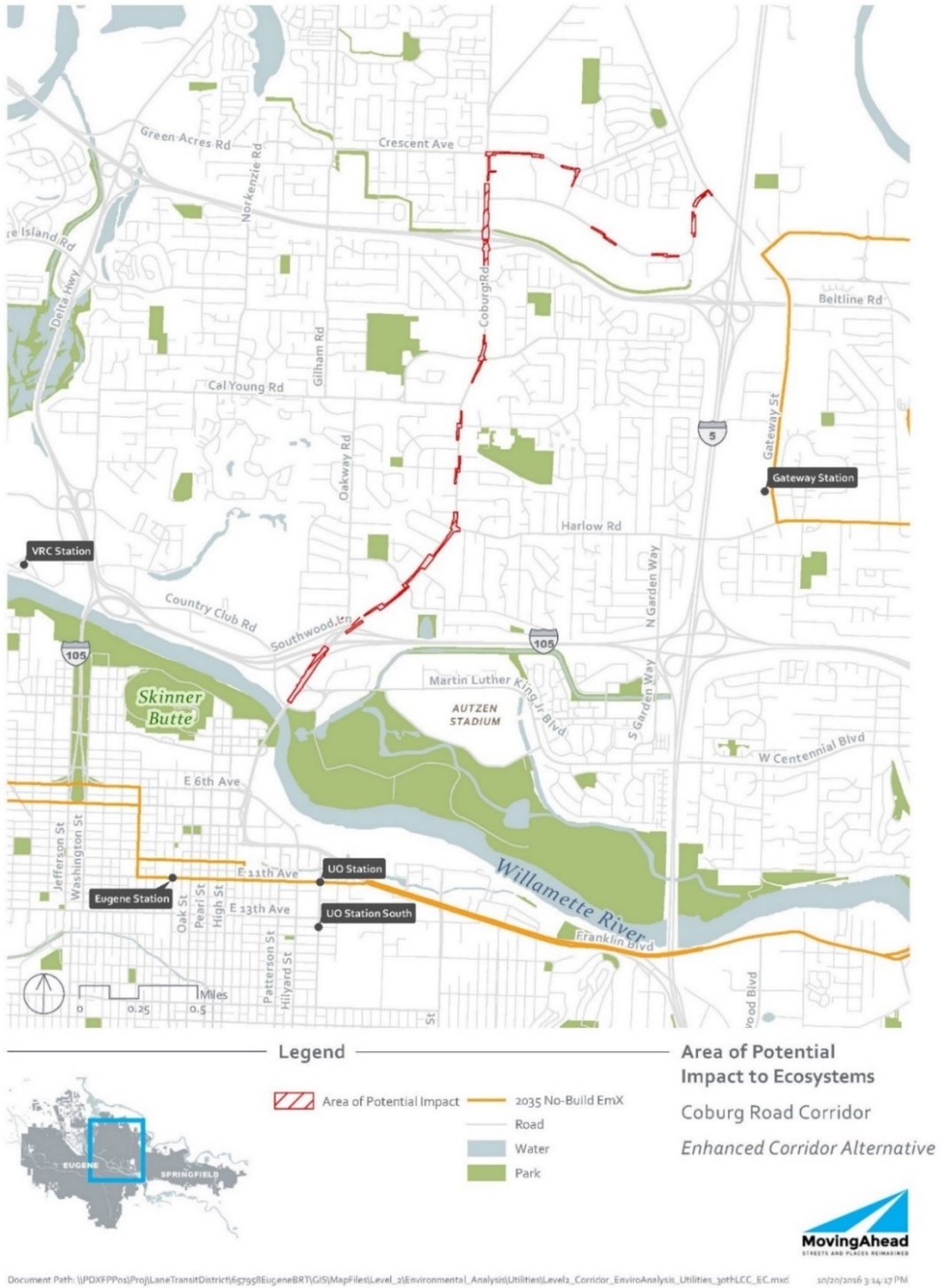
A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table 3.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table 3.1-2.

### 7.2. Effects Common to Most or All Build Alternatives

Potential impacts to street and landscape trees may occur under the build alternatives. Potential tree impacts were evaluated based on the linear feet of the alternative to have a high, moderate, low, or no probability of impact. The portions of alternatives with a high probability of impact to trees were then evaluated further to quantify potential impacts in those areas. A City of Eugene Street Tree Removal Permit may be required and/or permits from the Building Permit Services Division of the Planning and Development Department for landscape trees. Tree removal would be mitigated by replacing the trees at a minimum 1:1 ratio. In addition, any construction activity that would impact trees would need to comply with the MBTA to ensure no impacts to nesting migratory bird species would occur.

The build alternatives would result in construction of new impervious surfaces. Stormwater runoff from new impervious surfaces could reach fish bearing waterways. The project would incorporate several protective measures that would minimize effects to fish. Runoff from the increase in impervious surface would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

**Figure 7.1-1. Coburg Road Corridor Enhanced Corridor Alternative Areas of Potential Impact to Ecosystems**



**Figure 7.1-2. Coburg Road Corridor EmX Alternative Areas of Potential Impact to Ecosystems**



### 7.3. Long-Term Direct Impacts

#### 7.3.1. No-Build Alternative

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. As a result, there would be no injury, loss, or change in biological resources and, therefore, the No-Build Alternative would have no effect on species listed under the ESA or designated critical habitat. The No-Build Alternative would not result in any long-term direct impacts to wetlands or waterways.

#### 7.3.2. Enhanced Corridor Alternative

##### 7.3.2.1. Ecosystems

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Table 7.3-1. Based on the assessment of potential impacts to street and landscape trees, 2 percent of the Enhanced Corridor Alternative would have a high probability of impact to trees. Within the areas with a high probability of impact to trees, seven to nine medium and large trees would potentially be removed. None of the tree impacts would occur within the Charter Tree boundary. Any tree impacts would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 7.3-1. Coburg Road Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	840 (2)
Moderate	4,720 (10)
Low	9,890 (20)
No Impact	32,844 (68)
Corridor Length Outside the Charter Tree Boundary	48,294 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	<b>3 street trees and 4 to 6 landscape trees</b>

Source: CH2M. (2017a).

The Enhanced Corridor Alternative would result in 358,576 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). A portion of the total new impervious surface measuring 95,774 ft<sup>2</sup> would drain to the Willamette River, 92,523 ft<sup>2</sup> would drain to Debrick Slough, and 170,279 ft<sup>2</sup> would drain to Dodson Slough. Runoff from the increase in impervious surface would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The Enhanced Corridor Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is mostly highly urbanized and existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Areas that are not currently developed with hard structures or pavement are either landscaped or consist of fields that are vegetated with weedy plant species.

**7.3.2.2. Wetlands and Waters of the U.S. and State**

There are no wetlands mapped along the Coburg Road Corridor. The Enhanced Corridor Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. Construction of the Enhanced Corridor Alternative would not cause any changes to the hydrology of mapped wetlands or encroach on any wetland buffers or conservation setbacks.

**7.3.3. EmX Alternative**

**7.3.3.1. Ecosystems**

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Table 7.3-2 and Table 7.3-3. Table 7.3-2 shows probabilities for tree impacts within the Charter Tree Boundary and Table 7.3-3 shows probabilities for tree impacts outside the Charter Tree Boundary. Based on the assessment of potential impacts to street and landscape trees, 29 percent of the EmX Alternative would have a high probability of impact to trees within the Charter Tree Boundary and 2 percent would have a high probability of impact to trees outside the Charter Tree Boundary. Within the areas with a high probability of impact to trees, 98 to 100 medium and large trees inside the Charter Tree Boundary would potentially be removed, and 42 to 49 medium and large trees outside the Charter Tree Boundary would potentially be removed. Any tree impacts would occur in accordance with local regulations and would be mitigated through replacement. Mitigation would offset any long-term direct impacts.

**Table 7.3-2. Coburg Road Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees Within the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	5,600 (29)
Moderate	3,990 (20)
Low	160 (1)
No Impact	9,782 (50)
Corridor Length Within Charter Tree Boundary	19,532 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	98 to 100 street trees and 0 landscape trees

Source: CH2M. (2017a).



**Table 7.3-3. Coburg Road Corridor EmX Alternative Probability of Potential Impacts to Medium and Large Trees Outside the Charter Tree Boundary**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	950 (2)
Moderate	5,800 (12)
Low	13,300 (28)
No Impact	28,244 (58)
Corridor Length Outside Charter Tree Boundary	48,294 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	33 to 38 street trees and 9 to 11 landscape trees

Source: CH2M. (2017a).

The EmX Alternative would result in 812,922 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). A portion of the total new impervious surface measuring 102,310 ft<sup>2</sup> would drain to the Willamette River, 177,597 ft<sup>2</sup> would drain to Debrick Slough, and 533,015 ft<sup>2</sup> would drain to Dodson Slough. Runoff from the increase in impervious surface would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The EmX Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is mostly highly urbanized and existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Areas that are not currently developed with hard structures or pavement are either landscaped or consist of fields that are vegetated with weedy plant species.

### 7.3.3.2. Wetlands and Waters of the U.S. and State

There are no wetlands mapped along the Coburg Road Corridor. The EmX Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. Construction of the EmX Alternative would not cause any changes to the hydrology of mapped wetlands or encroach on any wetland buffers or conservation setbacks.

## 7.4. Indirect and Cumulative Effects

### 7.4.1. No-Build Alternative

Population and job growth is anticipated to continue to occur throughout the region and increases in traffic volumes would be expected to occur without improvements to the transit system. The City of Eugene is proposing standards that would preclude increases in transportation infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would occur over time under the No-Build Alternative. The specific extent of these effects cannot be assessed at this time, but they are assumed to be minor within the corridor because of the existing level of development and limited ecosystem resources present.

## **7.4.2. Enhanced Corridor Alternative**

### **7.4.2.1. Ecosystems**

The improvements proposed under the Enhanced Corridor Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the Enhanced Corridor Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to Debrick Slough, Dodson Slough and designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to terrestrial designated critical habitat.

### **7.4.2.2. Wetlands and Waters of the U.S. and State**

Indirect impacts to mapped wetlands are unlikely to occur. The project corridor is not close to documented wetlands and storm-water management regulations and requirements would prevent indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes would occur to mapped wetlands.

## **7.4.3. EmX Alternative**

### **7.4.3.1. Ecosystems**

The improvements proposed under the EmX Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the EmX Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to Debrick Slough, Dodson Slough and designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to terrestrial designated critical habitat.

#### **7.4.3.2. Wetlands and Waters of the U.S. and State**

Indirect impacts to currently documented wetlands are unlikely to occur. The project corridor is not close to documented wetlands and storm-water management regulations and requirements would prevent indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes would occur to mapped wetlands.

### **7.5. Short-Term Construction-Related Impacts**

#### **7.5.1. No-Build Alternative**

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any short-term construction-related impacts to the environment.

#### **7.5.2. Enhanced Corridor Alternative**

##### **7.5.2.1. Ecosystems**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed species are known to occur within the API, no displacement of listed species is anticipated.

Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature. Short-term construction-related water quality impacts may occur as a result of the Enhanced Corridor Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no terrestrial designated critical habitat or listed species documented within the API.

##### **7.5.2.2. Wetlands and Waters of the U.S. and State**

Construction is not proposed near mapped wetlands, so there is no potential for short-term construction-related degradation of wetland quality or adverse changes in wetland functions at those locations.

#### **7.5.3. EmX Alternative**

##### **7.5.3.1. Ecosystems**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed species are known to occur within the API, no displacement of listed species is anticipated.

Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or trees would be surveyed for occupied nests prior to impact. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the EmX Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no terrestrial designated critical habitat or listed species documented within the API.

#### **7.5.3.2. Wetlands and Waters of the U.S. and State**

Construction is not proposed near currently documented wetlands, so there is no potential for short-term construction-related degradation of wetland quality or adverse changes in wetland functions at those locations.

### **7.6. Potential Mitigation Measures**

#### **7.6.1. No-Build Alternative**

Because the No-Build Alternative would not involve any construction or any direct impacts associated with this project, no mitigation measures are required.

#### **7.6.2. Enhanced Corridor Alternative**

##### **7.6.2.1. Ecosystems**

Mitigation for direct impacts to resources required by local regulations may include mitigation for street and landscape tree impacts. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the Enhanced Corridor Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

##### **7.6.2.2. Wetlands and Waters of U.S. and State**

To avoid and minimize impacts to wetland areas, an onsite wetland determination would be conducted prior to construction. The wetland determination would identify any potentially jurisdictional wetland areas that are not included on current inventories. If wetlands are identified within areas that may be impacted by the project, a wetland delineation would be conducted to document and map the wetland boundaries. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

### 7.6.3. EmX Alternative

#### 7.6.3.1. Ecosystems

Mitigation for direct impacts to resources as required by local regulations may include mitigation for street and landscape tree impacts. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the EmX Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

#### 7.6.3.2. Wetlands and Waters of the U.S. and State

To avoid and minimize impacts to wetland areas, an onsite wetland determination would be conducted prior to construction. The wetland determination would identify any potentially jurisdictional wetland areas that are not included on current inventories. If wetlands are identified within areas that may be impacted by the project, a wetland delineation would be conducted to document and map the wetland boundaries. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

### 7.7. Permits and Approvals

Permits and approvals that could potentially be required are presented in Table 7.7-1. Prior to construction, additional onsite analysis may be necessary to determine if certain permits are required. Specifically, a Wetland Determination or Delineation may be required to identify any potential wetland areas that are not currently documented.

**Table 7.7-1. Coburg Road Corridor Permits and Approvals that May Be Required**

<b>Permits and Approvals</b>	<b>No-Build Alternative</b>	<b>Enhanced Corridor Alternative</b>	<b>EmX Alternative</b>
Street Tree Removal Permit (R-6305-C3)		✓	✓
CWA Section 402: NPDES General Construction 1200-C Stormwater Permit		✓	✓
CWA Section 404: Permits for the discharge of dredged or fill material into waters of the United States		✓	✓
CWA Section 401: Water Quality Certification		✓	✓
Oregon Removal-Fill Permit		✓	✓

## 8. Martin Luther King, Jr. Boulevard Corridor Environmental Consequences

### 8.1. Affected Environment

The API for this evaluation is located along the Martin Luther King, Jr. Boulevard Corridor where construction activities would occur. The APIs for the build alternative is presented on Figure 8.1-1.

The Martin Luther King, Jr. Boulevard Corridor is located within a highly urbanized area consisting of residential and commercial development. The highly developed areas do not possess substantial habitat features and generally lack sensitive ecosystem features. Street and landscape trees along the corridor provide limited habitat for urban avian species.

The corridor crosses the Willamette River. The nearest construction area is located over 100 feet from the Willamette River. The City of Eugene Riparian Corridor setback from the Willamette River is 100 feet. No construction is proposed within the Willamette Greenway.

Wetlands are mapped adjacent to the Martin Luther King, Jr. Boulevard Corridor. Prior to construction, detailed onsite wetland determination and delineation work would occur. It is possible that additional wetland areas may be identified at that time.

Designated critical habitat for Chinook salmon (*Oncorhynchus tshawytscha*) is located at the Willamette River. The Martin Luther King, Jr. Boulevard Corridor crosses the Willamette River and the nearest construction area is approximately 150 feet from the river. The minimum distance from the corridor to designated critical habitat for Willamette daisy (*Erigeron decumbens*) is approximately 3 miles. No other designated critical habitat is located in the project vicinity.

A list of protected federal and state listed species documented as occurring in the project vicinity is presented in Table 3.1-1. A list of protected federal and state listed species documented as occurring in Lane County is presented in Table 3.1-2.

### 8.2. Long-Term Direct Impacts

#### 8.2.1. No-Build Alternative

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. As a result, there would be no injury, loss, or change in biological resources and, therefore, the No-Build Alternative would have no effect on species listed under the Endangered Species Act or designated critical habitat. The No-Build Alternative would not result in any long-term direct impacts to wetlands or waterways.

**Figure 8.1-1. Martin Luther King, Jr. Boulevard Corridor Enhanced Corridor Alternative Areas of Potential Impact to Ecosystems**





## 8.2.2. Enhanced Corridor Alternative

### 8.2.2.1. Ecosystems

Potential impacts to street and landscape trees may occur under the Enhanced Corridor Alternative. Potential tree impacts were evaluated based on the linear feet of the alternative to have a high, moderate, low, or no probability of impact to trees. The portions of alternatives with a high probability of impact to trees were then evaluated further to quantify potential impacts in those areas. A City of Eugene Street Tree Removal Permit may be required and/or permits from the Building Permit Services Division of the Planning and Development Department for landscape trees.

A breakdown showing the probability of potential impacts of this alternative to medium and large trees is presented in Table 8.2-1. Based on the assessment of potential impacts to street and landscape trees, less than 1 percent of the Enhanced Corridor Alternative would have a probability of high impact to trees. Within the areas with a high probability of impact to trees, seven to nine medium and large trees would potentially be removed. None of the tree impacts would occur within the Charter Tree boundary. Any tree impacts would occur in accordance with local regulations and would be mitigated by replacing them at a minimum 1:1 ratio. Mitigation would offset any long-term direct impacts.

**Table 8.2-1. Martin Luther King, Jr. Boulevard Corridor Enhanced Corridor Alternative Probability of Potential Impacts to Medium and Large Trees**

Potential Impacts Probability	Impact Length in Linear Feet (Percent of Corridor Impacted)
High	110 (less than 1)
Moderate	2,600 (7)
Low	8,570 (21)
No Impact	28,651 (72)
Corridor Length	39,931 (100)
<b>Number of Medium and Large Trees Potentially Removed</b>	<b>7 to 9 street trees and 0 landscape trees</b>

Source: CH2M. (2017a).

The Enhanced Corridor Alternative would result in construction of 325,299 ft<sup>2</sup> of new, reconstructed and adjoining impervious surface. The net new impervious surface area associated with this alternative is provided in the *MovingAhead Water Quality, Floodplain and Hydrology Technical Report* (CH2M, 2017b). Stormwater runoff from new impervious surfaces could reach fish bearing waterways. A portion of the total new impervious surface measuring 70,842 ft<sup>2</sup> would drain to the Willamette River and 254,457 ft<sup>2</sup> would drain to the Q Street Canal. The project would incorporate several protective measures that would minimize effects to fish. Runoff from the increase in impervious surface would be required to meet ODOT’s stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards. For these reasons, the alternative would not significantly impact threatened fish species or designated critical habitat.

The Enhanced Corridor Alternative would not result in the destruction or adverse modification of critical habitat, suitable habitat or “take” of federal or state listed species. The corridor is mostly highly urbanized and existing habitat conditions are conducive to plant and wildlife species that are commonly found in urban areas. Wetlands and waterways along the corridor provide habitat for wildlife, but long-term direct impacts to the wetlands and waterways are not anticipated.

### **8.2.2.2. Wetlands and Waters of the U.S. and State**

Several wetlands are mapped along the Martin Luther King, Jr. Boulevard Corridor. The Enhanced Corridor Alternative is not anticipated to result in long-term direct impacts to mapped wetlands. No changes to wetland functions or quality are anticipated. Construction of the Enhanced Corridor Alternative would not cause any changes to the hydrology of mapped wetlands.

Wetlands and waterways along the Martin Luther King, Jr. Boulevard Corridor are subject to various City of Eugene setbacks ranging from 40 to 50 feet. Construction of new transit facilities between Centennial Loop and Leo Harris Parkway would result in encroachment into the 50-foot setback on the Q Street Canal, which would result in long-term direct impacts due to loss of setback area. No other setbacks would be subject to long-term direct impacts, provided that construction remains within the existing developed footprint in those areas.

## **8.3. Indirect and Cumulative Effects**

### **8.3.1. No-Build Alternative**

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any direct impact to the environment. As a result, there would be no injury, loss, or change in biological resources and, therefore, the No-Build Alternative would have no effect on species listed under the Endangered Species Act or designated critical habitat. The No-Build Alternative would not result in any indirect or cumulative impacts to wetlands or waterways.

### **8.3.2. Enhanced Corridor Alternative**

#### **8.3.2.1. Ecosystems**

The improvements proposed under the Enhanced Corridor Alternative would result in a more efficient mass transit system, and would therefore decrease the rate of overall traffic growth. Increases in traffic volumes would still be expected, but the City of Eugene is proposing standards that would preclude increases in infrastructure. However, regardless of whether that policy is adopted, indirect and cumulative effects to ecosystems would be expected to be less under the EmX Alternative than under the No-Build Alternative.

Potential tree impacts would not result in indirect or cumulative effects because any tree impacts would be mitigated through replacement.

Potential cumulative stormwater effects to Q Street Canal and designated critical habitat in the Willamette River would be mitigated by meeting ODOT, City of Eugene, and DEQ stormwater design standards.

Indirect and cumulative effects of the project would not result in destruction or adverse modification of terrestrial habitats for listed species due to the lack of habitat features within the API and the distance to terrestrial designated critical habitat.

#### **8.3.2.2. Wetlands and Waters of the U.S. and State**

Indirect impacts to wetlands and waterways may occur due to their proximity to the corridor. BMPs would be utilized to avoid indirect effects related to increases in pollution loads, sedimentation, erosion, or alteration of hydrologic regimes.

## **8.4. Short-Term Construction-Related Impacts**

### **8.4.1. No-Build Alternative**

The No-Build Alternative would not involve any construction activities associated with this project and, therefore, would not result in any short-term construction-related impacts to the environment.

### **8.4.2. Enhanced Corridor Alternative**

#### **8.4.2.1. Ecosystems**

Short-term construction-related activities may temporarily displace urban wildlife. Since no federal or state listed fish or wildlife species are known to occur within the API, no displacement of listed fish and wildlife species is anticipated.

Any construction activity that would impact trees would need to comply with the MBTA to ensure no impacts to nesting migratory bird species would occur. Before beginning any construction activities with the potential to impact trees, measures would be taken to ensure no impacts to nesting migratory bird species would occur to comply with the MBTA. Tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA. Tree removal would result in short-term construction-related impacts to wildlife habitat. The wildlife habitat features would be replaced over time as the mitigation plantings mature.

Short-term construction-related water quality impacts may occur as a result of the Enhanced Corridor Alternative. The work could increase the potential for sediment transport to waterways. Because erosion prevention and sediment control measures would be implemented, none of these effects would be significant.

No short-term construction-related impacts to designated terrestrial critical habitat or listed species are anticipated. There is no terrestrial designated critical habitat or listed species documented within the API.

#### **8.4.2.2. Wetlands and Waters of the U.S. and State**

Construction of new transit facilities between Centennial Loop and Leo Harris Parkway would result in encroachment into the 50-foot Water Resources Conservation setback on the Q Street Canal. Construction activities within the setback could result in short-term construction-related impacts to the riparian corridor.

## **8.5. Potential Mitigation Measures**

### **8.5.1. No-Build Alternative**

Because the No-Build Alternative would not involve any construction or any direct impacts associated with this project, no mitigation measures are required.

## 8.5.2. Enhanced Corridor Alternative

### 8.5.2.1. Ecosystems

Mitigation for direct impacts to resources required by local regulations may include mitigation for street and landscape tree impacts. Local regulations may also require mitigation for direct impacts to the Water Resources Conservation setback associated with the wetlands and waterways. Other potential mitigation measures are likely to involve BMPs for avoiding and minimizing impacts. Mitigation for direct impacts to resources as required by state and federal regulations is not anticipated for the Enhanced Corridor Alternative.

Tree removal would be mitigated through replacement at a minimum 1:1 ratio. To comply with the MBTA, tree impacts would either occur outside the nesting season or surveys would be conducted to ensure that there are no impacts to species protected under the MBTA.

BMPs would be utilized to minimize the potential for impacts to waterways and fish habitat. Runoff from the project would be required to meet ODOT's stormwater design standards or City of Eugene stormwater standards, depending on the roadway jurisdiction. Runoff would also meet DEQ standards.

### 8.5.2.2. Wetlands and Waters of the U.S. and State

In order to avoid and minimize impacts to wetland areas, onsite wetland delineation would be conducted prior to construction. The wetland delineation would identify any potentially jurisdictional wetland areas that are not included on current inventories. It would also accurately locate the boundaries of the wetland in Amazon Park where a new station is proposed. If impacts to wetlands are unavoidable, compensatory wetland mitigation may be required in accordance with state and federal regulations.

## 8.6. Permits and Approvals

Permits and approvals that could potentially be required are presented in Table 8.6-1. Prior to construction, additional onsite analysis may be necessary to determine if certain permits are required. Specifically, a Wetland Determination or Delineation may be required to identify any potential wetland areas that are not currently documented.

**Table 8.6-1. Martin Luther King, Jr. Boulevard Corridor Permits and Approvals that May Be Required**

<b>Permits and Approvals</b>	<b>No-Build Alternative</b>	<b>Enhanced Corridor Alternative</b>
Street Tree Removal Permit (R-6305-C3)		✓
Standards Review Within /WR Conservation Areas		✓
CWA Section 402: NPDES General Construction 1200-C Stormwater Permit		✓
CWA Section 404: Permits for the discharge of dredged or fill material into waters of the United States		✓
CWA Section 401: Water Quality Certification		✓
Oregon Removal-Fill Permit		✓

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## Appendix A: Glossary and Naming Conventions

This appendix includes a detailed list of acronyms, abbreviations, and technical terms used throughout this report. It also includes naming conventions used in the MovingAhead Project.

### Acronyms and Abbreviations

**Table A-1. Acronyms and Abbreviations**

Acronyms and Abbreviations	Definitions
/H-RCP	Historic Structures or Sites Combine Zone
/WP	Waterside Protection
/WQ	Water Quality
°C	degree(s) Celsius
µg/L	microgram(s) per liter
µg/m <sup>3</sup>	microgram(s) per cubic meter
AA	Alternatives Analysis
AAC	all aluminum conductor
AASHTO	American Association of State Highway and Transportation Officials
AAI	All Appropriate Inquiry
ACS	American Community Survey
ADA	Americans with Disabilities Act
AEO	Annual Energy Outlook
APE	Area of Potential Effect
API	Area of Potential Impact
approx.	Approximately
ARTS	All Roads Transportation Safety Program
ATR	Automated Traffic Recording
BAT	business access and transit
BEST	Better Eugene Springfield Transit
BFE	Base Flood Elevation
BMP	best management practice
BPA	Bonneville Power Administration
BRT	bus rapid transit
Btu	British thermal unit
c	Circa
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980



**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
CFU	Colony-Forming Unit
CH2M	CH2M HILL, Inc.
CIG	Capital Investment Grant
CIP	Capital Improvements Program
City	City of Eugene
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
COGP	County Opportunity Grant Program
Corps	U.S. Army Corps of Engineers
CRL	Confirmed Release List
CSZ	Cascadia Subduction Zone
CTR	commute trip reduction
CWA	Clean Water Act
CY	cubic yard
dB	Decibel
dba	A-weighted decibel
DBE	Disadvantaged Business Enterprise
DEIS	Draft Environmental Impact Statement. Also referred to as Draft EIS.
DEQ	Oregon Department of Environmental Quality
DKS	DKS Associates
DLS	Donation Land Claim
DOE	Determination of Eligibility
DOGAMI	Oregon Department of Geology and Mineral Industries
DOT	Department of Transportation
Draft EIS	Draft Environmental Impact Statement. Also referred to as DEIS.
Draft Envision Eugene	<i>Draft Envision Eugene Community Vision</i> (Envision Eugene, 2016, July)
Draft Eugene 2035 TSP	<i>Draft Eugene 2035 Transportation System Plan</i> (City of Eugene, 2016)
DSL	Oregon Department of State Lands
DU	dwelling unit
EA	Environmental Assessment or each
EC	City of Eugene Code
EC	eligible contributing

**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
EC	Enhanced Corridor Alternative (in some tables)
ECLA	<i>Eugene Comprehensive Lands Assessment</i> (ECONorthwest, 2010, June)
ECSI	Environmental Cleanup Site Information database (Oregon DEQ, 2016)
EFH	essential fish habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EmX	Emerald Express, Lane Transit District's Bus Rapid Transit System
EmX	EmX Alternative (in some tables)
EOA	Equity and Opportunity Assessment
EPA	U. S. Environmental Protection Agency
ES	eligible significant
ES NR	eligible significant NRHP
ESA	Endangered Species Act or Environmental Site Assessment
ESH	essential indigenous anadromous salmonid habitat
ESU	Evolutionarily Significant Unit
EWEB	Eugene Water & Electric Board
FAST Act	Fixing America's Surface Transportation Act
FEIS	Final Environmental Impact Statement. Also referred to as Final EIS.
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act of 1974
Final EIS	Final Environmental Impact Statement. Also referred to as FEIS.
FOE	Finding of Effect
FPPA	Farmland Protection Policy Act, 7 U.S.C. 4201-4209 and 7 CFR 658
FRA	Federal Railroad Administration
ft	foot (feet)
ft <sup>2</sup>	square foot (feet)
FTA	Federal Transit Administration
FTN	Frequent Transit Network
FY	fiscal year
GAN	Grant Anticipation Note
GARVEE	Grant Anticipation Revenue Vehicle
GHG	greenhouse gas
GIS	geographic information system
GLO	General Land Office
Heritage	Heritage Research Associates, Inc.

**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
HGM	Hydro-geomorphic
HMTA	Hazardous Materials Transport Act of 1975, with amendments in 1990 and 1994
HOV	high-occupancy vehicle
HPNW	Historic Preservation Northwest
I-5	Interstate 5
I-105	Interstate 105
IOF	Immediate Opportunity Fund
ISA	International Society of Arboriculture
ISTEA	Intermodal Surface Transportation Efficiency Act
kV	kilovolt(s)
LaneACT	Lane Area Commission on Transportation
LCC	Lane Community College
LCDC	Land Conservation and Development Commission
LCOG	Lane Council of Governments
Ldn	day-night sound level
LE	Listed Endangered
LEP	limited English proficiency
$L_{eq}$	equivalent sound level
LF	lineal foot (feet)
LGAC	Local Government Affairs Council
LGGP	Local Government Grant Program
LID	Local Improvement District
$L_{max}$	maximum sound level
$L_{min}$	minimum sound level
LNG	liquefied natural gas
LOS	level of service
LPA	Locally Preferred Alternative
LRAPA	Lane Regional Air Protection Agency
LRFP	LTD's Long-Range Financial Plan
LRT	Light Rail Transit
LRTP	LTD's Long-Range Transit Plan
LT	Listed Threatened
LTD	Lane Transit District
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
m	meter(s)

**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Migratory Bird Treaty Act
Metro Plan	<i>Metro Plan, Eugene-Springfield Metropolitan Area General Plan</i> (LCOG et al., 1987, as updated on 2015, December 31)
mg/kg	milligram(s) per kilogram
MI	mile(s)
mL	milliliter(s)
MMA	Michael Minor and Associates, Inc.
MOA	Memorandum of Agreement
MOE	Measure of Effectiveness
MPC	Metropolitan Policy Committee
mpg	miles per gallon
mph	miles per hour
MPO	Metropolitan Planning Organization
MTIP	<i>Metropolitan Transportation Improvement Program Federal FY 2015 to Federal FY 2018</i> (Central Lane MPO, adopted 2014, October, as amended)
Mw	Earthquake moment magnitude
N/A	not applicable
NA	not applicable; no data available
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAVD88	North American Vertical Datum of 1988
ND	nodal development
NEPA	National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4347
NFA	no further action
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO <sub>2</sub>	nitrous dioxide
NO <sub>x</sub>	nitrous oxides
NPDES	National Pollutant Discharge Elimination System
NPMS	National Pipeline Mapping System
NPS	Department of Interior's National Park Service
NR	Natural Resource
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NS	no standard established

**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
NW Natural	Northwest Natural
O <sub>3</sub>	Ozone
O&M	operations and maintenance
OAR	Oregon Administrative Rule
OARRA	Oregon Archaeological Records Remote Access
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OPA	Oil Pollution Act of 1990
OPRD	Oregon Parks and Recreation Department
OR	Oregon
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statutes
OTIB	Oregon Transportation Infrastructure Bank
Pb	Lead
PCB	polychlorinated biphenyl
PEM	Palustrine Emergent Wetland
PM	particulate matter
PM <sub>10</sub>	particulate matter – 10 microns in diameter
PM <sub>2.5</sub>	particulate matter – 2.5 microns in diameter
PMT	Project Management Team
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PROS	Parks, Recreation, and Open Space
PUC	Public Utilities Commission
Qls	landslide and debris avalanche deposits
Qtg	terrace and fan deposits
Qty	Quantity
RCRA	Resource Conservation and Recovery Act of 1976
RFFA	reasonably foreseeable future action
ROW	right of way
RRFB	Rectangular Rapid Flash Beacon

**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
RTP	<i>Central Lane Metropolitan Planning Organization Regional Transportation Plan</i> (LCOG, adopted 2007, November; 2011, December). (The RTP includes the Financially Constrained Roadway Projects List)
SARA	Superfund Amendments and Reauthorization Act of 1986
SARA III	Emergency Planning and Community Right to Know Act of 1986; part of the SARA amendments
SC	sensitive critical
SCC	Standard Cost Categories
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SDC	Systems Development Charge
SDWA	Safe Drinking Water Act
sec	second(s)
Section 4(f)	Section 4(f) of the Department of Transportation Act of 1966
Section 6(f)	Section 6(f) of the LWCF Act of 1965
Section 106	Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800.5)
SF	square foot (feet)
SHPO	Oregon State Historic Preservation Office
SIP	State Implementation Plan
SMU	Species Management Unit
SO <sub>2</sub>	sulfur dioxide
SOC	species of concern
SSGA	Small Starts Construction Grant Agreement
STA	Special Transportation Area
STIP	Statewide Transportation Improvement Program
SV	Sensitive Vulnerable
SY	square yard(s)
TAP	Transportation Alternatives Program
TAZ	transportation analysis zone
TCE	Temporary Construction Easement
TD	transit-oriented development
TDM	Transportation Demand Management
TEA-21	Transportation Equity Act for the 21st Century
Teoe	siliciclastic marine sedimentary rocks
TESCP	Temporary Erosion and Sediment Control Plan
TIF	Tax Increment Financing
TIP	Transportation Improvement Program
TMDL	total maximum daily load

**Table A-1. Acronyms and Abbreviations**

<b>Acronyms and Abbreviations</b>	<b>Definitions</b>
TOD	transit-oriented development
TPAU	Department of Transportation – Transportation Planning Analysis Unit
TPR	Transportation Planning Rule
TransPlan	<i>Eugene-Springfield Transportation System Plan</i> (City of Eugene et al., adopted 2002, July)
TRB	Transportation Research Board
TSI	Transportation System Improvement
TSM	Transportation System Management
TSP	Transportation System Plan
UGB	Urban Growth Boundary
UMTA	Urban Mass Transit Administration
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. 4601 et. seq., 49 CFR Part 24
URA	Urban Renewal Area
U.S.C.	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
v/c	volume-to-capacity
VHT	vehicle hours traveled
VMT	vehicle miles traveled
VOC	volatile organic compound
WEEE	West Eugene EmX Extension
WEG	wind erodibility group
YOE	year of expenditure



## Terms

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Accessibility	The extent to which facilities are barrier-free and useable for all persons with or without disabilities.
Action	An “action,” a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Handbook, the terms “project,” “proposal,” and “action” are used interchangeably unless otherwise specified. An action may be categorized as a “categorical exclusion” or a “major federal action.”
Agricultural / Forest / Natural Resource	AG, EFU-25, EFU-30, EFU-40, F-1, F-2, and NR
Alignment	Alignment is the street or corridor that the transit project would be located within.
Alternative Fuels	Low-polluting fuels which are used to propel a vehicle instead of high-sulfur diesel or gasoline. Examples include methanol, ethanol, propane or compressed natural gas, liquid natural gas, low-sulfur or "clean" diesel and electricity.
Alternatives Analysis (AA)	The process of evaluating the costs, benefits, and impacts of a range of transportation alternatives designed to address mobility problems and other locally-defined objectives in a defined transportation corridor, and for determining which particular investment strategy should be advanced for more focused study and development. The Alternatives Analysis (AA) process provides a foundation for effective decision making.
Area of Potential Effect	A term used in Section 106 to describe the area in which historic resources may be affected by a federal undertaking.
Area of Potential Impact	An assessment’s Area of Potential Impact for the project is defined separately for each discipline.
Auxiliary Lanes	Lanes designed to improve safety and reduce congestion by accommodating cars and trucks entering or exiting the highway or roadway, and reducing conflicting weaving and merging movements.
Base Fare	The price charged to one adult for one transit ride; excludes transfer charges, and reduced fares.
Base Period	The period between the morning and evening peak periods when transit service is generally scheduled on a constant interval. Also known as "off-peak period."
Boarding	Boarding is a term used in transit to account for passengers of public transit systems. One person getting on a transit vehicle equals one boarding. In many cases, individuals will have to transfer to an additional transit vehicle to reach their destination and may well use transit for the return trip. Therefore, a single rider may account for several transit boardings in one day.
Bus Phase	An exclusive traffic signal phase for buses and/or BRT vehicles.
Bus Rapid Transit (BRT)	A transit mode that combines the quality of rail transit and the flexibility of buses. It can operate on bus lanes, high-occupancy vehicle (HOV) lanes, expressways, or ordinary streets. The vehicles are designed to allow rapid passenger loading and unloading, with more doors than ordinary buses.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Business Access and Transit (BAT) Lane	In general, a BAT lane is a concrete lane, separated from general-purpose lanes by a paint stripe and signage. A BAT lane provides Bus Rapid Transit (BRT) priority operations, but general-purpose traffic is allowed to travel within the lane to make a turn into or out of a driveway or at an intersecting street. However, only the BRT vehicle is allowed to use the lane to cross an intersecting street.
Busway	Exclusive freeway lane for buses and carpools.
Capital Improvements Program (CIP)	A CIP is a short-range plan, usually 4 to 10 years, which identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for funding projects in the program.
Categorical Exclusion (CE)	A CE means a category of actions that do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is required.
Chambers Special Area Zone	S-C
Charter Tree	A tree defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as “... (a living, standing, woody plant having a trunk 25 inches in circumference at a point 4-½ feet above mean ground level at the base of the trunk) of at least fifty years of age within publicly owned rights of way for streets, roads, freeways, thoroughways, and thoroughfares and within those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915, shall be designated historic street trees and recognized as objects of high historic value and significance in the history of the city and deserving of maintenance and protection.” These trees have special historic importance to the City and require special processes be followed if their removal is proposed, including a public vote on the project proposing the removal.
Charter Tree Boundary	Defined by the Eugene Charter (City of Eugene, 2002, updated 2008) as “...those portions of the city which were in the incorporated boundaries of the city as of January 1, 1915.” Trees within this boundary may, if they meet certain criteria, be granted the special title and protective status of a Charter Tree, defined above.
City of Eugene Zoning Classifications	Industrial (I-2 and I-3), Commercial (C-3), Mixed-Use (C-1, C-2, GO, S-C, S-CN, S-DR, S-DW, S-E, S-F, S-HB, S-JW, S-RN, S-W, and S-WS), Single-Family Residential (R-1), Multi-Family Residential (R-2 and R-3), Institution (PL and PRO), Agricultural / Forest / Natural Resource (AG, EFU-25, EFU-30, EFU-40, F-1, F-2, and NR), Office (E-1 and E-2), Special Area Zone (Non-Mixed Use) (S-H and S-RP), Downtown Westside Special Area Zone (S-DW), Chambers Special Area Zone (S-C)
Clean Air Act Amendments of 1990	The comprehensive federal legislation that establishes criteria for attaining and maintaining the federal standards for allowable concentrations and exposure limits for various air pollutants; the act also provides emission standards for specific vehicles and fuels.
Collector Streets	Collector streets provide a balance of both access and circulation within and between residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access, and are located in residential neighborhoods, distributing trips from the neighborhood and local street system.
Commercial	C-3

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Commuter Rail	Commuter rail is a transit mode that is a multiple car electric or diesel propelled train. It is typically used for local, longer-distance travel between a central city and adjacent suburbs, and can operate alongside existing freight or passenger rail lines or in exclusive rights of way.
Compressed Natural Gas (CNG)	An alternative fuel; compressed natural gas stored under high pressure. CNG vapor is lighter than air.
Conformity	The ongoing process that ensures the planning for highway and transit systems, as a whole and over the long term, is consistent with the state air quality plans for attaining and maintaining health-based air quality standards; conformity is determined by metropolitan planning organizations (MPOs) and the U.S. Department of Transportation (U.S. DOT), and is based on whether transportation plans and programs meet the provisions of a State Implementation Plan.
Congestion Mitigation and Air Quality (CMAQ)	Federal funds available for either transit or highway projects that contribute significantly to reducing automobile emissions, which cause air pollution.
Cooperating Agency	Regulations that implement the National Environmental Policy Act define a cooperating agency as any federal agency, other than a lead agency, which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment.
Coordination Plan	Required under Moving Ahead for Progress in the 21st Century (MAP-21), the coordination plan contains procedures aimed at achieving consensus among all parties in the initial phase of environmental review and to pre-empt disagreements that can create delays later on in a project.
Corridor	A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, and transit route alignments.
Corridor Transit Service Characteristics	The amount of transit service provided in each corridor, measured by daily vehicle hours traveled, daily vehicle miles traveled, and daily place-miles of service.
Demand Responsive	Non-fixed-route service utilizing vans or buses with passengers boarding and alighting at pre-arranged times at any location within the system's service area. Also called "Dial-a-Ride."
Diesel Multiple Unit (DMU)	Each unit carries passengers and can be self-powered by a diesel motor; no engine unit is required.
Documented Categorical Exclusion (DCE)	A DCE means a group of actions that may also qualify as Categorical Exclusions (CEs) if it can be demonstrated that the context in which the action is taken warrants a CE exclusion; i.e., that no significant environmental impact will occur. Thus, these actions are referred to as DCEs. Such actions require some National Environmental Policy Act documentation, but not an Environmental Assessment or a full-scale Environmental Impact Statement.  DCEs documentation must demonstrate that, in the context(s) in which these actions are to be performed, they will have no significant environmental impact or that such impacts will be mitigated.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Downtown Westside Special Area Zone	S-DW
Draft Environmental Impact Statement (DEIS)	The DEIS is the document that details the results of the detailed analysis of all of the projects alternatives. The DEIS contains all information learned about the impacts of a project and alternatives.
Earmark	A federal budgetary term that refers to the specific designation by Congress that part of a more general lump-sum appropriation be used for a particular project; the earmark can be designated as a minimum and/or maximum dollar amount.
Effects	Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Effects include: (1) direct effects that are caused by the action and occur at the same time and place, and (2) indirect effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
Electrical Multiple Unit (EMU)	The EMU is heavier than a light rail vehicle, but it is powered in the same way by an overhead electrical system.
EmX	Lane Transit District’s Bus Rapid Transit System, pronounced “MX,” short for Emerald Express.
Environmental Assessment (EA)	A report subject to the requirements of the National Environmental Policy Act (NEPA) demonstrating that an Environmental Impact Statement (EIS) is not needed for a specific set of actions. The EA can lead to a Finding of No Significant Impact (FONSI).
Environmental Impact Statement (EIS)	A comprehensive study of likely environmental impacts resulting from major federally-assisted projects; EISs are required by the National Environmental Policy Act.
Environmental Justice	A formal federal policy on environmental justice was established in February 1994 with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations." There are three fundamental environmental justice principles: <ul style="list-style-type: none"> <li>• To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.</li> <li>• To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.</li> <li>• To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.</li> </ul>
Envision Eugene	The City of Eugene’s Comprehensive Plan (latest draft or as adopted). Envision Eugene includes a determination of the best way to accommodate the community’s projected needs over the next 20 years.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Evaluation Criteria	Evaluation criteria are the factors used to determine how well each of the proposed multimodal alternatives would meet the project's Goals and Objectives. The Evaluation Criteria require a mix of quantitative data and qualitative assessment. The resulting data are used to measure the effectiveness of proposed multimodal alternatives and to assist in comparing and contrasting each of the alternatives to select a preferred alternative.
Exclusive Right of Way	A roadway or other facility that can only be used by buses or other transit vehicles.
Fatal Flaw Screening	The purpose of a Fatal Flaw Screening is to identify alternatives that will not work for one reason or another (e.g., environmental, economic, community). By using a Fatal Flaw Screening process to eliminate alternatives that are not likely to be viable, a project can avoid wasting time or money studying options that are not viable and focus on alternatives and solutions that have the greatest probability of meeting the community's needs (e.g., environmentally acceptable, economically efficient, implementable).
Finding of No Significant Impact (FONSI)	A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement (EIS). A FONSI is based on the results of an Environmental Assessment (EA).
Fixed Guideway System	A system of vehicles that can operate only on its own guideway constructed for that purpose (e.g., rapid rail, light rail). Federal usage in funding legislation also includes exclusive right of way bus operations, trolley coaches, and ferryboats as "fixed guideway" transit.
Fixed Route	Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers at set stops and stations; each fixed-route trip serves the same origins and destinations, unlike demand responsive and taxicabs.
Geographic Information System (GIS)	A data management software tool that enables data to be displayed geographically (i.e., as maps).
Goals and Objectives	Goals and objectives define the project's desired outcome and reflect community values. Goals and objectives build from the project's Purpose and Need Statement. <ul style="list-style-type: none"> <li>• Goals are overarching principles that guide decision making. Goals are broad statements.</li> <li>• Objectives define strategies or implementation steps to attain the goals. Unlike goals, objectives are specific and measurable.</li> </ul>
Guideway	A transit right of way separated from general purpose vehicles.
Headway	Time interval between vehicles passing the same point while moving in the same direction on a particular route.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Heritage Tree	The <i>City of Eugene Urban Forest Management Plan</i> (City of Eugene Public Works Department Maintenance Division, 1992) defines “Heritage Trees” as: “Any tree of exceptional value to our community based on its size (relative to species), history, location, or species, or any combination of these criteria.” Such a tree cannot be removed “except when otherwise necessary for the public health, safety, or welfare.”
Hydrology	Refers to the flow of water including its volume, where it drains, and how quickly it flows.
Impacts	A term to describe the positive or negative effects upon the natural or built environments as a result of an action (i.e., project).
In-vehicle Travel Time	The amount of time it takes for a transit vehicle to travel between an origin and a destination.
In-vehicle Walk and Wait Travel Time	The amount of in-vehicle travel time plus time spent walking to transit, initial wait time, transfer wait time (if any), and time walking from transit to the destination.
Independent Utility	A project or section of a larger project that would be a usable and reasonable expenditure even if no other projects or sections of a larger project were built and/or improved.
Industrial	I-2 and I-3
Institution	PL and PRO
Intergovernmental Agreement	A legal pact authorized by state law between two or more units of government, in which the parties contract for, or agree on, the performance of a specific activity through either mutual or delegated provision.
Intermodal	Those issues or activities that involve or affect more than one mode of transportation, including transportation connections, choices, cooperation, and coordination of various modes. Also known as "multimodal."
Jefferson Westside Special Area Zone	S-JW
Joint Development	Ventures undertaken by the public and private sectors for development of land around transit stations or stops.
Key Transit Corridors	Key Transit Corridors are mapped in <i>Envision Eugene</i> and are anticipated to be significant transit corridors for the City and the region
Kiss & Ride	A place where commuters are driven and dropped off at a station to board a public transportation vehicle.
Land and Water Conservation Fund (LWCF) Act of 1965	16 U.S.C. 4601-4 et seq. The Land and Water Conservation Fund (LWCF) State Assistance Program was established by the LWCF Act of 1965 to stimulate a nationwide action program to assist in preserving, developing, and providing assurance to all citizens of the United States (of present and future generations) such quality and quantity of outdoor recreation resources as may be available, necessary, and desirable for individual active participation. The program provides matching grants to states and through states to local units of government, for the acquisition and development of public outdoor recreation sites and facilities.
Landscape Tree	A living, standing, woody plant having a trunk that exists on private property.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Lane Regional Air Protection Agency (LRAPA)	LRAPA is responsible for achieving and maintain clean air in Lane County using a combination of regulatory and non-regulatory methods
Layover Time	Time built into a schedule between arrival at the end of a route and the departure for the return trip, used for the recovery of delays and preparation for the return trip.
Lead Agency	The organization that contracts and administers a study. For transit projects, FTA would typically fill this role. The lead agency has the final say about the project's purpose and need, range of alternatives to be considered, and other procedural matters.
Level of Detail	The amount of data collected, and the scale, scope, extent, and degree to which item-by-item particulars and refinements of specific points are necessary or desirable in carrying out a study.
Level of Service (LOS)	LOS is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. LOS is most commonly used to analyze highways, but the concept has also been applied to intersections, transit, and water supply.
Light Rail Transit (LRT)	Steel wheel/steel rail transit constructed on city streets, semi-private right of way, or exclusive private right of way. Formerly known as "streetcar" or "trolley car" service, LRT's major advantage is operation in mixed street traffic at grade. LRT vehicles can be coupled into trains, which require only one operator and often are used to provide express service.
Limited (or Controlled) Access	Restricted entry to a transportation facility based upon facility congestion levels or operational condition. For example, a limited access roadway normally would not allow direct entry or exit to private driveways or fields from said roadway.
Liquefaction	A phenomenon associated with earthquakes in which sandy to silty, water saturated soils behave like fluids. As seismic waves pass through saturated soil, the structure of the soil distorts, and spaces between soil particles collapse, causing ground failure.
Liquefied Natural Gas (LNG)	An alternative fuel; a natural gas cooled to below its boiling point of 260 degrees Fahrenheit so that it becomes a liquid; stored in a vacuum bottle-type container at very low temperatures and under moderate pressure. LNG vapor is lighter than air.
Local Streets	Local streets have the sole function of providing direct access to adjacent land. Local streets are deliberately designed to discourage through-traffic movements.
Locally Preferred Alternative (LPA)	The LPA is the alternative selected through the Alternatives Analysis process completed prior to or concurrent with National Environmental Policy Act analysis. This term is also used to describe the proposed action that is being considered for New Starts or Small Starts funds.
Low-Income Persons	Those whose median household income is at or below the Department of Health and Human Services poverty guidelines. For a four-person household with two related children, the poverty threshold is \$24,300 (year 2016 dollars).



**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Maintenance area	An air quality designation for a geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard, or NAAQS) for the pollutant. An area may have an acceptable level for one criteria air pollutant, but may have unacceptable levels for others. Maintenance/attainment areas are defined using federal pollutant limits set by EPA.
Maintenance facility	A facility along a corridor used to clean, inspect, repair and maintain bus vehicles, as well as to store them when they are not in use.
Major Arterial	Major arterial streets should serve to interconnect the roadway system of a city. These streets link major commercial, residential, industrial, and institutional areas. Major arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets for through traffic in lieu of a well-placed arterial street. Access control, such as raised center medians, is a key feature of an arterial route. Arterials are typically multiple miles in length.
Major Investment Study (MIS)	An alternatives analysis study process for proposed transportation investments in which a wide range of alternatives is examined to produce a smaller set of alternatives that best meet project transportation needs. The purpose of the study is to provide a framework for developing a package of potential solutions that can then be further analyzed during an Environmental Impact Statement process.
Metro Plan Designations	Commercial, Commercial / Mixed Use, Government and Education, Heavy Industrial, High Density Residential / Mixed-Use, High Density Residential, Light-Medium Industrial, Low Density Residential, Medium Density Residential, Medium Density Residential / Mixed-Use, Mixed-Use, Parks and Open Space, Major Retail Center, Campus Industrial, University Research
Metropolitan Planning Organization (MPO)	The organization designated by local elected officials as being responsible for carrying out the urban transportation and other planning processes for an area.
Minimum Operable Segment	A stand-alone portion of the alternative alignment that has independent utility, allowed by FTA to be considered as interim termini for a project. A minimum operable segment (MOS) provides flexibility to initiate a project with available funding while pursuing additional funding to complete the remainder of the project.
Minor Arterial	A minor arterial street system should interconnect with and augment the urban major arterial system and provide service to trips of moderate length at a somewhat lower level of travel mobility than major arterials. This system also distributes travel to geographic areas smaller than those identified with the higher system. The minor arterial street system includes facilities that allow more access and offer a lower traffic mobility. Such facilities may carry local bus routes and provide for community trips, but ideally should not be located through residential neighborhoods.

**Table A-2. Terms**

Terms	Definitions
Minority	<p>A person who is one or more of the following:</p> <ul style="list-style-type: none"> <li>• Black: a person having origins in any of the black racial groups of Africa</li> <li>• Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race</li> <li>• Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent</li> <li>• American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition</li> <li>• Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands</li> </ul>
Mitigation	<p>A means to avoid, minimize, rectify, or reduce an impact, and in some cases, to compensate for an impact.</p>
Mixed-Use	<p>C-1, C-2, GO, S-C, S-CN, S-DR, S-DW, S-E, S-F, S-HB, S-JW, S-RN, S-W, and S-WS</p>
Modal Split	<p>A term that describes how many people use different forms of transportation. Frequently used to describe the percentage of people using private automobiles as opposed to the percentage using public transportation, walking, or biking. Modal split can also be used to describe travelers using other modes of transportation. In freight transportation, modal split may be measured in mass.</p>
Mode	<p>A particular form or method of travel distinguished by vehicle type, operation technology, and right-of-way separation from other traffic.</p>
<p>Moving Ahead for Progress in the 21st Century (MAP-21)</p>	<p>Moving Ahead for Progress in the 21st Century (MAP-21) was signed by President Obama on July 6, 2012, reauthorizing surface transportation programs through FY 2014. It includes new and revised program guidance and regulations with planning requirements related to public participation, publication, and environmental considerations.</p>
MovingAhead Project	<p>The City of Eugene and LTD are working with regional partners and the community to determine which improvements are needed on some of our most important transportation corridors for people using transit, and facilities for people walking and biking. MovingAhead will prioritize transit, walking, and biking projects along these corridors so that they can be funded and built in the near-term.</p> <p>The project will focus on creating active, vibrant places that serve the community and accommodate future growth. During Phase 1, currently underway, the community will weigh in on preferred transportation solutions for each corridor and help prioritize corridors for implementation. When thinking about these important streets, LTD and the City of Eugene refer to them as corridors because several streets may work as a system to serve transportation needs.</p>
Multi-Family Residential	<p>R-2 and R-3</p>
Multimodal	<p>Multimodal refers to various modes. For the MovingAhead project, multimodal refers to Corridors that support various transportation modes including vehicles, buses, walking and cycling.</p>

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
National Environmental Policy Act of 1969 (NEPA)	A comprehensive federal law requiring analysis of the environmental impacts of federal actions such as the approval of grants; also requiring preparation of an Environmental Impact Statement for every major federal action significantly affecting the quality of the human environment.
New Starts	Federal funding granted under Section 3(i) of the Federal Transit Act. These discretionary funds are made available for construction of a new fixed guideway system or extension of any existing fixed guideway system, based on cost-effectiveness, alternatives analysis results, and the degree of local financial commitment.
No Action or No-Build Alternative	An alternative that is used as the basis to measure the impacts and benefits of the other alternative(s) in an environmental assessment or other National Environmental Policy Act action. The No-Build Alternative consists of the existing conditions, plus any improvements that have been identified in the Statewide Transportation Improvement Program.
Nonattainment Area	Any geographic region of the United States that the U.S. Environmental Protection Agency (EPA) has designated as not attaining the federal air quality standards for one or more air pollutants, such as ozone and carbon monoxide.
Notice of Intent	A federal announcement, printed in the <i>Federal Register</i> , advising interested parties that an Environmental Impact Statement will be prepared and circulated for a given project
Off-Peak Period	Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled. Also called "base period."
Office	E-1 and E-2
Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP)	The 2013-2017 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP), entitled <i>Ensuring Oregon's Outdoor Legacy</i> (OPRD, No Date), constitutes Oregon's basic 5-year plan for outdoor recreation. The plan guides the use of LWCF funds that come into the state; provides guidance for other OPRD-administered grant programs; and provides recommendations to guide federal, state, and local units of government, as well as the private sector, in making policy and planning decisions.
Park and Ride	Designated parking areas for automobile drivers who then board transit vehicles from these locations.
Participating Agency	A federal or non-federal agency that may have an interest in the project. These agencies are identified and contacted early-on in the project with an invitation to participate in the process. This is a broader category than "cooperating agency" (see Cooperating Agency).
Passenger Miles	The total number of miles traveled by passengers on transit vehicles; determined by multiplying the number of unlinked passenger trips times the average length of their trips.
Peak Hour	The hour of the day in which the maximum demand for transportation service is experienced (refers to private automobiles and transit vehicles).
Peak Period	Morning and afternoon time periods when transit riding is heaviest.
Peak/Base Ratio	The number of vehicles operated in passenger service during the peak period divided by the number operated during the base period.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Place-miles	Place-miles refers to the total carrying capacity (seated and standing) of each bus and is calculated by multiplying vehicle capacity of each bus by the number of service miles traveled each day. Place-miles highlight differences among alternatives caused by a different mix of vehicles and levels of service.
Preferred Alternative	An alternative that includes a major capital improvement project to address the problem under investigation. As part of the decision making process, the Preferred Alternative is compared against the No Action or No-Build Alternative from the standpoints of transportation performance, environmental consequences, cost-effectiveness, and funding considerations.
Purpose and Need	The project Purpose and Need provides a framework for developing and screening alternatives. The purpose is a broad statement of the project's transportation objectives. The need is a detailed explanation of existing conditions that need to be changed or problems that need to be fixed.
Queuing	Occurs when traffic lanes cannot fit all the vehicles trying to use them, or if the line at an intersection extends into an upstream intersection.
Record of Decision (ROD)	A decision made by FTA as to whether the project sponsor receives federal funding for a project. The Record of Decision follows the Draft EIS and Final EIS.
Regulatory Agency	An agency empowered to issue or deny permits.
Resource Agency	A federal or state agency or commission that has jurisdictional responsibilities for the management of a resource such as plants, animals, water, or historic sites.
Revenue Hours	Hours of transit service available for carrying paying riders.
Ridership	The number of people using a public transportation system in a given time period.
Ridesharing	A form of transportation, other than public transit, in which more than one person shares the use of the vehicle, such as a van or car, to make a trip. Also known as "carpooling" or "vanpooling."
Right of Way	Publicly owned land that can be acquired and used for transportation purposes.
Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU)	SAFETEA-LU was passed by Congress July 29, 2005, and signed by the President August 10, 2005. Includes new and revised program guidance and regulations (approximately 15 rulemakings) with planning requirements related to public participation, publication, and environmental considerations. SAFETEA-LU covers FY 2005 through FY 2009 with a total authorization of \$45.3 billion.
Scoping	A formal coordination process used to determine the scope of the project and the major issues likely to be related to the proposed action (i.e., project).
Screening Criteria	Criteria used to compare alternatives.
Section 4(f) of the Department of Transportation Act of 1966	23 U.S.C. 138 and 49 U.S.C. 303. Parks are subject to evaluation in the context of Section 4(f) of the Department of Transportation Act of 1966, which governs the use of publicly-owned/open to the public park and recreation lands, government-owned wildlife lands, and historic resources.
Section 4(f) resources	(i) any publicly owned land in a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or (ii) any land from a historic site of national, state, or local significance

**Table A-2. Terms**

Terms	Definitions
Section 6(f) of the LWCF Act of 1965	The LWCF’s most important tool for ensuring long-term stewardship is its “conversion protection” requirement. Section 6(f)(3) strongly discourages conversions of state and local park, and recreational facilities to other uses. Conversion of property acquired or developed with assistance under the program requires approval of the Department of Interior’s National Park Service (NPS) and substitution of other recreational properties of at least equal fair market value, and of reasonably equivalent usefulness and location.
Section 106	Section 106 of the National Historic Preservation Act of 1966 requires that federal agencies take into account the effect of government-funded construction projects on property that is included in, or eligible for inclusion in, the NRHP.
Shuttle	A public or private vehicle that travels back and forth over a particular route, especially a short route or one that provides connections between transportation systems, employment centers, etc.
Single-Family Residential	R-1
Special Area Zone (Non-Mixed Use)	S-H and S-RP
Springfield 2030	Currently underway, this update to the City of Springfield’s Comprehensive Plan will guide and support attainment of the community’s livability and economic prosperity goals and redevelopment priorities.
Springfield Transportation System Plan (TSP)	The City of Springfield’s Transportation System Plan looks at how the transportation system is currently used and how it should change to meet the long-term (20-year) needs of the City of Springfield’s residents, businesses, and visitors. The Plan, which identifies improvements for all modes of transportation, will serve as the City of Springfield’s portion of the Regional Transportation System Plan prepared by Lane Council of Governments (LCOG). It was prepared in coordination with Oregon Department of Transportation, LCOG, and the Oregon Department of Land Conservation and Development. The TSP was adopted March 11, 2014.
State Implementation Plan (SIP)	A state plan mandated by the Clean Air Act Amendments of 1990 that contains procedures to monitor, control, maintain, and enforce compliance with national standards for air quality.
Strategy	An intended action or series of actions which when implemented achieves the stated goal.
Street Tree	A living, standing, woody plant having a trunk that exists in the public right of way.
Study Area	The area within which evaluation of impacts is conducted. The study area for particular resources will vary based on the decisions being made and the type of resource(s) being evaluated.
Throughput	The number of users being served at any time by the transportation system.
Title VI	This Title declares it to be the policy of the United States that discrimination on the ground of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance and authorizes and directs the appropriate federal departments and agencies to take action to carry out this policy.

**Table A-2. Terms**

<b>Terms</b>	<b>Definitions</b>
Transit Oriented Development (TOD) or Nodal Development	A strategy to build transit ridership, while discouraging sprawl, improving air quality and helping to coordinate a new type of community for residents. TODs are compact, mixed-use developments situated at or around transit stops. Sometimes referred to as Transit Oriented Communities, or Transit Villages.
Transit System	An organization (public or private) providing local or regional multi-occupancy-vehicle passenger service. Organizations that provide service under contract to another agency are generally not counted as separate systems.
Transitway	A Bus Rapid Transit (BRT) priority lane generally with a concrete lane, with or without concrete tracks with grass-strip divider, and a curb separation, traversable by general-purpose vehicles at signalized intersections.
Transportation Demand Management (TDM)	Strategies to attempt to reduce peak period automobile trips by encouraging the use of high occupancy modes through commuter assistance, parking incentives, and work policies that alter the demand for travel in a defined area in terms of the total volume of traffic, the use of alternative modes of travel, and the distribution of travel over different times of the day.
Transportation Improvement Program (TIP)	A program of intermodal transportation projects, to be implemented over several years, growing out of the planning process and designed to improve transportation in a community. This program is required as a condition of a locality receiving federal transit and highway grants.
Travel Shed	Synonymous with “corridor” (see Corridor). A subarea in which multiple transportation facilities are experiencing congestion, safety, or other problems.
urban plaza	An urban plaza is a place that can be used for socializing, relaxation, and/or events.
v/c ratio	Used as a principal measure of congestion. The “v” represents the volume or the number of vehicles that are using the roadway at any particular period. The “c” represents the capacity of a roadway at its adopted level of service (LOS). If the volume exceeds the capacity of the roadway (volume divided by capacity exceeds 1.00), congestion exists.
Vehicle Hours of Delay	Cumulative delay experiences by transit vehicles during high traffic periods.
Water Quality	Refers to the characteristics of the water, such as its temperature and oxygen levels, how clear it is, and whether it contains pollutants.
Whiteaker Special Area Zone	S-W

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## Appendix B: Construction Activities

### General Construction Methods

The following section describes how construction of the Locally Preferred Alternative (LPA) would likely be staged and sequenced. This description is based on Lane Transit District's (LTD's) experience with the Franklin, Gateway, and West Eugene EmX Corridors. The final plan for construction methods, sequencing, and staging will be determined in coordination with the contractor and permitting authorities.

Utility work will generally be completed before the transportation infrastructure is constructed. Utility work, often conducted by local utility companies, occurs separately from project-related construction. After completing required utility relocation and other preparatory site work, the contractor will begin with construction of new transit lanes, bike lanes, sidewalks, and any other "flatwork." The contractor will modify existing signals or construct new traffic signals as part of this work. In some cases, the contractor may construct the signal footings but install signal arms after initial work is complete. Flatwork for stations, including curbs, ramps, and station footings, will be completed as the work progresses along the alignment. Streets and street segments will be restored to normal operations after this work is complete. The contractor is expected to progress approximately two blocks every 2 weeks, with additional time required – up to 2 weeks – for each enhanced stop or EmX station. Additional time will be required at intersections that require new or substantially modified traffic signals. The construction sequencing will be determined through coordination between the contractor and local residents, businesses, and property owners regarding construction scheduling preferences. It is expected that, for each major segment, the work would start at one end of the segment and progress to the other end of the segment. All flatwork is expected to be completed in two construction seasons.

Stations will be fabricated during the second construction season and installed during the subsequent (final) construction season, along with landscaping, fare machines, real-time passenger information, enhanced stop or EmX station amenities, and other similar items.

The contractor and LTD will coordinate closely with the Oregon Department of Transportation (ODOT) and with the City of Eugene (as appropriate to the jurisdiction) on traffic control. Depending on the segment, ODOT or the City will review and approve traffic plans for construction.

On streets with multiple lanes in each direction (or multiple lanes in one direction for one-way streets), at least one lane of traffic will be open at all times. Flaggers will coordinate travel at intersections and other points of congestion, as necessary. On streets with a single lane, it may be necessary to close one direction of traffic for certain periods. In those situations, flaggers will be used to manage the traffic flow safely. The contractor and LTD will also coordinate with businesses to ensure that the project maintains access for patrons and deliveries.

### Coordination with Businesses and Residents

LTD's Franklin, Gateway, and West Eugene EmX projects demonstrated LTD's commitment to communicating with impacted businesses, residences, and travelers, both before and during construction. As with those projects, LTD will contact all businesses and residents along the alignment well before construction begins to solicit local concerns, issues, and scheduling preferences. Businesses and residents will also be able to communicate with the contractor and LTD during construction. LTD's construction liaison will provide e-mail updates and serve as an ongoing point of contact to address

concerns and to provide information to affected businesses, residents, and other interested persons. LTD will provide a 24-hour hotline to quickly address construction concerns from businesses and residences.

LTD will also work to enhance activity at businesses affected by construction. This can be done through attractive signage, direct communications with the public (e.g., direct mail and advertising), and community events (e.g., street fairs). These techniques succeeded in keeping business areas active during previous EmX projects.