

# *I-5 JBLM Vicinity Congestion Relief Project – South Study Area*

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT  
OCTOBER 2020



Washington State  
Department of Transportation



U.S. Department of Transportation  
Federal Highway  
Administration

## **IMPORTANT**

### **HOW TO READ THIS DOCUMENT**

This Supplemental Environmental Assessment (SEA) was prepared as a supplement to the 2017 *I-5 JBLM Vicinity Congestion Relief Project Revised Environmental Assessment/FONSI* (2017 EA). The SEA addresses the potential environmental impacts of improvements in the South Study Area, the second of two study areas that comprise the I-5 JBLM Vicinity Congestion Relief Project (Project). The overall Project includes improvements to I-5 between the vicinity of Thorne Lane (Exit 123) and Mounts Road (Exit 116); project-specific impacts for the North Study Area, located between the vicinity of Thorne Lane and Steilacoom-DuPont Road (Exit 119), were evaluated in the 2017 EA.

This SEA analyzes project-specific impacts for the South Study Area, located between the vicinity of Steilacoom-DuPont Road and Mounts Road (Exit 116). When reading this document, it is important to keep in mind that project-specific analysis is only presented for the South Study Area Build Alternative. Analysis for the North Study Area Build Alternative can be found in the 2017 EA.

The content of each chapter is discussed briefly below.

#### **CHAPTER 1 – Introduction / Need and Purpose / Project Setting / Outreach**

*The Study Area is defined here. Discussion of the NEPA strategy and background information regarding the project setting, previous planning efforts and how the project responded to outreach efforts can be found in this chapter.*

#### **CHAPTER 2 – Description of Alternatives**

*Specific information regarding what the Build Alternative in the South Study Area would include is presented here.*

#### **CHAPTER 3 – South Study Area Analysis**

*Detailed analysis of the environmental impacts associated with construction of the Build Alternative in the South Study Area is addressed here. These impacts are compared to what would occur if the Build Alternative were not constructed (the No Build Alternative). Mitigation measures for impacts associated with the Build Alternative are also presented in this chapter.*

# I-5 JBLM Vicinity Congestion Relief Project – South Study Area

Pierce County, Washington

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## Supplemental Environmental Assessment

Submitted pursuant to 42.U.S.C. 4332(2)(c)

By the

U.S. Department of Transportation – Federal Highway Administration  
and Washington State Department of Transportation

**Liana Liu**

Digitally signed by Liana Liu  
Date: 2020.10.23 16:13:59 -07'00'

---

Liana Liu, PE  
Area Engineer  
Federal Highway Administration

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Date

**Megan White**

Digitally signed by Megan White  
Date: 2020.10.23 13:26:52 -07'00'

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Megan White, PE  
Director, Environmental Services  
Washington State Department of Transportation

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Date

### Abstract:

The I-5 JBLM Vicinity Congestion Relief Project is located in western Washington in southern Pierce County. In accordance with the National Environmental Policy Act, this environmental assessment evaluates the environmental effects of the proposed Build Alternative and No Build Alternative. The Project includes a North Study Area located between the vicinity of Thorne Lane (Exit 123) and Steilacoom-DuPont Road (Exit 119) and a South Study Area between the vicinity of Steilacoom-DuPont Road and Mounts Road (Exit 116). The 2017 EA evaluated the North Study Area which included an additional northbound and southbound travel lane on I-5 between the vicinity of Thorne Lane and Steilacoom-DuPont Road, new interchanges at Thorne Lane and Berkeley Street (Exit 122) and a shared use pedestrian and bicycle path. This Supplemental EA includes the South Study Area improvements, including construction of additional capacity on I-5 and construction of a new interchange at Steilacoom-DuPont Road.

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**The following persons may be contacted for additional information:**

**Liana Liu, PE**  
**FHWA Area Engineer**  
711 South Capitol Way, Suite 501  
Olympia, WA 98501  
Telephone: 360-753-9553  
Email: liana.liu@dot.gov

**Jeff Sawyer**  
**Environmental and Hydraulic Manager**  
**WSDOT, Olympic Region**  
P.O. Box 47440  
Olympia, WA 98504-7440  
Telephone: 360-570-6701  
Email: sawyerj@wsdot.wa.gov

Copies of this Supplemental EA are available from WSDOT (360-570-6700) at a cost to cover printing and mailing.



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# ACRONYMS

## A

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AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
AMTRAK	American Railroad Passenger Corporation
APE	Area of Potential Effects
ARR	Access Revision Report
ASTM	American Society for Testing & Materials

## B

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BA	Biological Assessment
BMPs	Best Management Practices
BNSF	BNSF Railway

## C

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CAA	Clean Air Act
CABS	Compost-Amended Biofiltration Swale
CAVFS	Compost-Amended Vegetated Filter Strips
CCDP	Concrete Containment and Disposal Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act

## D

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DAHP	Washington State Department of Archaeology and Historic Preservation
dB	Decibel
dBA	Decibels on the A-weighted Scale (human hearing range)

## E

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EA	Environmental Assessment
EDNA	Environmental Designation for Noise Abatement
EIS	Environmental Impact Statement
EJ	Environmental Justice
EOD	Extent of Ground Disturbance
EPA	Environmental Protection Agency
ESA	Endangered Species Act

## F

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FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRMS	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact

## G

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GHG	Greenhouse Gas
GIS	Geographic Information System
GLO	General Land Office
GMA	Growth Management Act
GP	General Purpose (travel lane)
GPS	Global Positioning System
GTC	Gravelly-Thorne Connector

## H

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HC	Hydrocarbons
HGM	Hydrogeomorphic
HOV	High Occupancy Vehicle
HRM	Highway Runoff Manual
HSP	Highway System Plan
HSS	Highway of Statewide Significance

## I

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I-5	Interstate 5
ICE	Intersection Control Evaluation
ILF	In-Lieu Fee Program
IPaC	Information for Planning and Consultation (for USFWS environmental review process)
IT	Intercity Transit
ITS	Intelligent Transportation Systems

## J

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JBLM	Joint Base Lewis-McChord
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## L

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LEP	Limited English Proficiency
Leq	Equivalent Sound Level
LOS	Level of Service
LWCF	Land and Water Conservation Fund

## M

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MBTA	Migratory Bird Treaty Act
MFD	Media Filter Drain
MP	Milepost
MSAT	Mobile Source Air Toxic
MTCA	Model Toxics Control Act

## N

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NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NATA	National Air Toxics Assessment
NB	Northbound
NEPA	National Environmental Policy Act
NHP	Natural Heritage Program
NHS	National Highway System
NMFS	National Marine Fisheries Service
NO <sub>2</sub>	Nitrogen Dioxide
NOx	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places

## O

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OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Act

## P

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PAHs	Polycyclic Aromatic Hydrocarbons
PALS	Pierce County Planning and Land Services
PCRHP	Pierce County Register of Historic Places
PGIS	Pollution Generating Impervious Surfaces
PM <sub>2.5</sub>	Particulate Matter (2.5 microns or less in diameter)
PM <sub>10</sub>	Particulate Matter (10 microns or less in diameter)
PSRC	Puget Sound Regional Council
PSCAA	Puget Sound Clean Air Agency
PT	Pierce Transit

## Q

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Qf	Man-made Fill
Qgd	Glacial Drift
Qgt	Glacial Till
QI	Soft Fine-grained Sediment
Qp	Peat
Qa	Alluvium Sand

## R

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RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
ROD	Record of Decision

## S

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SARA	Superfund Amendments and Reauthorization Act
SB	Southbound
SEA	Supplemental Environmental Assessment
SEPA	Washington State Environmental Policy Act
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office
SOV	Single Occupant Vehicle
SPCC	Spill Prevention, Control, and Countermeasures
SR	State Route
ST	Sound Transit
STIP	Washington Statewide Transportation Improvement Program
SWPPP	Stormwater Pollution Prevention Plan

## T

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TCE	Trichloroethylene
TDM	Transportation Demand Management
TESC	Temporary Erosion and Sediment Control
TIP	Transportation Improvement Program
TMP	Transportation Management Plan
TNM	Traffic Noise Model
TSCA	Toxic Substances Control Act
TSS	Total Suspended Solids

## U

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USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish & Wildlife Service
UST	Underground Storage Tank

## V

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VMT	Vehicle Miles of Travel
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## W

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WAC	Washington Administrative Code
WDFW	Washington State Department of Fish & Wildlife
WDNR	Washington State Department of Natural Resources
WHPA	Wellhead Protection Area
WISAARD	Washington Information System for Architectural & Archaeological Records Data
WISHA	Washington Industrial Safety and Health Act
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation
WTP	Washington Transportation Plan
WWI	World War I
WWII	World War II

# GLOSSARY

**Access Revision Report (ARR):** A technical report which documents specific analyses in order for FHWA to approve or reject a proposed revision to freeway access in Washington State. (Previously known as an Interchange Justification Report/IJR.)

**Area of Potential Effect (APE):** The area within which historic properties, and archaeological resources if they are present, could be directly or indirectly affected by the project.

**At-Grade:** At the same level (elevation).

**Attainment Area:** An area with concentrations of criteria pollutants that are below the levels established by the NAAQS.

**Auxiliary Lane:** A supplemental lane between interchanges that can help improve safety and reduce congestion by accommodating cars and trucks entering or exiting the highway or traveling short distances between adjacent interchanges and reduce conflicting weaving and merging movements.

**Average Daily Traffic (ADT):** The average number of vehicles passing a certain point on a highway, road, or street each day.

**Baseline Condition:** As it relates to the transportation analysis in this EA, refers to the I-5 configuration as it existed prior to construction of North Study Area improvements. This term is used in analysis of future year conditions. The Baseline Condition consists of three lanes on I-5 in each direction between Thorne Lane and Center Drive and four lanes in each direction between Center Drive and Mounts Road.

**Best Management Practices (BMPs):** Environmental protection tools that have been determined to be the most effective, practical means of avoiding or reducing environmental impacts.

**Build Alternative:** A program of improvements for the South Study Area as described in Chapter 2 of this environmental assessment.

**Cantonment:** A permanent military installation.

**Clear Zone:** A clear roadside border area the intent of which is to provide as much clear, traversable area for a vehicle leaving the roadway to recover as practicable given the function of the roadway and potential trade-offs.

**Collector-Distributor (C-D):** A roadway that typically parallels a higher capacity and/or limited access roadway. A C-D road is designed to accommodate weaving and merging activity separately from the mainline of the higher capacity road and to reduce the number of mainline entrances and exits.

**Construction Staging:** A staging area is a designated area where vehicles, supplies, and construction equipment are positioned for access and use at a construction site.

**Corridor Level Analysis:** Environmental analysis that identifies a geographically-bounded area within which future proposed actions may be taken and identifies broad mitigation or conservation measures that could be applied during future environmental reviews.

**Criteria Pollutant:** Sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, and lead.

**Cultural Resource:** Any district, site, building, structure, object, person or people, document, or traditional place that may be important in American history or prehistory.

**Cumulative Effect/Cumulative Impact:** An impact on the environment which results from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such action.

**Decibel (dB):** A logarithmic based unit of measure of sound pressure.

**Delay:** The increased travel time experienced because of circumstances that impede the desirable movement of traffic.

**Demand:** The desire for travel by potential users of the transportation system.

**De Minimis Impact:** Impact that, after taking into account avoidance, minimization, and enhancement measures, results in no adverse effects to activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For historic properties, a *de minimis* impact is one that results in a Section 106 determination of “no adverse effect” or “no historic properties affected.”

**Dewatering Plans:** Prepared plans identifying the method of removal and disposal of water from groundwater or surface water intrusion on a construction site.

**Direct Effect/Direct Impact:** An effect caused by an action or alternative and occurring at the same time and location. Effects may be transportation-related, ecological, aesthetic, historic, cultural, economic, social, or health-related.

**Discharge:** Runoff leaving an area via overland flow, built conveyance systems, or infiltration facilities.

**Duration:** The length of time of an event.

**Ecosystem:** A community of organisms interacting with each other, and the environment in which they live.

**Effect:** Something brought about by a cause or agent; a result. May be beneficial or detrimental.

**Emission:** Pollution discharged into the atmosphere from fixed or mobile sources.

**Endangered Species:** Any species that is in danger of extinction throughout all or a substantial portion of its range.

**Endangered Species Act (ESA):** Legislation adopted to prevent the extinction of plants or animals.

**Environmental Justice (EJ):** The provisions of Presidential Executive Order 12898 that requires each federal agency to address, as appropriate, disproportionately high and adverse health and/or environmental effects of a federal action on minority and/or low-income populations.

**Environmental Justice Population:** Refers collectively to the low-income and minority populations in a given area.

**Existing Conditions:** As it relates to the transportation analysis in this EA, refers to the I-5 and local street configurations that existed in the fall of 2017.

**Floodplain:** Any land area susceptible to being inundated by flood waters from any source.

**General Purpose (GP) Lane:** A freeway or arterial lane available for use by all traffic.

**Grade-Separated:** Separation of different flows of traffic using physical means. Roads, paths, railroads cross one another at different elevations typically by providing a bridge-like structure.

**Greenhouse Gases (GHG):** Greenhouse gases are gases that, when released into the atmosphere, contribute to global warming.

**Groundwater:** That portion of water below the ground surface that is free flowing within the soil particles. Groundwater typically moves slowly, generally in a downhill direction because of gravity, and eventually enters into streams, lakes, and oceans.

**High Occupancy Vehicle (HOV):** Special designation for a bus, carpool, or vanpool provided to encourage an increase in ride-sharing and make the transportation system more efficient.

**Impervious:** Pavement, roofs, and other compacted or hardened areas that do not allow the passage of rainfall or runoff into the ground.

**Independent Utility:** Determination that a transportation improvement is usable and is a reasonable expenditure even if no additional transportation improvements in the area are made.

**Indirect Effect/Indirect Impact:** An effect that occurs later in time or is removed in distance from the proposed action but is still reasonably foreseeable. May include growth-inducing effects or other effects related to the pattern of land use, population density or growth rates, and related effects on air, water, and other natural systems.

**Intersection Control Evaluation (ICE):** A data-driven, performance-based framework and approach used to objectively screen alternatives and identify an optimal geometric and control solution for an intersection. (Previously known as an Intersection Control Analysis/ICA.)

**Isolate:** A single archaeological artifact that is found without association to any other artifact or feature; generally thought to represent items lost or discarded by people as they moved through an area.

**Lateral Spreading:** Lateral movement of gently to steeply sloping soil caused by earthquake-induced liquefaction.

**Level of Service (LOS):** A qualitative measure of transportation system performance. AASHTO defines the following levels of service: A = Free flow; B = Reasonably free flow; C = Stable flow; D = Approaching unstable flow; E = Unstable flow; and F = Forced or breakdown flow.

**Liquefaction:** A phenomenon in which the strength and stiffness of a saturated soil is reduced by earthquake shaking or other rapid loading.

**Logical Termini:** Rational beginning and end points for a transportation project to result in an improvement that functions efficiently and improves operations of the system, as well as for review of its environmental impacts.

**Low-Income:** A household income that is at or below the federally designated poverty level for a given household size.

**Maintenance Area:** An area that has a history of not meeting air quality standards for a particular air pollutant but is now meeting the standards and has a maintenance plan for monitoring pollutant levels.

**Mobile Source Air Toxics (MSATs):** The Clean Air Act identifies 188 air toxics, of which MSATs are the subset emitted by mobile sources.

**Modeling:** The use of statistics and mathematical equations to simulate and predict real events and processes such as future traffic volumes.

**Mode Split:** The percentage of total travel in a given area by different forms of transportation, typically single-occupant vehicles, high-occupancy vehicles (two or more persons in a car), transit, walk, and bicycle.

**Multimodal:** Refers to a transportation system, in whole or in part, that provides for more than one mode or means of transportation.

**National Ambient Air Quality Standards (NAAQS):** Standards established by the U.S. Environmental Protection Agency under the Clean Air Act for pollutant concentrations in outside air throughout the country.

**National Environmental Policy Act (NEPA):** Established in 1969, this act requires public disclosure of all environmental, social, and economic impacts for federally funded projects with significant impacts.

**National Register of Historic Places (NRHP):** Authorized under the National Historic Preservation Act of 1966, this is the nation's official list of properties and other cultural resources that are recognized as deserving protection.

**No Build Alternative:** The alternative under which the proposed project will not be built. The No Build Alternative is carried through the NEPA process and analyzed as a way to compare the effects of the proposed Build Alternative with what is likely to happen if the proposed project is not constructed.

**Noise Wall:** A wall designed to serve as a noise buffer between a noise source and affected residences or other sensitive noise receptors.

**Non-Attainment Area:** An area where concentrations of one or more criteria air quality pollutants are found to exceed the regulated or "threshold" level for one or more of the NAAQS.

**PM<sub>2.5</sub>:** Particulate matter 2.5 microns or less in diameter.

**PM<sub>10</sub>:** Particulate matter 10 microns or less in diameter.

**Park-and-Ride:** A facility where individuals can park their vehicle for the day and access public transportation or ride-share for the major portion of their trip.

**Particulate Matter:** A mixture of extremely small particles and liquid droplets suspended in the air. Components can include acids (e.g., sulfates and nitrates), organic chemicals, metals, and soil or dust particles. Particulate matter is classified according to particle size.

**Peak Hour or Peak Period:** Informally known as "rush hour," this term refers to the time of the day when traffic volumes in an urban area are the highest and when travel patterns generate the most traffic, especially in a peak direction.

**Pervious:** Permeable ground or other surfaces that will absorb water.

**Project-Specific Analysis:** Environmental evaluation for projects in which the proposed construction limits and types are known. The evaluation considers the proposed construction and the specific impacts it would have on the natural and built environment.

**Queuing:** A line of waiting vehicles. Examples of common locations for queues to form include at a ramp meter, a traffic signal, or waiting to turn from a left turn lane.

**Ramp Meter:** A signaling device on a highway on-ramp, usually a red-green stoplight, that regulates the flow of traffic entering the highway.

**Right of Way:** Land acquired (in fee or by easement) for the purpose of constructing and operating transportation facilities including ancillary facilities such as noise walls, retaining walls, stormwater facilities, and other project elements.

**Riparian Area:** The land and habitat adjacent to water bodies that includes the transition area between an aquatic ecosystem and the nearby upland terrestrial ecosystem.

**Section 106:** That portion of the National Historic Preservation Act that requires federal agencies to identify and evaluate cultural resources and consider how their undertakings affect historic properties eligible for inclusion in the National Register of Historic Places.

**Section 4(f):** Section 4(f) of the U.S. Department of Transportation Act (49 USC 303) concerns the use of or impacts on any significant public park, recreation area, wildlife or waterfowl refuge, or historic site by a transportation project. Section 4(f) applies to impacts caused by programs and policies undertaken by the USDOT.

**Section 6(f):** Section 6(f) of the Land and Water Conservation Fund Act concerns only those parks and recreational facilities that have received funding through this act.

**Single Occupant Vehicle (SOV):** A vehicle having one occupant (i.e., the driver).

**State Environmental Policy Act (SEPA):** Legislation adopted in Washington in 1974 that establishes an environmental review process for all development proposals and major planning studies prior to taking any action.

**T1 Freight Corridor:** A classification within the Washington State Freight and Goods Transportation System assigned to highways that carry more than ten million tons of freight annually.

**Tiered Environmental Analysis:** Rather than preparing a single environmental analysis as the basis for approving the entire project, an agency conducts two or more rounds – or “tiers” – of environmental review.

**Transportation Demand Management (TDM):** Measures that seek to reduce the number of vehicles using the road system, especially single-occupant vehicles, by providing alternative options to single-occupant auto travel.

**Terminus; Termini (pl):** The beginning and end points of transportation projects are known as termini.

**Vehicle Miles of Travel (VMT):** The number of miles traveled per vehicle multiplied by the total number of vehicles.

**Viewshed:** The area that can be seen from a given viewpoint or group of viewpoints. It is also the area from which that viewpoint or group of viewpoints can be seen.

**Visual Quality:** A subjective measure of the character of the visual environment.

**Visual Resources:** The collection of all features that can be seen in an area.

**Water Quality:** Refers to the characteristics of the water – for example, its temperature and oxygen levels, how clear it is, and whether it contains pollutants.

**Weaving:** An undesirable situation in which traffic veering right and traffic veering left must cross paths within a limited distance to merge with traffic in an adjacent through lane.

**Wetland:** Areas that are inundated or saturated by water at a frequency and for a duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

**Wetland Buffer:** An area adjacent to a wetland that can reduce adverse impacts to the wetland’s ecological functions and values from development or construction activities. Wetland buffers can also provide support functions for species that live in and around wetlands and reduce the impacts of human disturbance on the wetland.

**Windshield Survey:** Systematic observations made from a moving vehicle.

# EXECUTIVE SUMMARY

## ES 1 Where Is the I-5 JBLM Vicinity Congestion Relief Project Located?

The I-5 JBLM Vicinity Congestion Relief Project (Project) is located in southern Pierce County generally between the Thorne Lane interchange (Exit 123) on the north and the Mounts Road interchange (Exit 116) on the south. The Project has been divided into two segments – the North Study Area and the South Study Area. The North Study Area includes the segment of I-5 from the Thorne Lane interchange (Exit 123) to the Steilacoom-DuPont Road interchange (Exit 119) and was evaluated in the May 2017 *I-5 JBLM Vicinity Congestion Relief Project Revised Environmental Assessment/FONSI* (2017 EA). The South Study Area includes the segment of I-5 generally between Main Gate (Exit 120) and the Mounts Road interchange (Exit 116) and is the subject of this Supplemental Environmental Assessment (SEA). See Figure 1.3-1 for an illustration of the South Study Area.

## ES 2 Why Is This Project Important?

Within south Pierce County, traffic on I-5 increased 16 percent between 2003 and 2017, to over 127,000 vehicles per day. Truck volumes during this time increased 9 percent to over 14,400 trucks per day. Truck volumes on I-5 at the border between Pierce County and Thurston County are some of the highest in the state. The traffic increase has been influenced by both population and employment growth in the south Puget Sound region. No through lanes have been added to this portion of I-5 since 1975. The presence of a secure military installation on both sides of I-5 through the area limits alternate parallel routes for regional travel.

## ES 3 Why Is the Project Needed and What Is Its Purpose?

Congested traffic along I-5 in the JBLM vicinity, characterized by stop-and-go conditions, has become commonplace during weekday morning (AM) and evening (PM) peak periods, and weekend afternoons during summer months. Contributors to the traffic are both regional and local. Most of the traffic growth occurred

before 2003 and is associated with significant growth in Thurston and Pierce Counties. Additionally, JBLM has become the biggest military installation on the West Coast and affects peak period traffic congestion levels. Existing weekday peak period travel demand on I-5 exceeds available capacity in several locations. Congestion during the PM peak period often lasts up to three hours and is expected to increase to nearly six hours by 2040.

The purpose of the proposed action is to reduce chronic traffic congestion and improve person and freight mobility on I-5 in the vicinity of JBLM while continuing to maintain access to the communities and military installations neighboring the freeway. The proposed Project would improve I-5 through the JBLM area and relieve existing and expected future congestion on I-5 within the vicinity of JBLM, improve local and mainline system efficiency, enhance mobility, improve safety, and increase transit and Transportation Demand Management (TDM) opportunities by reducing I-5 travel times and improving accessibility at Steilacoom-DuPont Road.

## ES 4 Is the Project Included in the Adopted Planning Documents for the Region?

The need for improvement to I-5 and interchanges in the I-5 JBLM vicinity is identified in several state, regional, and local planning documents, including the Washington State Highway System Plan and the Puget Sound Regional Council (PSRC) Transportation 2040 plan. JBLM and the City of DuPont include goals and policies in their comprehensive planning documents addressing the need for congestion relief on I-5 and improved operations at key interchanges.

## ES 5 What Benefits Would the Build Alternative Provide?

The Build Alternative would provide relief to the chronic congestion on I-5 in the JBLM vicinity. The completed project would provide an additional lane in each direction on I-5 between south of the Main Gate interchange (Exit 120) and Center Drive (Exit 118). It would also replace the existing Steilacoom-DuPont Road interchange (Exit 119), thus improving interchange traffic operations and providing grade separation with the Sound Transit rail line. In 2025, PM peak period travel times

would be reduced by approximately 33 minutes for HOVs (12 minutes for SOVs) southbound between SR 512 (Exit 127) and Mounts Road (Exit 116), and 26 minutes in the northbound direction for HOVs (20 minutes for SOVs) between these same two interchanges.

## **ES 6 Who Is Leading the Project?**

The Federal Highway Administration (FHWA) is the lead agency for the National Environmental Policy Act compliance process. WSDOT is a co-lead agency.

## **ES 7 Who Else Participated in Developing the Supplemental Environmental Assessment?**

As a Cooperating Agency, Joint Base Lewis-McChord participated in the development of the Supplemental Environmental Assessment.

## **ES 8 What Is the No Build Alternative?**

The No Build Alternative includes the existing transportation system within the study area, as well as funded projects that are expected to be in place prior to implementation of the I-5 JBLM South Study Area improvements, including the North Study Area improvements that are currently under construction. In the South Study Area, I-5 currently has three general purpose (GP) lanes in each direction with auxiliary lanes in three areas between Mounts Road and Steilacoom-DuPont Road as described in Chapter 2. No changes would be made to I-5 in the South Study Area with the No Build Alternative.

## **ES 9 What Is the Build Alternative?**

The Build Alternative would provide a continuous through lane between the vicinity of Mounts Road (Exit 116) and Thorne Lane (Exit 123), which would be used for HOVs between Mounts Road and Thorne Lane (Exits 116 and 123) in the northbound direction, and between Thorne Lane and Steilacoom-DuPont Road (Exits 123 and 119) in the southbound direction; add a new northbound auxiliary lane from Center Drive (Exit 118) to Steilacoom-DuPont Road (Exit 119); reconfigure the interchange at Steilacoom-DuPont Road (Exit 119); and construct two noise walls to reduce traffic noise at various residences located on JBLM.

## **ES 10 When Would Project Construction Begin and End?**

Project funding is programmed over several state budget biennia. Funding for final planning and design began in July 2015 and is programmed for construction through 2025. The funded project is titled I-5, Mounts Road to Thorne Lane – Corridor Improvements.

## **ES 11 What Would Happen if the Build Alternative Is Not Constructed?**

Under the No Build Alternative, congestion on I-5 in the vicinity of JBLM would continue to increase. The duration of delay on I-5 would increase resulting in longer travel times through the Project corridor, exacerbated safety issues, and potential minor increases in air emissions caused by slow traffic speeds and periodic stop-and-go conditions.

## **ES 12 How Would the Build Alternative Affect the Project Environment?**

### **ES 12.1 Transportation (See Section 3.3)**

Construction of the Build Alternative would reduce short-term congestion and accommodate an increase in travel demand. By 2040, the Build Alternative would carry more person trips and accommodate more traffic than the No Build Alternative. It would improve operations at the Steilacoom-DuPont Road interchange, reduce potential back-ups onto I-5, and improve safety. It would provide a grade-separated crossing of the Sound Transit railroad tracks for improved access to the City of DuPont, JBLM's Integrity Gate, and the Town of Steilacoom. HOV travel times on I-5 would be 33 minutes shorter for southbound trips in the 2025 PM peak between SR 512 and Mounts Road, and 26 minutes shorter for northbound trips between the same two interchanges. During the same peak period, SOV travel times between these two interchanges would be 12 minutes shorter in the southbound direction and 20 minutes shorter in the northbound direction. Multimodal connectivity would be improved via a bicycle/pedestrian pathway over I-5.

### **ES 12.2 Air Quality (See Section 3.4)**

No violations of the National Ambient Air Quality Standards (NAAQS) are expected for carbon monoxide (CO) or Particulate Matter (PM<sub>2.5</sub>).

Mobile Source Air Toxic (MSAT) emissions are expected to improve over existing conditions. The Build Alternative is also expected to help reduce greenhouse gas (GHG) emissions by reducing stop-and-go conditions, improving speeds and traffic flow, and providing for enhanced bicycle and pedestrian connectivity. Potential short-term, localized air quality impacts could be experienced related to dust and construction emissions.

### **ES 12.3 Noise (See Section 3.5)**

Projected traffic in 2040 would produce noise levels that exceed the FHWA Noise Abatement Criteria of 66 dBA for 35 receptors, an increase of seven locations as compared to the No Build Alternative. Two noise walls are proposed to mitigate sound levels at 33 of the receptors expected to be impacted. Two receptors in the Davis Hill neighborhood on JBLM would remain at noise levels above the 66 dBA threshold because a noise wall in this location did not meet WSDOT's reasonableness and feasibility criteria.

### **ES 12.4 Geology and Soils (See Section 3.6)**

The Build Alternative has the potential to increase erosion, result in long-term settlement of fill and result in seismic stability issues with new structures.

### **ES 12.5 Water Resources (See Section 3.7)**

Construction of the Build Alternative could have a temporary effect on adjacent water bodies, floodplain resources, and surface/groundwater. Runoff from new pavement would be infiltrated or similarly managed for quantity control. Increased stormwater treatment of runoff, where currently there is none, would provide some benefit to surface water bodies and groundwater resources.

### **ES 12.6 Wetlands (See Section 3.8)**

Six wetlands are located within the South Study Area. One of the wetlands, Bell Marsh, is a Category I and is located immediately south of Steilacoom-DuPont Road. Five wetlands are rated Category III. The Build Alternative would permanently fill a portion of two Category III wetlands resulting in a loss of 0.30 acres, and 1.59 acres of wetland

buffer. Construction of the Build Alternative would temporarily impact an additional 0.08 acres of wetlands and 1.04 acres of wetland buffers. The Build Alternative was designed to avoid impacts to wetlands; however, total avoidance would not be possible.

### **ES 12.7 Fish, Wildlife and Vegetation (See Section 3.9)**

The Build Alternative would result in the conversion of existing vegetated land cover to new paved areas, stormwater treatment facilities, or other vegetated land cover types that provide a lower level of habitat functions (e.g., forest to lawn). As part of this conversion, the Build Alternative would result in 4.94 acres of permanent impacts and 2.05 acres of temporary impacts to Oregon white oak habitat. Most of the impacts are focused on highly disturbed habitat directly adjacent to I-5 and interchange ramps. Marbled murrelet, northern goshawk, northern spotted owl, pileated woodpecker, streaked horned lark, yellow-billed cuckoo and Vaux's swift are bird species of concern in the area. There are no federally-listed fish or amphibians, or suitable habitat for such in the South Study Area. The potential for listed mammals (such as the Roy Prairie pocket gopher) to be in the Build Alternative's footprint is low, but still feasible. No rare plants are known within the study area. Additional species surveys would be conducted for the pocket gopher prior to the start of construction.

### **ES 12.8 Hazardous Materials (See Section 3.10)**

There are known locations of soil or groundwater contamination in the South Study Area, and these may be present within the Build Alternative footprint. Contaminants may include petroleum products, metals, polyaromatic hydrocarbons, and solvents including trichloroethylene (TCE). Additionally, airborne contaminants from the Tacoma Smelter Plume may be found in surface soils in the area. Contamination could also result if spills occur during construction and are not properly managed, resulting in pollutants reaching adjacent surface waters or seeping into groundwater.

### **ES 12.9 Visual Quality (See Section 3.11)**

Potential impacts of the Build Alternative include three primary long-term changes to visual character: retaining walls related to construction

of the interchange, which would be prominent in the views from adjacent businesses and residential areas on JBLM; increased pavement width on I-5; and loss of existing trees and other vegetation. Two new noise abatement walls are proposed, which would affect current views of I-5 from JBLM residential areas, as well as views from I-5 toward these areas.

### **ES 12.10 Archaeological and Historic Resources (See Section 3.12)**

There are ten historic resources within the South Study Area that are either listed on or eligible for the National Register of Historic Places (NRHP), including a portion of the NRHP-eligible and Washington Heritage Register (WHR)-listed Fort Lewis Garrison Historic District. Additionally, the original road system and the rail system for Fort Lewis are identified as contributing elements, and the Red Shield Inn/Lewis Army Museum is independently listed on the NRHP.

As proposed, the Build Alternative would permanently affect 3.8 acres along the northwestern border of the Garrison Historic District (0.8 percent of the total area) and temporarily affect an additional 2.1 acres. Due to the minimal amount of land affected, the Build Alternative would not diminish the significance or integrity of these historic properties.

### **ES 12.11 Section 4(f) (See Section 3.13)**

The Build Alternative would result in the permanent use of 0.8 percent of the total 494-acre Fort Lewis Garrison Historic District (3.8 acres). The proposed improvements would partially shield I-5 and freeway traffic from view within JBLM, and partially shield views of the Fort Lewis Garrison Historic District from drivers on I-5. The District would retain integrity of location, setting, design, materials, workmanship, feeling, and association and would not be adversely affected. The 4(f) impact would be *de minimis*.

### **ES 12.12 Socioeconomics and Environmental Justice (See Section 3.14)**

The area surrounding the Steilacoom-DuPont Road interchange (Exit 119) has varying numbers of low-income and minority populations, with a proportionately larger share on JBLM than in the

City of DuPont. The Build Alternative would provide benefits in the form of reduced congestion and improved connectivity for residents and businesses along the South Study Area corridor. Pedestrian features on the proposed overpass for Exit 119A and along the new extension of Steilacoom-DuPont Road would improve connectivity between JBLM and the City of DuPont for residents of those areas, particularly those with limited access to vehicles. Temporary impacts to area residents located in close proximity to the Build Alternative would include dust, noise, equipment emissions and possible traffic interruptions. The Build Alternative would not cause any displacements or impacts to community resources.

### **ES 12.13 Land Use (See Section 3.15)**

The Build Alternative would improve traffic operations in support of land use consistent with local, regional, state, and JBLM plans. Some short-term road or freeway interchange ramp closures are anticipated that could temporarily affect land accessibility.

### **ES 12.14 Utilities (See Section 3.16)**

Some potential utility disruptions could occur during transitions between old and new utility connections. Disruptions are anticipated to last only a few minutes. During construction, solid waste providers would need to establish alternative routes during longer-term ramp closures. Early communication with utility providers would occur during the Build Alternative design process to identify necessary relocations and establish relocation and/or mitigation plans for impacted utilities.

### **ES 12.15 Economics (See Section 3.17)**

Analysis of potential Build Alternative-related economic effects focused primarily on local businesses in the vicinity of the existing Steilacoom-DuPont Road interchange (Exit 119), as these businesses would be primarily affected by the change in travel patterns for vehicles moving between I-5 and both the City of DuPont and JBLM.

Following construction of the Build Alternative, economic activities dependent on I-5, such as movement of freight, would experience improved traffic operations compared to the No Build Alternative. The DuPont Grocery and Union 76 may experience a slight decrease in

customers as a result of the Build Alternative due to the rerouting of traffic on Steilacoom-DuPont Road.

Construction of the new Steilacoom-DuPont Road would have minimal construction closure impacts to local streets. As a result of the staged construction schedule and availability of alternate routes, the forecasted impacts on local businesses is expected to be low. Vehicles that normally drive to DuPont would still be able to do so during construction.

### **ES 13 What Mitigation Is Proposed to Address the Build Alternative Impacts?**

Mitigation is an array of actions that are intended to reduce the negative effects or impacts of a proposed project. Gathering environmental information early and integrating it into the design and engineering process makes it possible to avoid some impacts. In other cases, unavoidable impacts can be minimized. When impacts are unavoidable, this SEA evaluates ways to compensate for these impacts. Mitigation measures include:

- ◆ **Transportation (Section 3.3)** Construction of the reconfigured Steilacoom-DuPont Road interchange (Exit 119) would occur in phases. Temporary detour routing would be provided around construction activity to maintain access to neighborhoods and JBLM. Three lanes on I-5 would be kept open in both the north and southbound directions during daytime and peak travel hours. A draft approach for addressing work zone traffic would be developed to guide construction traffic operations and public communications during construction. This approach would be used to develop specific contract requirements for the Design-Build construction contract documents after contract award.
- ◆ **Air Quality (Section 3.4)** Measures would be taken during construction to reduce dust. Equipment and staging areas would be as far from sensitive receptors as practicable. Equipment idling would be minimized near sensitive receptors, and peak traffic delays would be minimized during construction by only closing lanes during off-peak hours.
- ◆ **Noise (Section 3.5)** Noise abatement walls are proposed at two locations to mitigate existing and modeled future noise levels.

Construction noise levels would be mitigated by using best management practices (BMPs) such as use of mufflers and engine enclosures on heavy equipment, use of the quietest equipment available near sensitive receivers, and/or limiting equipment idling time.

- ◆ **Geology and Soils (Section 3.6)** BMPs to minimize erosion, including covering exposed slopes, installing drains, and/or limiting soil moving to dry weather conditions, would be implemented.
- ◆ **Water Resources (Section 3.7)** A Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control and Countermeasures Plan would be implemented to protect surface water and groundwater resources. BMPs such as controlling sediment laden runoff from entering streams or drainage inlets near work areas and installation of filter fabric downstream of all exposed slopes would be used. Stormwater treatment facilities such as swales and infiltration ponds would also be constructed to treat runoff. If floodplain areas are impacted, compensatory flood storage would be provided. Work near surface water bodies may also be limited to dry weather periods to minimize impacts to streams and floodplains.
- ◆ **Wetlands (Section 3.8)** Mitigation would be implemented to compensate for the 1.89 acres of permanent wetland and wetland buffer impacts and 1.12 acres of temporary wetland and wetland buffer impacts during construction. Types of mitigation that may be used include compensatory mitigation through the Pierce County In-Lieu Fee (ILF) program for impacts or onsite restoration of disturbed wetland and buffer areas. Pierce County ILF program offers credits for the HGM and Cowardin classes that would be affected by project construction. This program would likely be a viable option for compensatory mitigation.
- ◆ **Fish, Wildlife and Vegetation (Section 3.9)** Clearing limits would be limited to the minimum area necessary and marked with construction fencing. Staging areas would be a minimum of 300 feet from wetlands or streams wherever possible. BMPs would be used to control sediments. Additional surveys for Roy Prairie pocket gopher should be completed prior to construction. Impacts to Oregon white oak habitat would be mitigated by planting new trees in accordance with replacement standards and ratios specified in applicable local codes.

- ◆ **Hazardous Materials (Section 3.10)** During construction, BMPs would be implemented to address/avoid the potential for spills. If hazardous materials are encountered, the effects would be mitigated using measures described in WSDOT’s Standard Hazardous Materials Impacts and Mitigation Measures table. Areas of soil disturbance within the Tacoma Smelter plume would be screened for arsenic and lead content to determine appropriate worker health and safety measures and waste handling disposal.
- ◆ **Visual Quality (Section 3.11)** Potential mitigation measures may include minimization of tree and shrub removal to construct noise barriers and other project features, application of aesthetic treatments to bridges and walls, replanting with native vegetation to maintain visual unity, and replacement of trees removed for construction in accordance with the WSDOT *Roadside Policy Manual* and in coordination with JBLM.
- ◆ **Archaeological and Historic Resources (Section 3.12)** The Build Alternative would not create adverse impacts to historic properties or archaeological resources, so no mitigation is required. If archaeological deposits are discovered during construction, work will stop and appropriate agencies will be notified.
- ◆ **Section 4(f) (Section 3.13)** The Build Alternative design incorporates numerous strategies for minimizing use of land within the Garrison Historic District. Tree removal would be mitigated through replanting of trees either within the Arboretum or other locations within the Garrison Historic District in coordination with JBLM.
- ◆ **Socioeconomic and Environmental Justice Effects (Section 3.14)** Scheduling of road closures would be coordinated with police, fire, emergency services, transit agencies, and school districts. A Transportation Management Plan (TMP) would be implemented and ongoing communications would occur with local businesses regarding potential access changes and alternate routes.
- ◆ **Land Use (Section 3.15)** Temporary impacts to existing development would be offset by efforts to ensure traffic flow is maintained during construction. Enhanced signage would be installed to provide drivers with wayfinding after the reconfigured interchange is completed.

- ◆ **Utilities (Section 3.16)** Early and frequent communication with utility companies would occur during Build Alternative design. Relocation and/or mitigation plans for existing utilities would be designed as needed through consultation between the Project team and utility provider(s).
- ◆ **Economics (Section 3.17)** Staged construction of the reconfigured interchange would minimize impacts to businesses in the City of DuPont. Variable message signs on I-5 and other methods would be used to inform drivers of route options during construction to maintain access to local businesses. A Traffic Management Plan would be prepared addressing traffic management and public information requirements the contractor must meet during construction.

#### **ES 14 Public Outreach (See Section 1.10)**

Public outreach efforts helped define the Build Alternative. Stakeholder feedback was used to identify improvement options, and work through challenging design and environmental issues to ensure the Build Alternative design reflects the needs of both I-5 users and the communities immediately adjacent to the freeway.

#### **ES 15 How Can I Learn More?**

Questions regarding the Project and this SEA can be directed to:

**Jeff Sawyer**  
**Environmental and Hydraulic Manager**  
**WSDOT, Olympic Region**  
 P.O. Box 47440  
 Olympia, WA 98504-7440  
 Phone: 360-570-6701  
 Email: sawyerj@wsdot.wa.gov

**Bill Elliott**  
**WSDOT JBLM Project Manager**  
 P.O. Box 47440  
 Olympia, WA 98504-7440  
 Phone: 360-357-2735  
 Email: elliotb@wsdot.wa.gov

# 1

## INTRODUCTION / NEED AND PURPOSE / PROJECT SETTING / OUTREACH

### 1.1 BACKGROUND

Over the past several years, traffic has increased along the entire I-5 corridor from Portland, Oregon to Bellingham, Washington. In the vicinity of Joint Base Lewis-McChord (JBLM) in southern Pierce County, traffic has also grown as regional commuter trips have expanded between Thurston, Pierce and King Counties; JBLM and Camp Murray have expanded; and the communities of Lakewood, DuPont and Steilacoom have grown. Because of the presence of secure military bases on both sides of I-5, there are no alternate routes for motorists to use for travel between the Seattle/Tacoma area and Olympia without extended detours to bypass these bases. As a result, congestion along this segment of I-5 has become a daily occurrence, and interchange ramp traffic backing onto the I-5 mainline is causing delays and safety issues.

The Washington State Department of Transportation (WSDOT) is conducting an environmental evaluation for the I-5 JBLM Vicinity Congestion Relief Project. The environmental evaluation has been split into two study areas – North and South. This Tier II Supplemental Environmental Assessment (SEA) evaluates the potential environmental impacts associated with the construction of proposed improvements within the South Study Area as well as the operation of a High Occupancy Vehicle (HOV) lane through the complete study area (North and South). A Tier II Environmental Assessment (EA) was completed for the North Study Area, and a Finding of No Significant Impact (FONSI) was issued in May 2017. The 2017 EA provided a Tier I evaluation of the South Study Area; at that time, the configuration of proposed improvements in the South Study Area was not known and operation of an HOV lane was not considered. A Build Alternative has now been identified for the South Study Area, thus allowing for a Tier II evaluation to be completed. This document continues the

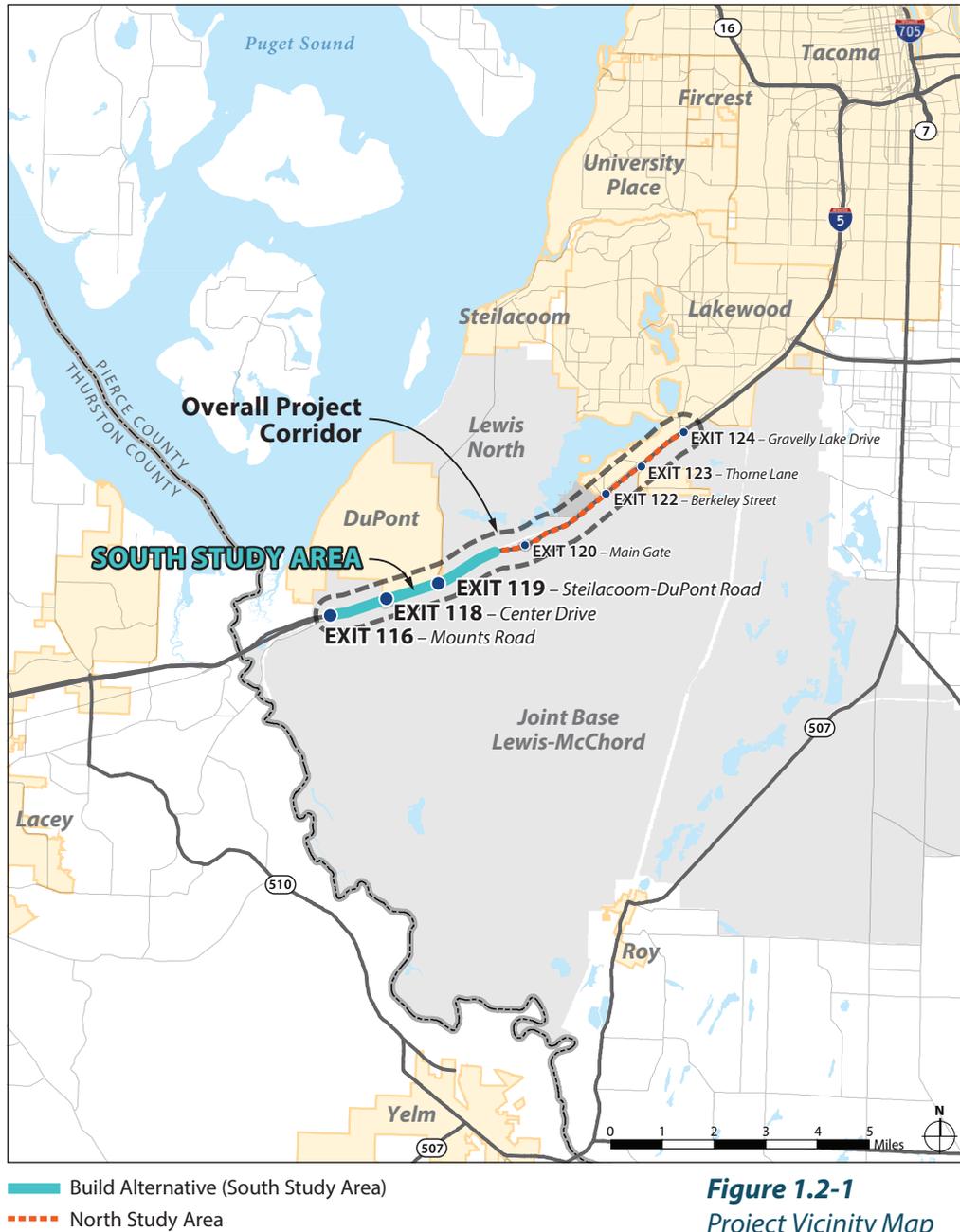
environmental review process started in Tier I for the South Study Area under the National Environmental Policy Act (NEPA).

Many of the studies conducted and documentation developed in 2016 for the May 2017 I-5 JBLM Vicinity Congestion Relief Project Revised Environmental Assessment/FONSI (2017 EA) are referenced in this SEA. For this SEA, some of the 2016 documentation was amended or updated based on new data, as necessary. Copies of the 2017 EA are available for review online at <https://www.wsdot.wa.gov/Projects/I5/MountsRdThorneLn/EA.htm>, at local libraries, or by request from WSDOT.

### 1.2 WHAT IS THE I-5 JBLM CONGESTION RELIEF PROJECT?

WSDOT is planning and implementing improvements on the I-5 corridor between the Gravelly Lake Drive interchange (Exit 124) and the Mounts Road interchange (Exit 116), known as the I-5 JBLM Vicinity Congestion Relief Project (Project). The Project is a program of improvements that would relieve the chronic congestion in the vicinity of JBLM while maintaining access to the adjacent communities and military installations. The overall Project includes:

- ◆ Replacement of three interchanges (Thorne Lane, Berkeley Street, and Steilacoom-DuPont Road) to allow width for construction of additional lanes on I-5 and to improve traffic operations at these interchanges,
- ◆ Construction of one new travel lane in each direction on I-5 dedicated to High Occupancy Vehicles, and
- ◆ Construction of a shared use bicycle and pedestrian path.



**Figure 1.2-1**  
Project Vicinity Map

The North Study Area is located generally between Gravelly Lake Drive (Exit 124) and Steilacoom-DuPont Road (Exit 119). The South Study Area is located generally between Main Gate (Exit 120) and Mounts Road (Exit 116). Figure 1.2-1 shows the North Study Area, South Study Area, and surrounding vicinity.

### 1.3 HOW HAS THE PROJECT CHANGED?

A number of the Build Alternative improvements previously identified in the 2017 EA have since been changed to reflect updated data or conditions. These changes include:

- ◆ **Identification of a configuration for Exit 119 that is supported by all stakeholders.** While several interchange design concepts for the reconfiguration of Exit 119 were evaluated during the 2017 EA process, no specific Build Alternative was identified due to a lack of consensus among project stakeholders. As discussed in Chapter 2, a feasibility study was subsequently completed for this interchange, resulting in a newly identified configuration supported by all stakeholders.
- ◆ **Changes to the design of the proposed Gravelly-Thorne Connector.** The Build Alternative evaluated in the 2017 EA included a southbound-only motor vehicle lane and shared use path between Gravelly Lake Drive and Thorne Lane, known as the Gravelly-Thorne Connector (GTC). Because a southbound auxiliary lane is now being added to I-5 between these two interchanges, the proposed GTC motor vehicle lane would no longer provide any additional benefit; the Build Alternative now proposes construction of the shared use path portion of the GTC only. The GTC design changes are described in greater detail in the Transportation section of this SEA (Section 3.3).
- ◆ **Designation of the new I-5 travel lanes as HOV lanes through the entire Project area.** The addition of one additional through travel lane in each direction on I-5

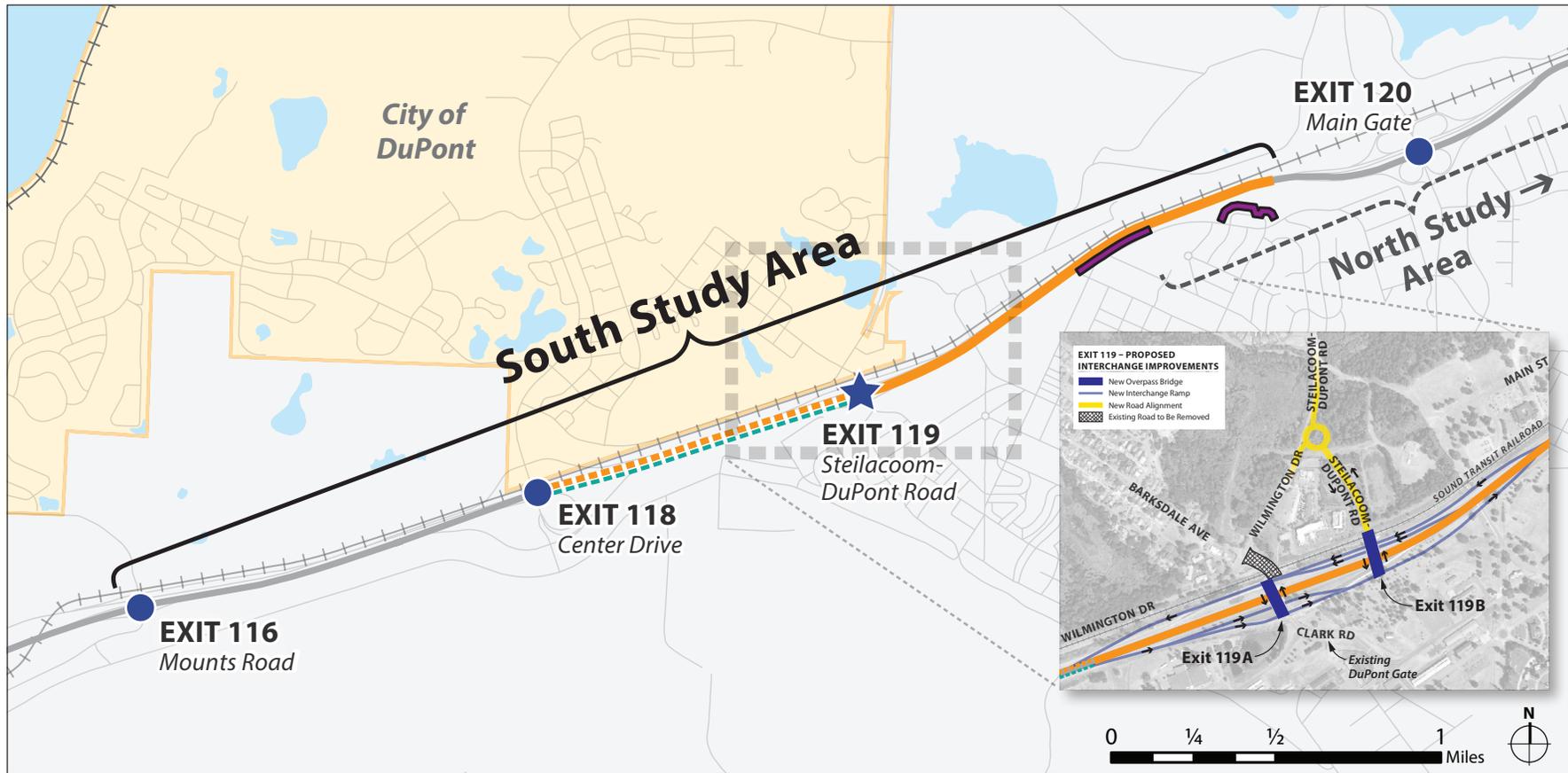
was included as part of the original Build Alternative, but these lanes were assumed to operate as general purpose lanes in the transportation analysis conducted for the 2017 EA. These new lanes are now proposed to be operated as HOV lanes through the entire Project area (Mounts Road to Thorne Lane), as reflected in the current transportation analysis.

These changes have been incorporated into the Build Alternative evaluated in this SEA, as described in the following section.

### 1.4 WHAT WOULD THE PROJECT INCLUDE?

The Build Alternative is more fully described in Section 2.4. Highlights include:

- ◆ An added I-5 lane in each direction from Center Drive to north of the Steilacoom-DuPont Road interchange.
- ◆ Designation of one northbound I-5 lane for HOV use from Mounts Road to Thorne Lane and one southbound I-5 lane for HOV use from Thorne Lane to Steilacoom-DuPont Road.



**Figure 1.4-1**  
I-5 JBLM South Study Area Overview

- ◆ A new northbound auxiliary lane from Center Drive to Steilacoom-DuPont Road.
- ◆ A reconfigured interchange at Steilacoom-DuPont Road.
- ◆ A new access road to I-5 (to be named Steilacoom-DuPont Road).
- ◆ Reconfiguration of Steilacoom-DuPont Road intersection at Wilmington Drive/Barksdale Avenue.
- ◆ A new shared use bicycle and pedestrian path connecting the JBLM DuPont Gate to Steilacoom-DuPont Road and Wilmington Drive (see Figure 2.4-3 for alignment).
- ◆ Construction of two noise walls.
- ◆ Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems (ITS), and signing would also be included in the Project.

Key elements of the Build Alternative are shown in Figure 1.4-1.

Consistent with the requirements of the National Environmental Policy Act (NEPA), WSDOT and the Federal Highway Administration (FHWA) determined a Supplemental Environmental Assessment (SEA) is the appropriate level of environmental documentation for the proposed improvements in the South Study Area. The purpose of this SEA is to identify the level of significance of project impacts, and to address both environmental effects and appropriate mitigation measures. The issuance of this SEA and the interaction with the public, agencies and Tribes will allow the FHWA to determine the significance of project impacts on the environment. Adoption of the NEPA decision document will meet the SEPA requirements.

## 1.5 WHAT ARE THE PROJECT LIMITS?

The beginning and end points of transportation projects are known as project termini. The beginning and end points must be logical and result in an improvement that functions efficiently and improves operations of the system. Logical termini are defined as rational beginning and end points for a transportation project and for review of its environmental impacts.

The Project termini were identified in the 2017 EA. The full project area includes the I-5 corridor from the Mounts Road interchange (Exit 116) to the Gravelly Lake Drive interchange (Exit 124). Within this area, the South Study Area focuses on a segment of the highway between the vicinity of the Main Gate interchange (Exit 120) on the north and the vicinity of the Mounts Road interchange (Exit 116) on the south. For purposes of this document, directions on I-5 are referred to as north and south even though in this location the freeway actually runs east/west.

## 1.6 WHY IS THE PROJECT NEEDED?

Congested traffic along I-5 in the JBLM vicinity, characterized by stop-and-go conditions, has become commonplace during weekday morning (AM) and evening (PM) peak periods, as well as weekend afternoons during summer months. Holiday weekends bring particularly acute levels of congestion. Contributors to the traffic demand are both regional and local. Most of the traffic growth in the Project corridor occurred before 2003 and is associated with significant growth in Thurston and Pierce counties. Additionally, JBLM, a secure military facility has become the largest military installation on the West Coast and affects traffic congestion levels. Factors contributing to the chronic traffic congestion include the following:

- ◆ Heavy existing and expected future volumes of through traffic traveling between Lacey/Olympia/other points south and Tacoma/Seattle/other points north.
- ◆ Military base security requirements, environmental consideration and right of way constraints limit public roadway options other than I-5 through and within the study area.
- ◆ Closely spaced interchanges are subject to high entering and exiting volumes.
- ◆ High volume of vehicle trips to and from DuPont, Lakewood, and JBLM.
- ◆ Vehicle trips using I-5 for local and short distance travel in the Project area.
- ◆ Fewer through lanes between Mounts Road and Thorne Lane (six) than north of Thorne Lane (eight).

Additionally, the Project would address existing crash problems along the I-5 mainline and at study area intersections. Between 2013 and 2017, there were three fatal crashes within the study area and seven crashes that involved serious injury. Eight of these crashes occurred on the I-5 mainline, two of which involved fatalities. One additional fatal crash occurred in the southbound direction at the Steilacoom-DuPont Road interchange, and one serious injury crash occurred in the southbound direction at the Mounts Road interchange. Traffic congestion resulting from crashes creates intermittent, unpredictable delays that can take hours to clear and is compounded by the lack of viable alternative routes.

## 1.7 WHAT IS THE PURPOSE OF THE PROJECT?

The Project would reduce chronic traffic congestion and improve person and freight mobility along I-5 in the vicinity of JBLM while continuing to provide access to the communities and military installations neighboring the freeway. The purpose of the proposed action is to address existing and expected future deficiencies along I-5. The proposed Project would improve I-5 through the JBLM area to achieve the following objectives:

- ◆ Relieve congestion on I-5 within the vicinity of JBLM.
- ◆ Improve local and mainline system efficiency.
- ◆ Enhance mobility and support the regional HOV network.
- ◆ Improve safety and operations.
- ◆ Increase transit and Transportation Demand Management (TDM) opportunities.

## 1.8 WHAT IS THE SETTING FOR THE PROJECT?

### *Interstate 5*

I-5 is the main north/south route through Washington State. It is classified as part of the National Highway System (NHS) and is designated as a Highway of Statewide Significance (HSS) by WSDOT. It is a principal route for the movement of people, goods, services, and the military within Washington, and between Washington and other states and countries. WSDOT designated I-5 as a Truck Freight Economic Corridor, recognizing it as the state's most important north-south interstate corridor for the role it plays in linking Washington's trade

with the rest of the United States, Canada, and Asia, and for its role in linking marine and air cargo port complexes with essential state warehouse districts, industrial lands, intermodal transportation hubs, and major population centers.

Within the Project area in southern Pierce County, I-5 traffic has increased 16 percent between 2003 and 2017, to over 127,000 vehicles per day. Truck volumes during this same time increased 9 percent to over 14,400 trucks per day. Truck volumes on I-5 at the border between Pierce County and Thurston County are some of the highest in the state.

The traffic increase in the study area has been influenced both by population and employment growth in the south Puget Sound region, and by increased economic activity at the state level, fostering a rapid rise in freight movement. Prior to initiating the I-5 JBLM Vicinity Congestion Relief Study (Congestion Relief Study), no through lanes had been added to I-5 in the study area since 1975. During that same time, the population in Pierce and Thurston Counties increased by more than 21 percent.

I-5 provides the primary access to JBLM and the Washington State National Guard at Camp Murray, both of which are secure military bases. Eight highway interchanges provide access to security gates into and out of these bases, through which, in 2013, more than 150,000 vehicles passed every weekday. JBLM is the largest single-site employer in the state of Washington, with over 46,000 active duty military and 16,000 civilian employees, also as of 2013.

The presence of a secure military facility on both sides of I-5 through the study area creates unique constraints, as there are no reasonable alternate parallel routes for regional travel. Additionally, much of I-5 through this area is on an easement granted by the U.S. Department of Defense in the late 1950s to the State of Washington.

Existing weekday peak period travel demand along I-5 exceeds available capacity in several locations. Total PM peak hour travel time through the full corridor from Mounts Road to SR 512 ranges from 14 minutes in the northbound direction to 18 minutes in the southbound direction, notably longer than free-flow travel time of 11 minutes which is experienced during the AM peak hour in both directions.

### Transit Operations and Efficiency

Three public transit providers operate within the study area: Intercity Transit, operating out of Olympia; Pierce Transit, operating out of Lakewood; and Sound Transit, the central Puget Sound regional transit agency. These agencies provide local and express service in and through the Project area. Service is available all day, with increased service frequencies during peak commute periods in the morning and evening. In late 2013, fixed-route bus service offered by these three agencies accounted for nearly 500 people traveling in the Project area during the PM peak hour.

Transit providers offer vanpool services as an alternative to bus service. Vanpools provide flexibility and more direct service options; one vanpool typically carries between five and eight people. In 2013, vanpools transported about 725 people through the Project area during the PM peak hour.

### Freight Mobility

The Steilacoom-DuPont Road interchange (Exit 119) experiences a high volume of freight traffic serving the existing industrial uses west of I-5 on Steilacoom-DuPont Road including large warehouses, a gravel pit, and JBLM's Lewis North complex. I-5 carries over ten million tons of freight annually, and is classified as a T1 freight corridor, the highest designation in the state.

Trucks are impacted by congestion; unreliable travel times and chronic delays increase the cost of moving freight. Research conducted during development of the Washington State Freight Systems Plan shows that congestion translates to a direct cost of doing business for freight-dependent businesses. Washington's economy is heavily trade dependent, so increases in the cost of moving freight are felt throughout the economy.

### At-Grade Rail Crossings

Sound Transit owns and operates a rail line immediately adjacent to I-5 on the west side of the highway. An at-grade crossing is located along the west portion of the Steilacoom-DuPont interchange (Exit 119). At this time, the rail tracks carry freight trains exclusively; however, Amtrak has plans to resume north/south service along this line. Once service resumes on the line adjacent to I-5, it would carry the eight northwest Cascade trains and two long-distance Coast Starlight trains a day on this line, at operating speeds up to 79 mph. More frequent service, potentially longer trains, and increased traffic management at rail crossings will contribute to congestion on local streets.

**Table 1.9-1 Recent History of Transportation Planning in the I-5 JBLM Vicinity**

Previous Studies & Documents	Relationship to the Project Area
<b><i>I-5 JBLM Vicinity Congestion Relief Project, Revised Environmental Assessment/FONSI – FHWA/WSDOT (May 2017)</i></b>	This document provided a tiered evaluation of improvements to I-5 between Gravelly Lake Drive (Exit 124) and Mounts Road (Exit 116) including both the North and South Study Areas. A specific Build Alternative was evaluated for the North Study Area. For the South Study Area, including the Exit 119 interchange, a Tier 1 or corridor level analysis was conducted. Using data collected from the resource agencies, other sources and field reconnaissance, potential environmental impacts or issues were also identified in the vicinity of Exit 119 and these were considered in the screening and evaluation of initial interchange improvement options.
<b><i>I-5, Mounts Road to Thorne Lane Corridor Improvements, Exit 119 Interchange Alternatives Analysis – Feasibility Report – WSDOT (September 2017)</i></b>	This report identified and evaluated the implementation feasibility and qualitative performance of a range of improvement options at the Exit 119 interchange. The evaluation was built on prior analyses conducted for the full I-5 JBLM project area and led to identification of a recommended Build Alternative.
<b><i>Access Revision Report for I-5, Exit 119 Interchange; Interstate 5, Mounts Road to Steilacoom-DuPont Road Corridor Improvements – WSDOT (March 2019)</i></b>	This report addresses WSDOT requirements for justification of proposed improvements at the Exit 119 Steilacoom-DuPont Road interchange and provides a complete description of the preferred Build Alternative upon which the Supplemental Environmental Assessment is based.

## 1.9 WHAT PROJECT PLANNING HAS BEEN CONDUCTED FOR THE PROJECT AREA?

The recent history of transportation planning along the I-5 corridor goes back more than a decade. Key studies providing both context for the current planning effort and guidance in the exploration of reasonable improvement alternatives are presented in Table 1.9-1. As part of the I-5 JBLM Vicinity Congestion Relief Project, a Tier I Environmental Assessment was prepared for the North Study Area and a Tier II (corridor level) assessment was conducted for the South Study Area. The *I-5, Mounts Road to Thorne Lane Corridor Improvements Exit 119 Interchange Alternatives Analysis Feasibility Report* used data collected from the resource agencies, other sources, and field reconnaissance to identify potential environmental impacts or issues and to screen and evaluate improvement options.

## 1.10 HOW WERE TRIBES AND GOVERNMENTAL AGENCIES INVOLVED?

Active participation by public agencies and the Nisqually Indian Tribe has been on-going since the Congestion Relief Study effort began in 2013. Stakeholders were formed into two working groups – the Executive Stakeholders Committee and the Technical Support Group. Elected officials or agency administrators participated in the Executive Stakeholders group, and technical staff from the agencies comprised the membership of the Technical Support Group. The Executive Stakeholders group was active primarily during the I-5 JBLM Congestion Relief Project analysis process and preparation of the 2017 EA.

### *Technical Support Group Participants*

Membership of the Technical Support Groups for analysis of the North Study Area included the following agencies:

- ◆ FHWA
- ◆ City of Lakewood
- ◆ Thurston Regional Planning Council
- ◆ WSDOT
- ◆ City of DuPont
- ◆ Puget Sound Regional Council
- ◆ Joint Base Lewis-McChord
- ◆ Town of Steilacoom
- ◆ Pierce Transit
- ◆ Camp Murray
- ◆ Pierce County
- ◆ Sound Transit
- ◆ Intercity Transit
- ◆ Nisqually Tribe

Development and evaluation of the Build Alternative has relied on input from a smaller subset of this group, primarily FHWA, WSDOT, Joint Base Lewis-McChord, Pierce County, the City of DuPont, and the Town of Steilacoom.

The subset of the Technical Support Group participated in every phase of the study to collaboratively address member organization needs and concerns and move effectively through the alternatives analysis and documentation process for the South Study Area. This group played an interagency advisory role during the planning phase by providing a technical review of study materials including interchange alternatives analysis, the Access Revision Report, and the SEA.

## 1.11 HOW WAS THE PUBLIC INVOLVED?

A focused public outreach effort has been integral to Project planning and identification of the Build Alternative. Outreach has taken a variety of forms which are described below. A detailed recap of the public involvement process affecting both study areas is included in Appendix F of the 2017 EA. Public involvement activities specifically affecting the South Study Area are described below.

As information regarding the Project and potential congestion relief strategies was generated, it was provided to the general public and targeted audiences using a variety of tools. Information and feedback were collected from the public to inform the analysis. Central to this strategy was development and use of materials that were easy to understand by a non-technical audience. Graphics-rich materials conveyed complex technical concepts while reader-friendly language made the study, considerations, analysis, and recommendations comprehensible to a wide audience.

### *Website*

The primary vehicle for providing on-going information to the public was a project website hosted by WSDOT. Designed to be easily navigable, visitors to the site could obtain details regarding the Project from easy-to-understand content on the Project home page. Those looking for more detailed information and data could readily find reports, analyses, summaries, maps, schedules, and other project-related information. Visitors to the website were

invited to sign up to receive email notifications of meetings and other project milestones.

### **Media**

Media outreach was an important mechanism for raising awareness about the study effort, generating community interest, and promoting public events. Given the statewide significance of I-5, outreach extended well beyond the study area to include media from Seattle to Vancouver, Washington. This included radio, television, print, and on-line media in addition to specialized media sources such as those targeted to the military community.

### **Open House**

An open house was held on April 11, 2018, which provided an in-depth opportunity for broad community engagement. This meeting was styled in such a way that visitors could get an overview or dive into project details. Several topic stations were displayed for the different features of the Project – transportation design and impacts, construction impacts, environmental

impacts, and project delivery. Each station featured large display boards and flip charts for capturing concerns and ideas. Comment forms were also provided at the meeting and online to allow the public a chance to sit down and share their more extended thoughts.

The open house was well-attended with over 120 attendees. Approximately 50 comment forms were received which provided feedback regarding the use of and access to the current interchange, and identification of specific interests and concerns relating to the construction and operation of the new interchange. The primary areas of concern expressed by attendees were safety, changes in travel patterns, and environmental impacts. The environmental concerns were largely related to wetlands, wildlife and vegetation, and noise level increases. The public indicated a strong support for an Exit 119 preferred Build Alternative based on the split ramps improvement concept. Project staff reached out to community members who submitted questions or requested more detailed project information. A compilation of all comments received at the open house can be found in Appendix F.

# 2 DESCRIPTION OF ALTERNATIVES

## 2.1 INTRODUCTION

The Build Alternative in this SEA best meets the need and purpose for the Project while avoiding, minimizing, and/or mitigating the effects it could have on the environment. The Build Alternative was identified through an evaluation process that occurred in multiple phases. The process began with a broad overview that established a framework for identifying specific corridor improvements. The *I-5 JBLM Vicinity IJR and Environmental Documentation, Phase 1 – Corridor Plan Feasibility Study* (completed in January 2014) and the *I-5 JBLM Vicinity Congestion Relief Study, Phase 2 – Multimodal Alternatives Analysis* (completed in March 2015) identified an ultimate cross-section for I-5, as well as a range of improvement options at interchanges in the corridor and various multimodal and local street enhancements to address transportation needs.

Building on these studies, the 2017 EA was prepared and presented a tiered evaluation of recommended improvements in the corridor, including a Tier II (detailed evaluation) in the North Study Area and a Tier I (high level assessment) in the South Study Area. In the North Study Area an assessment was conducted of impacts and mitigation for a specific Build Alternative that included I-5 widening throughout the corridor, improvements to the I-5 interchanges at Berkeley Street (Exit 122) and Thorne Lane (Exit 123), and selected local system improvements. The Tier I assessment in the South Study Area focused on potential improvements to the I-5 interchange at Steilacoom-DuPont Road (Exit 119). Several interchange design concepts were developed and evaluated but due to the lack of consensus among project stakeholders no specific Build Alternative was identified.

Following completion of the 2017 EA, a Feasibility Study was conducted for Exit 119 to identify and assess a wider range of interchange improvement

options than was considered in the earlier studies. The Feasibility Study evaluated the performance of eight interchange improvement concepts including the No Build condition using a variety of mobility, environmental, and implementation-related criteria. Based on this evaluation, a proposed Build Alternative was identified that included a couplet interchange configuration with two ramp design variations.

Each of these reports can be found on WSDOT's website: <http://www.wsdot.wa.gov/Projects/I5/JBLMImprovements/FuturePlans.htm>. The process for developing and evaluating reasonable alternatives for improvements in the South Study Area is described in greater detail in this chapter.

## 2.2 WHAT IMPROVEMENTS ARE PROPOSED BY 2025 & 2040 IF THE PROJECT IS NOT BUILT?

The No Build Alternative includes the existing multimodal transportation system within and serving the study area. This includes the North Study Area improvements – additional travel lanes between Main Gate (Exit 120) and Thorne Lane (Exit 123) and new interchanges at Berkeley Street (Exit 122) and Thorne Lane. For purposes of evaluating transportation impacts of the project, the analysis assumed a baseline condition in which none of the improvements within the I-5 JBLM Vicinity Congestion Relief project area are constructed (North Study Area and South Study Area), and I-5 would remain 3 lanes between Mounts Road and Thorne Lane. This allows for evaluation of the entire I-5 JBLM Vicinity Congestion Relief Project, especially as it relates to travel times, notwithstanding construction phasing.

The No Build Alternative also includes funded projects that are expected to be in place prior to implementation of the Build Alternative. It also includes projects identified in local agency short-term improvement programs, the WSDOT Statewide Transportation Improvement Program (STIP), and/or pending improvements on JBLM that are expected to be in place before the 2040 Design Year. Transit service enhancements as identified in the Puget Sound Regional Council's 2040 Vision, and the assumed long-term plans of Sound Transit such as the extension of Sounder Commuter Rail to DuPont, are also included in the No Build Alternative. For the 2025 No Build Alternative, the existing level of bus transit service is assumed to remain unchanged.

## 2.3 WHAT INTERCHANGE IMPROVEMENT OPTIONS WERE CONSIDERED IN DEVELOPING THE BUILD ALTERNATIVE?

The Build Alternative is the culmination of a multi-phased analysis process conducted between 2013 and early 2019. The first phase of the process involved development of a Project corridor and multimodal improvement strategy that considered the regional context and provided guidance on the type of highway and interchange improvements that should be considered for implementation. The results of this analysis were documented in the 2017 EA.

### *Types of Alternatives Considered*

Building on the analysis presented in these earlier documents, a variety of interchange improvement concepts were evaluated in the South Study Area focusing on the Exit 119 interchange. The first step in this effort involved development of an *Exit 119 Alternatives Analysis Feasibility Study* that identified a recommended reconfiguration for the existing interchange. This alternative was further refined in a study to evaluate traffic control strategies for the ramp termini intersections at the reconfigured interchange, leading to identification of a preferred Build Alternative. The analysis process and types of alternatives that were considered for the Exit 119 interchange are described below.

**EXIT 119 INTERCHANGE ALTERNATIVES ANALYSIS FEASIBILITY STUDY**  
A Feasibility Study was conducted for Exit 119 to identify and assess a wider range of interchange improvement options than was initially considered in the earlier studies. The Feasibility Study, prepared in conjunction with project

stakeholders and partners including JBLM, the City of DuPont, and the FHWA, evaluated the performance of eight interchange improvement concepts including the No Build condition using a variety of mobility, environmental, and implementation-related criteria. Interchange improvement options that were studied in this report include:

- ◆ **No Build Option** which would keep the existing interchange configuration and leave adjacent intersections unimproved.
- ◆ **Original but Rejected Concept** from the earlier analysis of interchange design options conducted as part of the 2013/2014 Congestion Relief Study Phase 1 planning process. This concept was rejected primarily due to concerns about the proposed reconfiguration of the JBLM DuPont Gate and force protection. This concept included an offset tight diamond configuration located over I-5 north of the existing interchange. Modern roundabouts were proposed at the two ramp termini intersections and required relocation of the JBLM DuPont Gate.
 
- ◆ **Skewed Alignment Concept** was a hybrid of the Original but Rejected Concept. With this concept, the bridge crossing over I-5 would be kept in the same location on the west side of the freeway as in the prior concept but would orient the relocated JBLM DuPont Gate further south on the east side of the I-5 to minimize project footprint within JBLM's Garrison Historic District.
 

- ◆ **Exit 119 Couplet Concept** would consist of two half diamond intersections and two freeway overcrossing structures connected by one-way frontage roads.



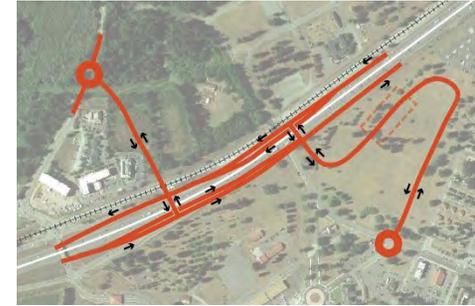
- ◆ **Exit 119 A-B Couplet Concept with Split Ramps** would be similar to the Exit 119 Couplet Concept but would add two grade-separated ramps to provide direct connections between the freeway and local destinations for both right- and left-turning traffic.



- ◆ **Wilmington Flyover Concept** would relocate the existing interchange slightly to the south of the existing interchange with a two-intersection tight diamond configuration. Access to JBLM would be relocated south of the existing ACP.



- ◆ **Exit 119 A-B Split Ramp Concept with New Gate** would provide a split diamond configuration similar to the Exit 119 A-B Couplet with Split Ramps Concept, but the entire interchange would be shifted north away from the existing interchange. The connection to JBLM would move from Clark Road to a location near Pendleton Avenue and a new gate would be constructed.



- ◆ **Local Crossing with At-Grade Rail Concept** would concentrate access to and from I-5 at a single location to the north of the existing Steilacoom-DuPont Road bridge and there would be no I-5 ramp access directly to and from JBLM. The existing at-grade railroad crossing would be retained along with a new structure over I-5 solely for the purpose of maintaining access between the DuPont Gate and the City of DuPont street network.



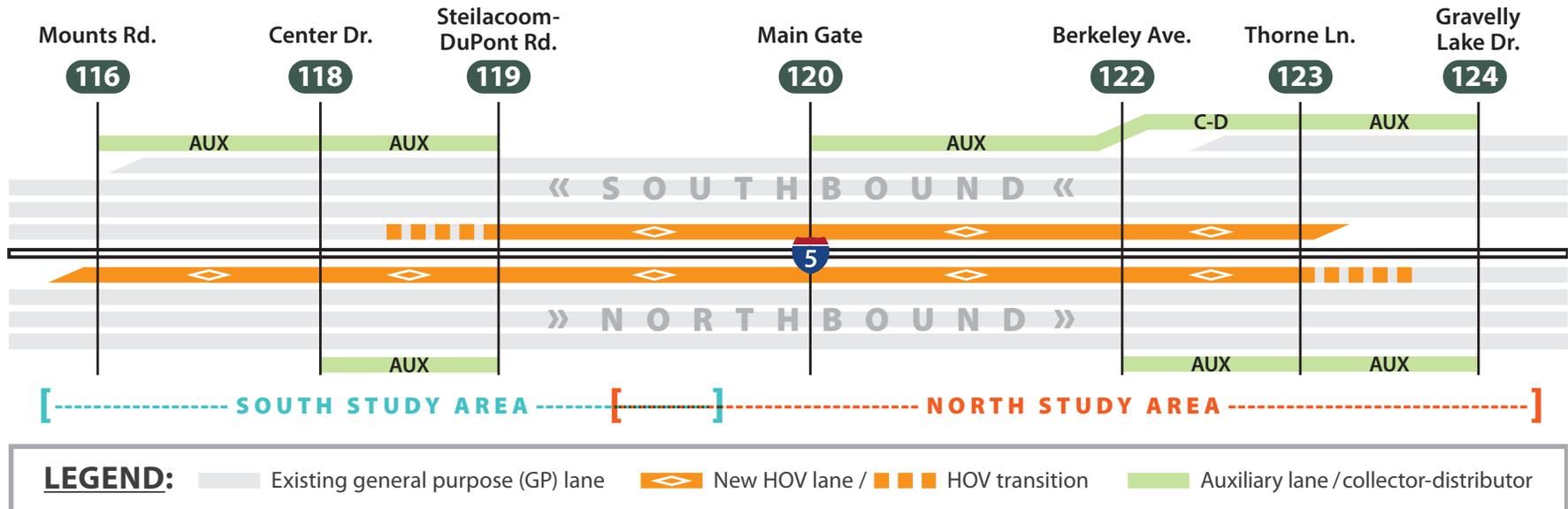
Based on the evaluation of these alternative concepts, the Exit 119 A-B Couplet was selected as the Build Alternative because it best met the Project's need and purpose. This concept allowed for the widening of the I-5 mainline; maintained access to JBLM's existing DuPont Gate; provided a grade-separated crossing of the Sound Transit railroad; and improved traffic operations, reducing congestion and improving safety at intersections and roadways. The couplet concept included a basic interchange configuration with two ramp design alternates. Subsequent to this report the split ramp concept with bypass lanes was determined to be the preferred improvement.

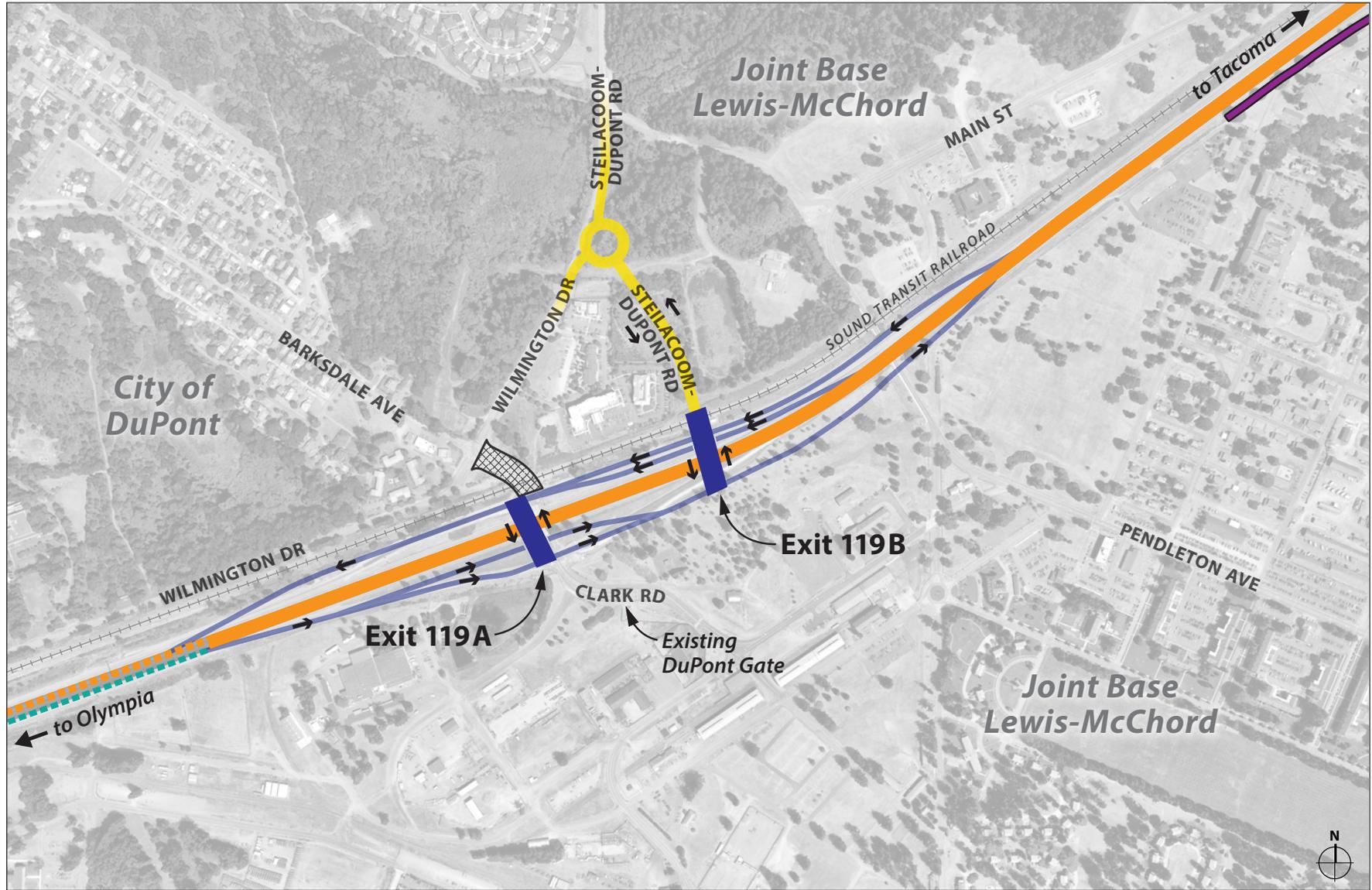
## 2.4 WHAT IMPROVEMENTS WOULD THE BUILD ALTERNATIVE INCLUDE?

Figures 2.4-1 and 2.4-2 show the proposed I-5 lane configuration and Exit 119 interchange improvements, which are described below:

- ◆ Widening of I-5 to provide a full four-lane cross-section in both directions from Mounts Road (Exit 116) to approximately 1,200 feet north of Exit 119 that will connect with added lanes from the North Study Area Build Alternative. A new northbound auxiliary lane would also be added between Center Drive (Exit 118) and Steilacoom-DuPont Road (Exit 119).
  - ◆ The new through travel lanes would be designated for High Occupancy Vehicles (HOV) between Mounts Road and Thorne Lane (Exits 116 and 123) in the northbound direction, and between Thorne Lane and Steilacoom-DuPont Road (Exits 123 and 119) in the southbound direction.
  - ◆ Reconfiguration of the existing Exit 119 interchange to allow added travel lanes on I-5 and provide vertical clearances meeting Design Manual guidelines over I-5 and the adjacent Sound Transit railroad track. The existing structurally deficient bridge over I-5 at Steilacoom-DuPont Road
- Exit 119A – The new southern bridge (Exit 119A) would be situated slightly south of the existing bridge. The northbound off-ramp at this exit would split with the right lane providing direct access to JBLM’s DuPont Gate via a signal-controlled intersection at Clark Road. The left lane would bypass Clark Road and pass under the Exit 119A bridge to connect with Exit 119B bridge. This connection would provide direct access to the City of DuPont, JBLM’s Lewis North area, and the Town of Steilacoom. The southbound on-ramp would link JBLM and destinations around the City of DuPont with I-5 to the south. The current I-5 connection to Steilacoom-DuPont Road would be eliminated along with the existing at-grade railroad crossing. The two intersections at Exit 119A would be traffic signal-controlled.
  - Exit 119B – The new northern bridge (Exit 119B) would be located approximately 900 feet north of the southern bridge and would

Figure 2.4-1 Proposed I-5 Configuration





- Add One Lane Each Direction
- Add One Lane Southbound Only
- Northbound Auxiliary Lane
- Noise Wall

**PROPOSED INTERCHANGE IMPROVEMENTS**

- New Overpass Bridge
- New Interchange Ramp
- New Road Alignment
- Existing Road to Be Removed

**Figure 2.4-2**  
I-5 JBLM South Study Area  
Improvements

provide a northbound on-ramp connection and a southbound off-ramp connection between I-5 and a realigned Steilacoom-DuPont Road. The northbound on-ramp would include a separate lane to allow northbound traffic exiting JBLM to bypass the northbound on-ramp intersection and enter the freeway directly. A second southbound off-ramp serving the Exit 119A structure and the JBLM DuPont Gate would pass under the Exit 119B bridge and connect directly with the southbound frontage road. The southbound off-ramp intersection at Exit 119B would be stop sign-controlled, while the northbound on-ramp intersection would be traffic signal-controlled.

- ◆ Construction of a new road to provide access between I-5 and destinations in the City of DuPont, the Town of Steilacoom, and JBLM's Integrity Gate. This new road would be known as Steilacoom-DuPont Road and would run between I-5 and a point where the new road would reconnect with the existing Steilacoom-DuPont Road alignment. The segment of Steilacoom-DuPont Road between the Wilmington Drive/Barksdale Avenue intersection and the new intersection would likely be renamed Wilmington Drive. The new intersection of Steilacoom-DuPont Road with Wilmington Drive would be designed as a multilane roundabout. The new Steilacoom-DuPont Road alignment would be grade-separated over the Sound Transit railroad track that runs parallel to I-5 and would have an approximate seven percent grade between Wilmington Drive and the Sound Transit overcrossing. The location of this new road is illustrated in Figure 2.4-2.
- ◆ Reconfiguration of Steilacoom-DuPont Road with Barksdale Avenue/Wilmington Drive intersection to eliminate the connection between this intersection and I-5. The new configuration would provide only three legs including the existing segment of Wilmington Drive, the renamed segment of Wilmington Drive Extension (formerly Steilacoom-DuPont Road), and Barksdale Avenue.

This intersection would continue to be traffic signal-controlled. Removal of the fourth leg would eliminate the existing at-grade railroad crossing.

- ◆ Construction of a shared use bicycle and pedestrian pathway to connect JBLM with the City of DuPont. The alignment of this proposed pathway is shown in Figure 2.4-3.
- ◆ Construction of noise walls. A noise wall would be constructed at the edge of the northbound I-5 right of way, beginning at the dead end of Idaho Street and extending 1,425 feet to the north. A second noise wall, approximately 1,100 feet in length, would be constructed at the top of Davis Hill behind the homes on the west side of Davis Lane. The location of these noise walls is shown in Figure 1.4-1.

Forecasts show that additional I-5 mainline capacity would be needed within the 2040 design horizon. In order to provide forward compatibility, the interchanges would be re-built to allow both the proposed mainline widening and a potential future additional lane in each direction. The potential future additional through lanes are not a part of this SEA.

**Figure 2.4-3** *Bicycle and Pedestrian Pathway Alignment*



# 3 SOUTH STUDY AREA ANALYSIS

## 3.1 INTRODUCTION

This chapter presents an analysis of the potential effects of the Build and No Build Alternatives on the community and natural environment of the South Study Area. Each section within the chapter is devoted to a specific element of the environment that was identified as important to fully understanding potential impacts. A description of the evaluation methodology used to assess impacts for a given discipline, existing conditions, and potential impacts, as well as possible measures to mitigate or avoid adverse impacts, are also identified in this section. Impacts are categorized as:

- ◆ Direct impacts (short-term construction and long-term).
- ◆ Secondary or indirect impacts.
- ◆ Cumulative effects.

**Direct impacts** are effects that have a straightforward cause-and-effect relationship to the Build Alternative.

**Secondary impacts, or indirect effects,** are reasonably foreseeable effects of the Build Alternative that could occur later in time or are further removed in distance from the direct effects. Indirect effects are discussed along with cumulative effects in Section 3.18.

**Cumulative effects** are the incremental or additive effects of the Build Alternative in conjunction with other past, present, and future reasonably foreseeable actions, regardless of what agency or person undertakes such actions. Cumulative effects are discussed in Section 3.18.

### *What Elements of the Environment are Addressed in this Chapter?*

Technical experts on the Project team conducted studies and summarized their analyses in Discipline Reports or Technical Memoranda for many elements of the environment. This information was used as a basis for examining changes that can occur as a result of constructing the proposed improvements along I-5, and illustrating how the Build Alternative might affect the built and natural environment of the area.

Several studies prepared for the North Study Area evaluated the entire Project corridor and were therefore also used for the analysis of the South Study Area. These were:

- ◆ *Air Quality Technical Memorandum*
- ◆ *Floodplain Resources Technical Memorandum*
- ◆ *Floodplains Technical Memorandum*
- ◆ *Geology and Soils Technical Memorandum*
- ◆ *Groundwater Technical Memorandum*

### ***What is a Discipline Report or Technical Memorandum?***

*A discipline report focuses on an environmental topic (discipline) of concern, such as air quality, noise, surface water, or other built or natural resources. It presents an analysis of the environment with respect to that discipline, how the project may affect that environment, and offers recommendations on how best to avoid or minimize adverse effects to that environment.*

*A technical memorandum is typically written in lieu of a discipline report when the potential environmental impacts are minimal for that particular discipline on a specific project.*

- ◆ *Hazardous Materials Analysis Report*
- ◆ *Socioeconomic and Environmental Justice Discipline Report*
- ◆ *Land Use Technical Memorandum*
- ◆ *Wetland and Stream Delineation Report*

The following studies were prepared or amended for Project specific elements of the South Study Area (additional information regarding discipline reports is located in Appendix B):

- ◆ *Cultural Resources Assessment*
- ◆ *Fish, Wildlife and Vegetation Discipline Report*
- ◆ *Noise Discipline Report*
- ◆ *Surface Water Discipline Report*
- ◆ *Transportation Operations and Safety Summary Technical Memorandum*
- ◆ *Visual Impact Assessment*
- ◆ *Economics Analysis*
- ◆ *Wetland Conceptual Mitigation Memorandum*

Analysis of effects associated with the Build Alternative includes a comparison with both existing baseline conditions and the No Build Alternative. The No Build Alternative assumes completion of several separate transportation improvements in the Project area as described in Chapter 2. By evaluating conditions with these improvements in place, the potential impacts of a No Build Alternative can be determined. A comparison can then be made of effects associated with the Build Alternative, and the environmental, social, and economic changes associated with this alternative can be identified.

### ***How Is This Chapter Organized?***

This chapter is organized by each element of the natural and built environment. Section 3.2 includes a summary of short-term (construction) effects, long-term (operational) effects, and benefits associated with the No Build and Build Alternatives relative to each element.

Each section includes the following:

1. Discussion of the relevant regulations, standards, and analysis methods appropriate for evaluating potential impacts associated with the discipline.
2. Description of existing conditions.
3. Summary of impacts that could be associated with the No Build and Build alternatives.
4. Discussion of possible actions to minimize or mitigate adverse impacts, and identification of any unavoidable adverse impacts.

## **3.2 SUMMARY OF EFFECTS**

As part of the Supplemental Environmental Assessment (SEA), the Project team analyzed the elements of the environment included in Table 3.2-1. To provide a baseline for comparison, the No Build Alternative is included in the SEA's discussion of the Build Alternative's affected environment and impacts. The No Build Alternative includes the existing transportation system, plus currently-funded improvements as described in Chapter 2. Table 3.2-1 summarizes the anticipated effects of the Build Alternative to each of these topic areas addressing both short-term (construction) impacts and long-term or operational impacts.

**Table 3.2-1 Summary of Effects for No Build and Build Alternatives**

Resource	No Build Alternative Effects	Build Alternative Effects
<b>Transportation</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> Travel time along the corridor would increase substantially during peak periods in both the northbound and southbound directions.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> New interchanges would be offset from existing locations to reduce traffic disruption during construction. Short-term closures of interchange ramps during transition to new dual bridge configuration. Night or weekend lane closures on I-5. Public transit and school bus routing may be affected by closures during construction.</p> <p><u>Long-Term:</u> Travel time savings between SR 512 and Mounts Road would be substantial for both HOVs and SOVs in the northbound direction. In the southbound direction, travel time savings would be notably larger for HOVs in comparison with SOVs; increased southbound congestion in the southern end of the corridor would increase overall SOV travel time southbound. Traffic operations at Steilacoom-DuPont Road interchange would improve and enhance travel safety.</p> <p><u>Beneficial:</u> The Build Alternative would add one new travel lane on I-5 in each direction; provide a grade-separated crossing of the Sound Transit railroad right of way for improved access to the City of DuPont, JBLM's Integrity Gate, and the Town of Steilacoom; improve traffic operations at the ramp termini intersections, reduce delay, and improve levels of service in both 2025 and 2040; improve travel time and reliability for HOV and transit; and improve the safety performance of the ramp segments, ramp termini intersections, cross streets and I-5 mainline within the study area.</p> <p><u>Mitigation:</u> Construction would occur in phases. Detour routing would be provided around construction sites and accommodate short-term ramp closures during transition periods and bridge demolition. Three lanes of I-5 open in both the north and southbound directions during daytime and peak travel times. Transportation Management Plan (TMP) to guide construction traffic operations and public communications.</p>
<b>Air Quality</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> None.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Potential impacts to localized air quality related to dust and construction vehicle emissions.</p> <p><u>Long-Term:</u> No violations of the NAAQS for carbon monoxide (CO) or Particulate Matter (PM<sub>2.5</sub>) Mobile Source Air Toxic (MSAT) emissions are expected to improve over existing conditions.</p> <p><u>Beneficial:</u> Greenhouse gas (GHG) emissions improved by reducing stop-and-go conditions, improving speeds, improving traffic flow, and providing for enhanced bicycle and pedestrian connectivity.</p> <p><u>Mitigation:</u> Disturbed areas would be kept to a minimum. Dirt, gravel and debris piles would be covered as needed; exposed soil would be sprayed with water or other dust suppressant; disturbed areas would be replanted as soon as possible. Quarry spalls or wheel washers would be used at equipment access locations. Equipment and staging areas would be as far from sensitive receptors as practicable. Equipment idling would be minimized.</p>
<b>Noise</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> 28 residences are expected to exceed FHWA Noise Abatement Criteria.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Temporary impacts from construction equipment. Level of impact is related to type of equipment being used and duration of use.</p> <p><u>Long-Term:</u> 35 residences are expected to exceed FHWA Noise Abatement Criteria. 33 can be mitigated leaving two that are unavoidably impacted.</p> <p><u>Beneficial:</u> Proposed noise walls would reduce noise exposure for most sensitive receptors.</p> <p><u>Mitigation:</u> Construction of two noise walls would mitigate noise levels at 33 out of 35 residences. Construction noise would be managed using Best Management Practices (BMPs).</p>

**Table 3.2-1 Continued** Summary of Effects for No Build and Build Alternatives

Resource	No Build Alternative Effects	Build Alternative Effects
<b>Geology and Soils</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No direct impact.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Impacts could result from earth movement and placement including structure foundations, slope cuts, fill for embankments and retaining walls, and soil import/export.</p> <p><u>Long-Term:</u> There could be geology and soil impacts, the extent depending on final design and mitigation.</p> <p><u>Beneficial:</u> No substantive benefits.</p> <p><u>Mitigation:</u> BMPs to minimize erosion, stabilize slopes, and compact fill would be implemented.</p>
<b>Water Resources</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> Runoff from roadway surfaces would continue to be untreated.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Could have temporary effect on adjacent water bodies, floodplain resources, and surface/ groundwater quality.</p> <p><u>Long-Term:</u> May increase runoff due to expansion of impervious areas. May also result in loss of floodplain storage and/or conveyance, and changes in infiltration capacity.</p> <p><u>Beneficial:</u> Increased treatment of runoff where currently there is none.</p> <p><u>Mitigation:</u> Construction of stormwater treatment for new paved surfaces. A Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control and Countermeasures Plan would be developed and implemented. Erosion control measures would be located adjacent to construction areas and near streams and stormwater facilities.</p>
<b>Wetlands</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No impact.</p> <p><u>Beneficial:</u> Preservation of existing wetlands and wetland buffers.</p>	<p><u>Construction:</u> Temporary impacts to 0.08 acres of wetlands and 1.04 acres of wetland buffers are expected.</p> <p><u>Long-Term:</u> Permanently fill a portion of Wetland 11 and all of Wetland 12 (Category III wetlands) resulting in a loss of 0.30 acres of wetland and 1.59 acres of wetland buffer.</p> <p><u>Beneficial:</u> None.</p> <p><u>Mitigation:</u> Compensatory mitigation through Pierce County's Fee In-Lieu program or restoration of disturbed wetland and buffer areas.</p>
<b>Fish, Wildlife and Vegetation</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No impact.</p> <p><u>Beneficial:</u> Preservation of existing trees and vegetation adjacent to I-5 and at location of new interchange and local access road.</p>	<p><u>Construction:</u> Some temporary impacts to land cover are expected such as tree removal and fill. There may also be noise impacts that affect wildlife.</p> <p><u>Long-Term:</u> Some conversion of land cover from potential habitat like grass or forest to pavement or other impervious surfaces is anticipated.</p> <p><u>Beneficial:</u> Water quality improvement associated with added treatment for stormwater runoff that currently discharges to wetlands and streams without treatment.</p> <p><u>Mitigation:</u> Minimize clearing, especially in habitat areas. Replacement of vegetation per the WSDOT Roadside Policy Manual. Clearing limits would be marked with construction fencing. Staging areas would be located 300 feet away from wetlands, streams or buffers if possible. BMPs would be used to control sediments. Additional surveys for Roy Prairie pocket gopher should be completed prior to construction and potential impacts would be avoided or mitigated. Impacts to Oregon white oak habitat would be mitigated by planting new trees in accordance with replacement standards and ratios specified in applicable local codes.</p>

**Table 3.2-1 Continued** Summary of Effects for No Build and Build Alternatives

Resource	No Build Alternative Effects	Build Alternative Effects
<b>Hazardous Materials</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No impact.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> May have impacts associated with excavation of contaminated materials or construction spills.</p> <p><u>Long-Term:</u> There are known locations of soil or groundwater contamination in the study area and these may be present within the Build Alternative footprint. Environmental impacts could occur if contaminated soils and groundwater are not properly managed and are allowed to spread to clean soil, surface water, or groundwater. Contamination due to spills could also occur.</p> <p><u>Beneficial:</u> No substantive benefits.</p> <p><u>Mitigation:</u> BMPs to address/avoid potential spills during construction. Hazardous materials encountered during construction would be mitigated using WSDOT’s Standard Hazardous Materials Impacts and Mitigation Measures table. Areas of soil disturbance within the Tacoma Smelter plume will be screened for arsenic and lead content to inform appropriate worker health and safety measures, and waste handling disposal.</p>
<b>Visual Quality</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No impact.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Impacts to visual resources would typically be greatest during construction due to presence of construction equipment and materials.</p> <p><u>Long-Term:</u> Three primary changes would affect visual quality: added retaining and noise walls, increased pavement width/modified geometry, and loss of existing trees and other vegetation. Impacts would occur largely around the reconfigured Steilacoom–DuPont Road interchange, as well as the new extension of Steilacoom–DuPont Road and the proposed noise walls. Impacts would be negative for some, while being neutral or benefiting others.</p> <p><u>Beneficial:</u> Some neighbors may benefit from walls that screen views of I-5.</p> <p><u>Mitigation:</u> Minimization of tree and shrub removal associated with construction of proposed noise walls. Aesthetic treatments to bridges and walls may be implemented, use of native vegetation in restoration of disturbed areas to maintain visual unity. The aesthetic treatments may provide enhancements to the Garrison Historic District by minimizing views of I-5.</p>
<b>Archaeological and Historic Resources</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No impact.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Primary impacts would be related to noise, construction traffic, vibration, possible limitations on building access.</p> <p><u>Long-Term:</u> No long-term adverse impacts to archaeological or historic resources.</p> <p><u>Beneficial:</u> No substantive benefits.</p> <p><u>Mitigation:</u> None.</p>

**Table 3.2-1 Continued** Summary of Effects for No Build and Build Alternatives

Resource	No Build Alternative Effects	Build Alternative Effects
<b>Section 4(f)</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No impact.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> There would be temporary use of 2.1 acres of the Garrison Historic District, a WHR-listed 4(f) resource during construction of the Build Alternative.</p> <p><u>Long-Term:</u> There would be 3.8 acres of permanent use of the Garrison Historic District, a NRHP eligible and WHR-listed 4(f) resource as a result of the Build Alternative. A total of 64 trees would be removed within the District including 26 in the JBLM Memorial Arboretum.</p> <p><u>Beneficial:</u> No substantive benefits.</p> <p><u>Mitigation:</u> All prudent measures have been considered to minimize harm to 4(f) resources. Tree removal would be mitigated through replanting of trees either within the Arboretum or other locations within the District.</p>
<b>Socioeconomic and Environmental Justice</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> Lacks both connections and transportation options provided by the Build Alternative.</p> <p><u>Beneficial:</u> No property acquisition or construction-related impacts.</p>	<p><u>Construction:</u> Temporary impacts would include dust, noise, equipment emissions and possible traffic interruptions. The City of DuPont and JBLM in the vicinity of the DuPont Gate would experience the greatest intrusion and disruption associated with modifications to the Steilacoom-DuPont Road interchange. Public transit and school bus routing, as well as access to bicycle and pedestrian facilities for users of all ability levels, may be temporarily affected by closures during construction.</p> <p><u>Long-Term:</u> Would generally reduce congestion, improve multimodal connectivity and enhance safety in the study area. The Build Alternative would require easements from JBLM but would not cause any displacements or impacts to community resources.</p> <p><u>Beneficial:</u> Congestion reduction and improve connectivity for residents and businesses throughout the corridor. The Build Alternative would support local economic development plans and provide construction jobs that could benefit all populations.</p> <p><u>Mitigation:</u> Scheduling of road closures would be coordinated with police, fire, emergency services, transit agencies, and school districts. A TMP would be implemented and ongoing communications would occur with local businesses regarding potential access changes and alternate routes. Ongoing focused community outreach through final design and construction of the Build Alternative.</p>
<b>Land Use</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> Not consistent with adopted state, regional, local, and JBLM plans. Existing land uses would likely persist, planned residential and employment development may not materialize, and a worsening of congestion would be experienced.</p> <p><u>Beneficial:</u> No property acquisition or construction-related impacts.</p>	<p><u>Construction:</u> Some short-term road or freeway interchange ramp closures are anticipated that would affect land accessibility.</p> <p><u>Long-Term:</u> The Build Alternative is consistent with local, regional, state, and JBLM plans. It improves traffic operations in support of land use consistent with adopted plans, add non-motorized connections, and eliminate the at-grade railroad crossing west of the existing Exit 119 interchange.</p> <p><u>Beneficial:</u> The Build Alternative would provide enhanced mobility to/from local communities and is consistent with local comprehensive plans.</p> <p><u>Mitigation:</u> Reasonable efforts would be made to ensure traffic flow is maintained during construction. Enhanced signage would be provided to assist with wayfinding after the reconfigured interchange is completed.</p>

**Table 3.2-1 Continued** Summary of Effects for No Build and Build Alternatives

Resource	No Build Alternative Effects	Build Alternative Effects
<b>Utilities</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> No change to existing utilities.</p> <p><u>Beneficial:</u> No disruptions to existing utility services.</p>	<p><u>Construction:</u> Some potential utility disruptions typically lasting only a few minutes during transitions between old and new connections. Solid waste providers would need to modify service routes during construction.</p> <p><u>Long-Term:</u> No long-term impacts related to utilities are expected.</p> <p><u>Beneficial:</u> No substantive benefits.</p> <p><u>Mitigation:</u> Early communication with utility providers during design process. Relocation and/or mitigation plans for existing utilities impacted by the Build Alternative would be prepared collaboratively between the Project team and the utility provider(s).</p>
<b>Economic</b>	<p><u>Construction:</u> No impact.</p> <p><u>Long-Term:</u> Anticipated increased future congestion on I-5, along with planned Amtrak high speed rail service could lead to increased travel delays to/from DuPont. This could result in fewer I-5 drivers stopping in DuPont to patronize local businesses, and an associated decrease in revenue and employment.</p> <p><u>Beneficial:</u> No substantive benefits.</p>	<p><u>Construction:</u> Traffic management plans implemented during ramp construction at the Steilacoom-DuPont Road interchange would continue to maintain access to local businesses minimizing construction-related impacts.</p> <p><u>Long-Term:</u> Increased capacity on I-5 would improve freight mobility. Reconfiguration of the Exit 119 interchange would result in slightly longer travel time to DuPont from I-5 and JBLM and reduced traffic volumes near the existing interchange. This may result in a decrease in activity for some businesses, but the impact may be partially offset due to the lack of similar, competing businesses along I-5 in the vicinity.</p> <p><u>Beneficial:</u> Grade separation and improved mobility associated with the new interchange would enhance access into and out of DuPont and JBLM. Most business owners anticipated that improved capacity, safety, and connectivity would have positive impacts to DuPont area businesses.</p> <p><u>Mitigation:</u> A Traffic Management Plan would be implemented to provide ongoing communications with and accessibility to area businesses.</p>
<b>Indirect and Cumulative</b>	<p><u>Construction:</u> None.</p> <p><u>Long-Term:</u> None.</p> <p><u>Beneficial:</u> None.</p>	<p><u>Construction:</u> None.</p> <p><u>Long-Term:</u> Some indirect effects would result from the reconfiguration of Exit 119 and the widening of I-5. These would cause a minor erosion of quality in the visual environment of the Fort Lewis Garrison Historic District and the Red Shield Inn. The Build Alternative would have a positive cumulative effect on transportation, noise, and socioeconomic and environmental justice in the Project area.</p> <p><u>Beneficial:</u> Improved traffic circulation and grade separation is expected to make the DuPont area more attractive to developers, customers, and residents. Grade separation of the rail line would enhance access. Temporary effects would be realized from the hiring of vendors, purchasing of materials, and employment opportunities associated with construction of the Build Alternative. Cumulative beneficial effects are expected for regional and local transportation. Noise barriers would reduce noise adjacent to the roadway at two locations.</p> <p><u>Mitigation:</u> None.</p>

## 3.3 TRANSPORTATION

The transportation analysis evaluated the near-term (2025) conditions and long-term (2040) performance of the Build Alternative. Overall, the proposed interchange modifications at Steilacoom-DuPont Road and the nearby local street connections would improve safety and ramp operations. The addition of through lanes and an auxiliary lane on I-5 would maintain or improve operational and safety conditions in 2025, and provide some 2040 operational benefits, especially for northbound traffic.

### 3.3.1 How Was Transportation Evaluated?

Recent studies that provide both context for current planning and the improvement alternatives are summarized in Table 1.8-1 and referenced in Appendix C. These studies include an updated *Transportation Technical Memorandum* (June 2020) which provides additional detail regarding the information summarized below.

Consistent with the Build Alternative described in Section 2.4, the transportation study area is primarily focused on I-5 between Mounts Road (Exit 116) and Main Gate (Exit 120) and key local roads that access, parallel, or influence I-5. The focal point of the study area is the Steilacoom-DuPont Road Interchange (Exit 119). Evaluation was extended beyond the overall Project limits, from Mounts Road to SR 512 (encompassing both the North and South Study Areas), to address implementation of HOV operation on the new through lane added in each direction by the Project. A graphic illustration of the new HOV lanes is presented in Figure 2.4-1.

Improvements in the North Study Area are currently under construction and were evaluated in the May 2017 *I-5 JBLM Vicinity Congestion Relief Project Revised Environmental Assessment/FONSI*. Although construction is occurring in phases due to funding availability, performance evaluation of the Build Alternative needs to consider the entire Project limits, including improvements in both the North and South Study Areas. This allows the Project to be considered as a whole, rather than by study area or phase of construction, and best reflects how HOV lanes influence I-5 performance. Therefore, the I-5 configuration as it existed prior to construction of North Study Area improvements (Baseline Condition) was used for traffic modeling comparison with the full corridor Build Alternative. The Baseline Condition consists of three lanes on I-5 in each

direction between Thorne Lane and Center Drive and four lanes in each direction between Center Drive and Mounts Road. Interchange improvements and auxiliary lane improvements currently under construction at Berkeley Street and Thorne Lane (described in Section 2.2) are not included in the Baseline Condition, nor is the additional travel lane currently under construction in the North Study Area. Operation and safety analyses were conducted for existing conditions (2017), as well as the Baseline Condition and the proposed Build Alternative in the AM and PM peak hours for 2025 and 2040.

The short-term (2025) analysis addresses expected traffic conditions that are five years beyond the 2020 analysis included in the 2017 EA and reflects changes in actual/measured traffic volumes from 2013 to 2017. As a result, it may be difficult to make direct comparisons between analysis results for such factors as I-5 travel speeds in this chapter versus those in the 2017 EA. The analysis of traffic operations focused on three areas: the I-5 mainline, ramps to and from I-5 and weaving areas between the ramps, and study area intersections. The analysis complies with WSDOT's traffic operations analysis policies and protocols in place as of the date the analysis began.

### 3.3.2 What Are Existing Transportation Conditions Like in the Study Area?

Two-way traffic volumes on I-5 between Mounts Road and the Main Gate interchange area range from approximately 8,200 to nearly 9,300 vehicle trips in the morning (AM) peak hour and from nearly 8,000 to 9,600 vehicle trips in the evening (PM) peak hour. These heavy traffic volumes reflect the substantial growth in travel demand that has occurred over the past decade and are

**Existing Conditions:** *The I-5 and local street configurations that existed in the fall of 2017 are considered to be the existing conditions for the purposes of this transportation analysis.*

**Baseline Condition:** *The I-5 configuration as it existed prior to construction of North Study Area improvements. This term is used in analysis of future year conditions. The Baseline Condition consists of three lanes on I-5 in each direction between Thorne Lane and Center Drive and four lanes in each direction between Center Drive and Mounts Road.*

characterized by stop-and-go conditions during weekday AM and PM peak periods, as well as summer weekends.

Factors contributing to the chronic traffic congestion in the South Study Area include:

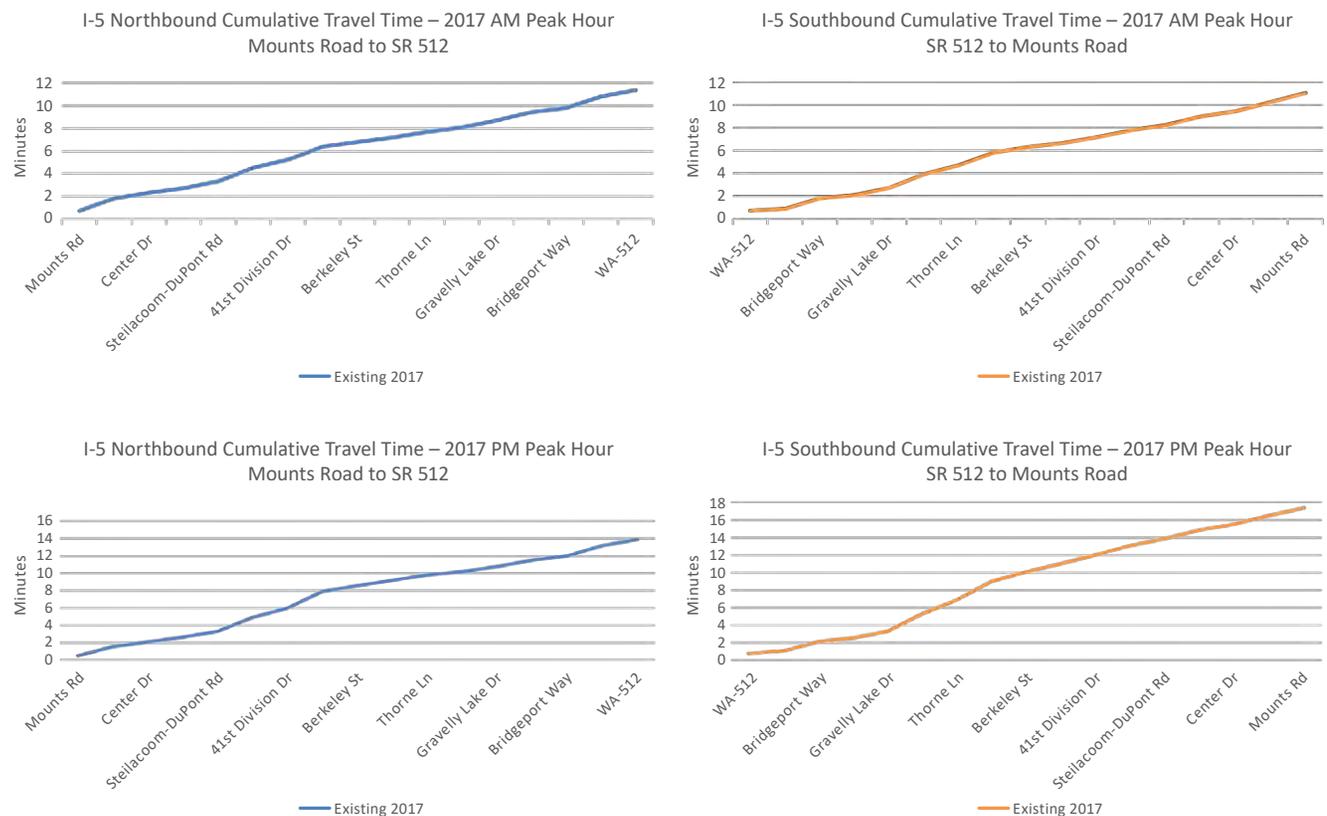
- ◆ Four closely spaced interchanges subject I-5 to high entering and exiting traffic volumes between Mounts Road and 41st Division Drive/Main Gate.
- ◆ Heavy through volumes between Lacey/Olympia and points south, and the Tacoma/Seattle area and points north, representing approximately 50 percent of peak period trips on I-5. This traffic mixes with the interchange traffic worsening congestion in all travel lanes.
- ◆ Drivers using I-5 for local and short distance travel in the study area because there are limited alternative routes.
- ◆ Military base security requirements, environmental, geophysical (such as lakes and Puget Sound), and right of way constraints that limit travel opportunities other than I-5 through and within the area result in drivers using I-5 for local and short distance travel in the study area.
- ◆ Congestion related crashes, especially during peak commute hours.

Existing morning and evening peak traffic performance on I-5 was evaluated using travel time, which is illustrated in Figure 3.3-1. As indicated in the graphic, AM peak hour travel times are very similar in both the northbound and southbound directions, averaging approximately 11 minutes between Mounts Road and SR 512 which equates to free-flow speed. Northbound travel

time is slightly longer in the PM peak hour, averaging about 14 minutes, while southbound PM peak hour travel time averages just under 18 minutes. Congestion levels generally north of the Steilacoom-DuPont Road interchange cause travel speeds to drop to 40 mph or less which increases the overall corridor travel time.

Travel time data were derived from existing travel speed information on I-5 and are strongly related to the level of activity at the study area interchanges. Where entering and exiting activity is high, not all traffic can be accommodated in the outside lane of I-5 at the same time. During periods of high congestion, drivers must merge right from other lanes to exit and entering drivers must merge left to clear the outside lane. This conflict causes vehicles to slow and increases both travel time and the likelihood of crashes.

**Figure 3.3-1 2017 AM and PM Peak Hour Average Travel Time on I-5**



The analysis of existing transportation conditions included traffic operations at intersections where freeway ramps meet local streets at the Steilacoom-DuPont Road and Center Drive interchanges, and other nearby locations. This analysis shows that while most study area intersections are currently operating well, the three intersections at Exit 119 experience peak period congestion as a result of traffic spilling back from one intersection to the next. Additionally, Exit 119 is affected by irregular and unpredictable traffic queues that occasionally spill over from the JBLM DuPont Gate and directly affect traffic queue lengths on the I-5 northbound off-ramp at Steilacoom-DuPont Road. While the most significant queues occur between 5 and 6 AM and are associated with early training activities on the base, queue spillback from the DuPont Gate is often an issue at other times of day.

### What Travel Modes Use the Corridor?

While single-occupant vehicles are predominant, other multimodal services and facilities are available. These include:

- ◆ Transit – Three public transit service providers operate within the study area: Intercity Transit, Pierce Transit, and Sound Transit. During the 2013 weekday PM peak period (3 to 6 PM) nearly 1,100 transit riders traveled on I-5 within the study area.
- ◆ Park-and-Ride Lots – There is one park-and-ride lot within the study area, in the City of DuPont. It is frequently heavily utilized.

- ◆ Transit Stations/Centers – There is one transit station in the study area in DuPont. The station is operated by Sound Transit and is served by two express bus routes and is planned for future (2035) commuter rail service.
- ◆ Vanpools – Vanpool service is provided by Intercity Transit (IT) and Pierce Transit (PT), as well as other transit agencies and private employers. Vanpool activity is substantial during peak travel periods.
- ◆ Rail – Sound Transit owns the existing rail line west of and parallel to I-5 in the study area. BNSF Railway and Tacoma Rail currently use the line, and Amtrak is expected to reinitiate rail passenger service on this line soon.
- ◆ Bicycle and Pedestrian Facilities – Non-motorized facilities are limited in the study area. Bicycles are allowed on I-5 south of the Gravelly Lake Drive interchange (Exit 124). Some of the local arterials and collectors crossing or paralleling I-5 include sidewalks and/or bicycle lanes, but there are no signed routes that provide a direct and continuous alternative to I-5.

### What Are the Existing Safety Issues?

Approximately 88 percent of recent crashes between MP 116.4 (south of Mounts Road) and MP 120.5 (south of Main Gate) occurred on I-5, while 12 percent occurred at the interchanges between Mounts Road and Steilacoom-DuPont Road and nearby segments of cross streets. A summary of the annual crashes by severity on I-5, interchange ramps, and cross-streets is shown in Table 3.3-1.

**Table 3.3-1 Crashes by Severity on I-5 and Interchanges, Mounts Road to Main Gate**

Severity of Collisions <sup>1</sup>	2013-2017 Crashes			Average Annual Crashes	Percentage of Total
	I-5 Mainline	I-5 Interchanges (Ramps and Cross Streets)	Total		
Fatal	2	1	3	0.6	0.4%
Serious Injuries	6	1	7	1.4	0.9%
Evident Injuries	33	3	36	7.2	4.8%
Possible Injuries	146	18	164	32.8	21.9%
Property Damage Only	471	67	538	107.6	71.7%
Unknown	2	0	2	0.4	0.3%
All Crashes	660	90	750	150.0	100%

<sup>1</sup> Source: WSDOT Crash Records for I-5, MP 116.43 to 120.51 for the period January 1, 2013 through December 31, 2017.

Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

**Table 3.3-2 Traffic Growth on I-5 in the JBLM Vicinity**

Scenario	2-Way Average Daily Traffic Volumes on I-5 in Vicinity of JBLM													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2017 Existing	129,000		139,400		137,700		128,600		135,400		N/A		N/A	
2025 Baseline Condition	164,100	Mounts Road	175,300	Center Drive	166,600	Stellacoom-DuPont Road	160,900	41st Division Drive	168,400	Berkeley Street	180,300	Thorne Lane	194,700	Gravelly Lake Drive
2025 Build Alternative	164,500		178,200		171,100		162,000		171,800		161,700		195,600	
2040 Baseline Condition	181,200		193,500		178,800		173,900		180,300		196,800		206,900	
2040 Build Alternative	180,400		192,500		178,700		176,200		181,900		175,800		208,200	

### 3.3.3 Would the Build Alternative Have Long-Term Impacts?

The Build Alternative is designed to improve traffic performance on the I-5 corridor in the vicinity of JBLM. The short-term (2025) and long-term (2040) effects of the proposed Build Alternative on the movement of people and goods compared to the Baseline Condition is summarized below. More detailed information about 2025 and 2040 conditions can be reviewed in the updated *Transportation Technical Memorandum* (June 2020).

#### How Is Traffic Predicted to Grow?

A summary of the estimated daily traffic growth between the Mounts Road interchange and the Main Gate (41st Division Drive) interchange is shown in Table 3.3-2. Key factors evident from review of this data include:

- ◆ In comparison with existing conditions, growth in the I-5 JBLM corridor is expected to increase traffic volumes on I-5 in both the Baseline Condition and Build Alternative.
- ◆ Traffic volumes with the 2025 Build Alternative are anticipated to be slightly higher than the 2025 volumes in the Baseline Condition. This increase in volume is the result of added capacity on I-5 and reduced congestion and reflects growth in both peak and off-peak periods.
- ◆ Substantial traffic growth is anticipated between 2025 and 2040, which would largely occur outside of the AM and PM peak periods. Not shown

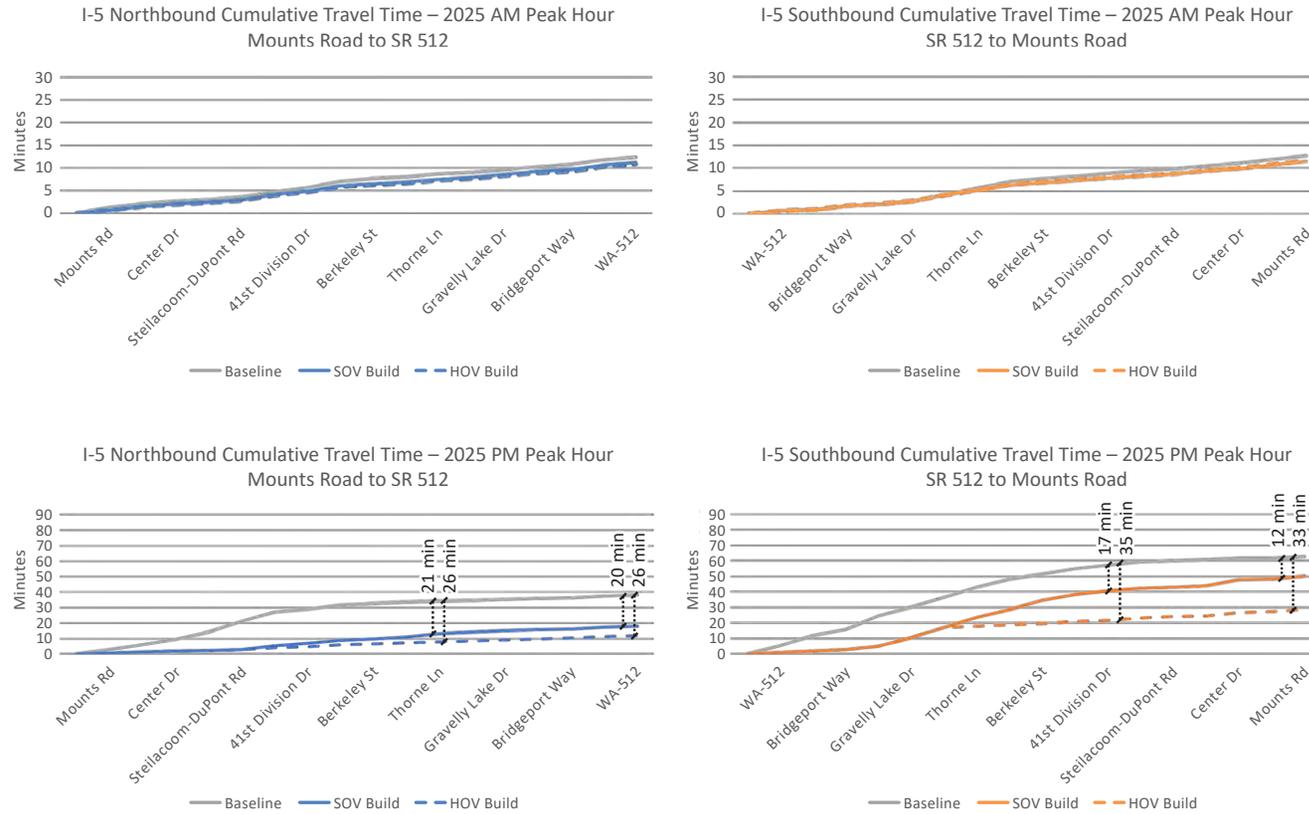
explicitly in this table is the substantial increase in HOV volumes that are expected to occur between these two time periods. For example, in the PM peak hour HOV volumes are expected to increase by 70 percent in the southbound direction between 2025 and 2040, and 40 percent in the northbound direction. The reverse is expected in the AM peak hour.

- ◆ Only a nominal change in daily traffic is anticipated in 2040 between the Baseline Condition and Build Alternative as a result of the congestion expected to occur by 2040.
- ◆ Daily volumes on I-5 between Berkeley Street and Thorne Lane will drop with the Build Alternative in comparison with the Baseline Condition due to the presence of the C-D road system between these two interchanges with the Build Alternative.

#### What Would I-5 Traffic Be Like in 2025?

As shown in Figure 3.3-2, travel times along I-5 through the study area in the 2025 AM peak hour Baseline Condition would be similar to 2017 conditions at 11 minutes for both directions. It should be noted that for purposes of the HOV lane evaluation in this section, the Baseline Condition assumes that no improvements would be made to the entire I-5 corridor through JBLM. Travel times with the Build Alternative are expected to be approximately one minute less.

During the PM peak hour in the northbound direction, travel time for both HOVs and SOVs with the Build Alternative would be substantially less than with the Baseline Condition. Average travel time savings between Mounts Road and

**Figure 3.3-2 2025 AM and PM Peak Hour Travel Times on I-5**

Thorne Lane would be approximately 21 minutes for SOVs and 26 minutes for HOVs. Travel time savings would be similar for HOVs through the entire corridor to SR 512, while northbound congestion in the northern part of the corridor would result in a total travel time savings through the corridor of 20 minutes for SOVs.

During the PM peak hour in the southbound direction, travel time savings would be notably larger for HOVs compared to SOVs. Average travel time savings for HOVs are expected to be about 35 minutes between SR 512 and 41st Division Drive/Main Gate in comparison with the Baseline Condition, and 33 minutes through the entire corridor to Mounts Road. Travel time savings for SOVs are expected to be 17 minutes between SR 512 and 41st Division Drive/Main Gate and 12 minutes to Mounts Road. The lowered level of travel time

savings through the entire corridor would result from southbound congestion levels generally from Steilacoom-DuPont Road south where the freeway would be reduced to three travel lanes.

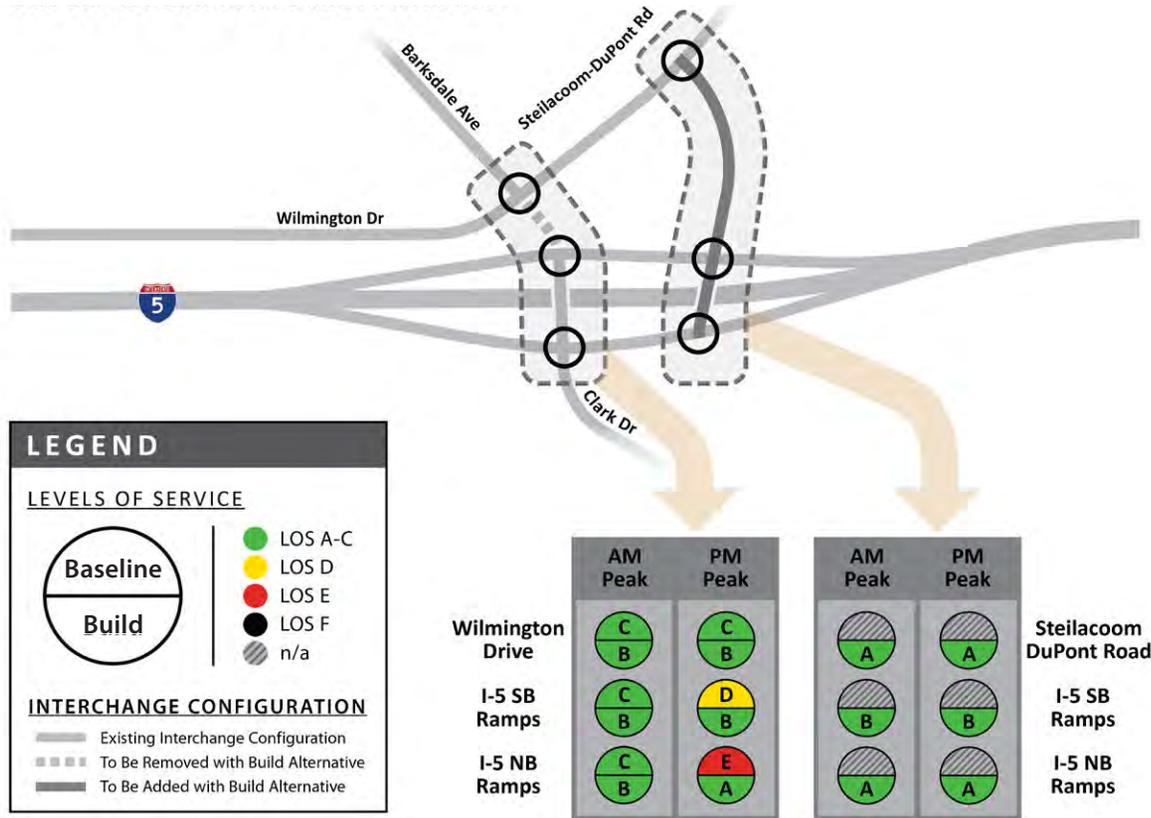
In the Build Alternative, most merging, exiting, and weaving associated with interchanges in the study area is expected to operate at LOS D or better. Interchange performance during the AM peak hour represents a substantial improvement over the Baseline Condition. Exceptions during the AM peak hour would occur:

- ◆ At the northbound off-ramp to Center Drive (LOS F).
- ◆ In the weave between Center Drive and Steilacoom-DuPont Road (LOS E).
- ◆ In the exit at Berkeley Street (LOS E).

At the northbound off-ramp to Center Drive, the cross-section would go from four general purpose (GP) lanes (Baseline Condition) to three GP lanes and one HOV lane (Build Alternative). Consequently, the forecasted SOV volumes must spread over three lanes instead of four with the Build Alternative resulting in an increase in the number of vehicles in the outside lane. These increased conflicts with exiting traffic would lead to LOS F performance.

LOS E and F conditions are expected at most northbound interchanges from Main Gate north. LOS E conditions are expected in the southbound weaving area between Thorne Lane and Berkeley Street.

**Figure 3.3-3** 2025 AM and PM Peak Hour Levels of Service for Baseline and Build Alternative



During the PM peak hour LOS E conditions are expected at three locations, one southbound and two northbound.

Figure 3.3-3 compares the Baseline Condition and Build Alternative 2025 AM and PM peak hour operating performance at intersections near the Exit 119 interchange. In the Baseline Condition, all study area intersections are expected to operate at an acceptable level of service D or better except for the I-5 northbound ramp intersection with Steilacoom-DuPont Road in the 2025 PM peak hour. LOS E performance is expected at this location. With the Build Alternative, all intersections would operate at LOS B or better.

**GRAVELLY-THORNE CONNECTOR DESIGN CHANGES**

As evaluated in the 2017 EA, the North Study Area Build Alternative included a southbound only motor vehicle lane and shared use path between Gravelly Lake Drive and Thorne Lane (to be known as the Gravelly-Thorne Connector or GTC). Since publication of the Revised EA, a southbound auxiliary lane is being added to I-5 between Gravelly Lake Drive and Thorne Lane as part of the construction contract. This auxiliary lane provides additional capacity for this link, making the benefit of the proposed GTC motor vehicle lane negligible. Therefore, the GTC motor vehicle lane is no longer included in the planned improvements. Instead, the shared use path would be constructed to provide a non-motorized facility between Gravelly Lake Drive and Tillicum. The shared use path would also allow for emergency vehicle access. The environmental evaluation conducted for the GTC is still consistent for the design changes, so no further environmental analysis is needed.

With elimination of the GTC motor vehicle lane, traffic would continue using the I-5 southbound auxiliary lane between Gravelly Lake Drive and Thorne Lane. The shift of the relatively low GTC projected volumes to the I-5 southbound auxiliary lane would have barely noticeable impact during the peak travel hours.

### What Would I-5 Traffic Be Like in 2040?

As shown in Figure 3.3-4, northbound travel times along I-5 through the study area during the AM peak hour would be similar to 2025 conditions with 12 minutes in the Baseline Condition and approximately 11 minutes for SOVs and HOVs with the Build Alternative. In the southbound direction travel times in the Baseline Condition would be approximately 16 minutes longer than for SOVs and HOVs with the Build Alternative. This is due to the reduction in lanes south of Thorne Lane where the freeway drops from four lanes to three.

During the PM peak hour in the northbound direction, travel time for both HOVs and SOVs with the Build Alternative would be substantially less than with the Baseline Condition. Average travel time savings between Mounts Road and Thorne Lane would be approximately 17 minutes for SOVs and 26 minutes for HOVs. Travel time savings would be similar for HOVs through the entire corridor to SR 512, while northbound congestion in the northern part of the corridor would result in a total travel time savings through the corridor of 15 minutes for SOVs and 25 minutes for HOVs.

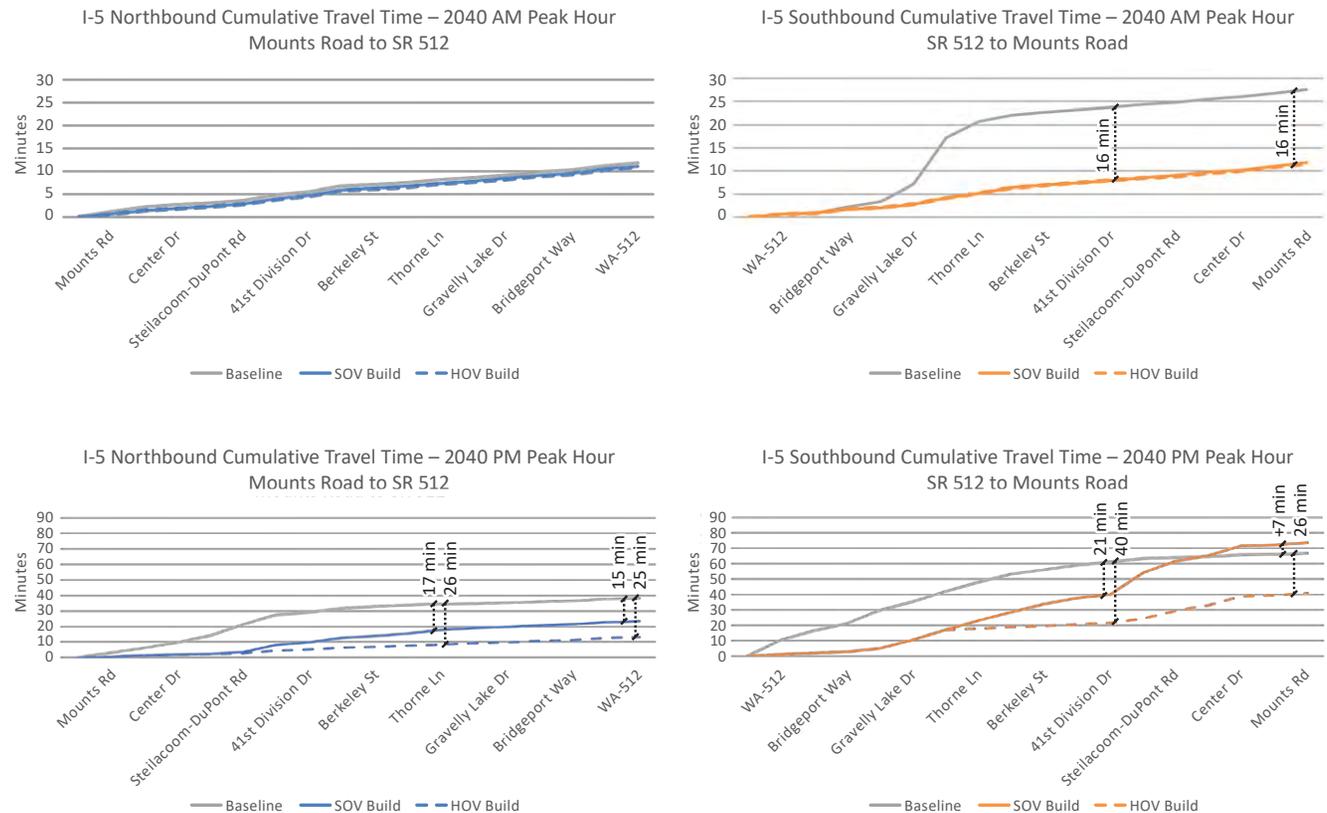
During the PM peak hour in the southbound direction, travel time savings would be notably larger for HOVs in comparison with SOVs. Average travel time savings for HOVs are expected to be about 40 minutes between SR 512 and 41st Division Drive/Main Gate in comparison with the Baseline Condition, and 26 minutes through the entire corridor to Mounts Road. Travel time savings for SOVs are expected to be 21 minutes between SR 512 and 41st Division Drive/Main Gate. However, due to increased southbound congestion in the southern end of the corridor,

travel time through the entire corridor for SOVs with the Build Alternative are expected to be about 7 minutes longer than in the Baseline Condition.

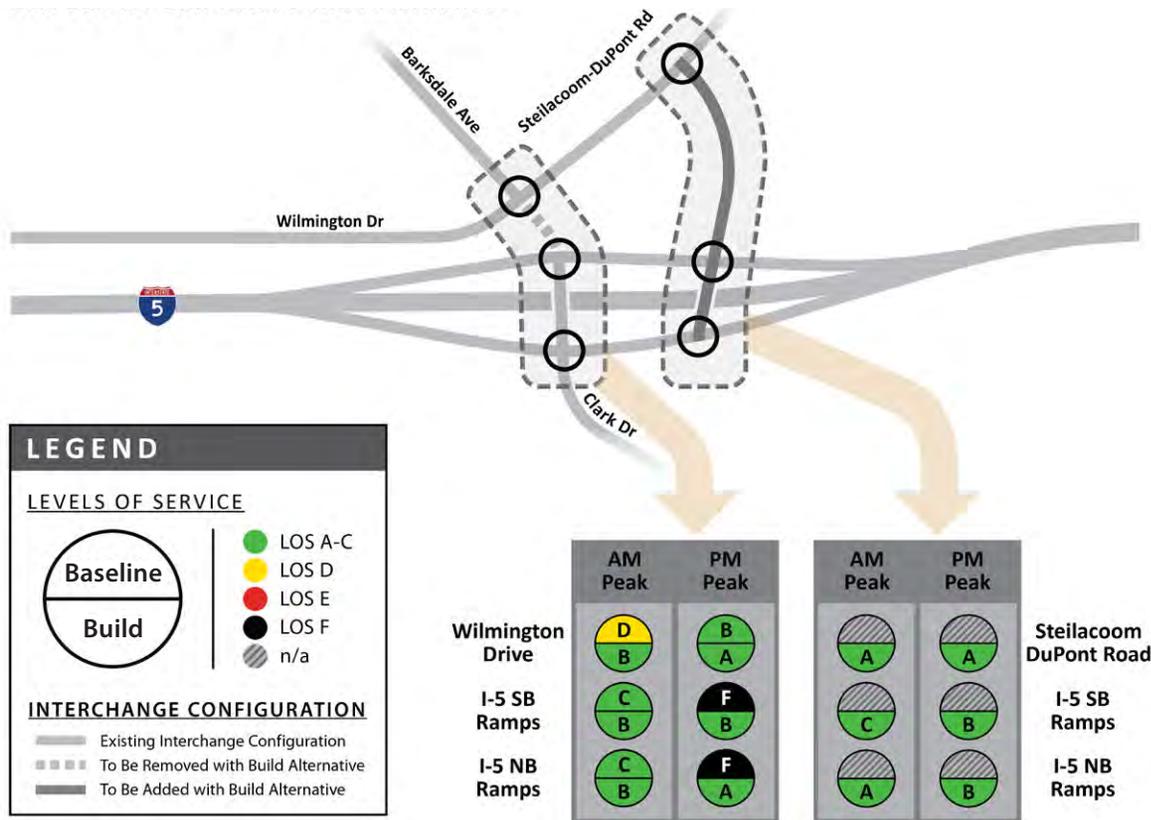
In the Build Alternative, most merging, exiting, and weaving associated with interchanges in the study area is expected to operate at LOS D or better. Exceptions operating at LOS E during the AM peak hour would occur:

- ◆ Southbound in the weaving area between Gravelly Lake Drive and Thorne Lane.
- ◆ Northbound at the Center Drive exit.
- ◆ Northbound in the weaving area between Center Drive and Steilacoom-DuPont Road.

**Figure 3.3-4 2040 AM and PM Peak Hour Average Travel Times on I-5**



**Figure 3.3-5** 2040 AM and PM Peak Hour Levels of Service for Baseline and Build Alternative



During the PM peak hour LOS E conditions are expected at two locations, one southbound and one northbound.

In most locations interchange operations are expected to improve with the Build Alternative in 2040 as compared to 2025. A higher proportion of traffic shifting from the GP lanes into the HOV lane would reduce the magnitude of conflicting traffic movements between on/off-ramps and the adjacent through travel lane.

Figure 3.3-5 compares the Baseline Condition and Build Alternative 2040 AM and PM peak hour operating performance at intersections near the Exit 119 interchange. In the Baseline Condition, all study area intersections are expected to operate at an acceptable level of service D or better during the AM peak hour, while LOS F is expected at the northbound and southbound ramp

termini intersections during the PM peak hour. With the Build Alternative, all intersections would operate at LOS C or better.

### 3.3.4 How Would the Build Alternative Affect I-5 Safety?

A safety analysis was conducted to estimate the number of crashes in the Baseline Condition and Build Alternative in 2025 and 2040. The crash analysis for 2025 was quantitative. The 2040 analysis was qualitative due to uncertainties about safety technology, the presence of autonomous vehicles, and other factors which make quantitative analysis increasingly uncertain. A reduction in I-5 crashes is expected with the proposed Build Alternative improvements. A similar reduction is also expected on the ramp segments and at the ramp termini intersections. Ramp termini intersection conflicts at Exit 119 would be reduced in the Build Alternative through separation of JBLM destined traffic from local traffic, and reduced number of turning movements at the signals. The operation of the new travel lanes on I-5 for HOV use is not expected to fundamentally alter these conclusions. However, there exists the possibility

that HOV operations may contribute to crashes in two ways:

1. Limited available research indicates that narrow buffers between HOV and GP lanes could result in an increase in crashes, possibly attributable to a high-speed differential between these two types of travel lanes as vehicles merge from one type to the other.
2. Operation of HOV lanes in the I-5 JBLM corridor will have a definitive end point in each direction which may contribute to crashes as HOVs transition back into the GP lanes.

Research in California on limited access HOV lanes indicated that crashes tended to congregate around the access/egress locations.

**Table 3.3-3** 2025 and 2040 AM and PM Peak Hour Two-way Volumes on Local Streets near the Steilacoom-DuPont Road Interchange – Baseline Condition vs. Build Alternative

Location	Baseline Condition				Build Alternative			
	2025 AM	2025 PM	2040 AM	2040 PM	2025 AM	2025 PM	2040 AM	2040 PM
Wilmington Drive south of Steilacoom-DuPont Road	485	835	605	1,055	510	770	510	1,060
Barksdale Avenue west of Wilmington Drive	200	320	205	330	215	330	220	285
Steilacoom-DuPont Road total over I-5 <sup>1</sup>	1,415	1,805	1,560	2,165	1,725	2,310	1,840	2,945
Steilacoom-DuPont Road south of Center Drive	1,390	1,495	1,595	1,520	1,650	1,600	1,820	1,500
Center Drive north of Wilmington Drive	1,405	1,465	1,500	1,840	1,155	1,455	1,330	1,705

<sup>1</sup> Note that the Baseline Condition includes a three-lane bridge over I-5 while the Build Alternative would include two four-lane bridges.

### 3.3.5 How Would the Build Alternative Affect Local Streets and Intersections?

The reconfigured interchange at Steilacoom-DuPont Road would affect local travel patterns and change how drivers access I-5 from the local street system. Traffic on local roads would also be affected by the amount of congestion on I-5. As congestion increases on I-5, more traffic typically shifts to local roads. In addition, some drivers may use alternate interchanges to reach their destination, depending on the level of congestion on I-5. Traffic changes caused by the reconfiguration of the Steilacoom-DuPont Road interchange and the addition of lanes on I-5 are presented in Table 3.3-3. The Build Alternative would provide an additional travel lane to cross I-5 and would eliminate or modify some existing freeway connections compared to the Baseline Condition. Thus, traffic volumes on the bridges and their approach roads should be expected to increase, while volumes could be expected to go down in other locations.

### 3.3.6 How Would the Build Alternative Affect Transit and Transportation Demand Management (TDM)?

Changes to the existing level of transit service are not included in the Build Alternative, but the added HOV lanes on I-5 would benefit the operations, speed, and reliability of transit and various TDM activities such as vanpooling and ridesharing. Added HOV lanes would serve carpools, vanpools, and buses. The Build Alternative would improve transit travel times compared to the

Baseline Condition, particularly during the PM peak hour. Speeds would be more stable on I-5 and interchange operations would be improved. The Build Alternative would result in shorter PM peak travel times in 2025 compared to the Baseline Condition. Travel time savings during the 2025 PM peak hour would be approximately 33 minutes for southbound HOV travelers between SR 512 and Mounts Road. Northbound HOV travelers would experience travel time savings of 26 minutes with the 2025 Build Alternative. When combined with improved traffic operations at the Exit 119 interchange, this would allow for better transit reliability and schedule adherence on I-5 through the JBLM area, as well as incentivize a shift from SOV to HOV modes of travel.

In 2040, the similar travel time changes would be present, with the southbound direction experiencing an HOV travel time savings in the order of 26 minutes and the northbound direction expected to see a travel time savings of 25 minutes.

### 3.3.7 How Would the Build Alternative Affect Bicycles and Pedestrians?

The proposed Build Alternative would include a shared use bicycle and pedestrian pathway across I-5 as part of the reconfigured Exit 119 interchange. Pedestrian crossing signals and crosswalks would be provided to facilitate the movement of non-motorized users across the interchange. The improved connections provided by the Build Alternative would allow persons stationed or working at JBLM, but living in adjacent communities, the opportunity

to walk or bicycle to duty station or work activities or to patronize nearby businesses.

### 3.3.8 What Construction Impacts Would Result from the Build Alternative?

The new bridge at Exit 119A would be located slightly south of the existing one but would necessitate ramp and roadway relocation during construction. Generally, the relocations would be minor and near existing ramps and roads. All ramp and roadway functions would be maintained throughout construction except for short-term closures as described below. As construction of the new interchange progresses, traffic would be routed onto interim alignments to allow construction of new roadway elements where they overlap with existing roadways.

Work on I-5 that requires temporary lane closures would take place at night during times when traffic is lightest. Full closures of I-5 would be required for demolition of the existing Steilacoom-DuPont Road overpass and during bridge girder setting for the new overpass structures. During full closures, I-5 traffic would be restricted to one lane in each direction and detoured onto off-ramps and on-ramps to bypass the work areas. Construction of the new I-5 bridges over Pendleton Avenue would require constructing temporary alignments within the permanent I-5 footprint to maintain three lanes in each direction on I-5 throughout the duration of bridge construction.

The Build Alternative is intended to be implemented through a Design-Build contract. With this contracting method, the Design-Builder will complete the final design and define means and methods for its construction. As part of defining the Build Alternative, the likely means and methods for construction have been evaluated, including maintaining roadways to support traffic demand during construction. The following description is a result of that evaluation.

Existing ramps at the Steilacoom-DuPont Road interchange would be maintained in similar configurations until the north part of the new interchange and the new extension of Steilacoom-DuPont Road are constructed. At that point, some of the ramp functions would be shifted to the north half of the new interchange (Exit 119B). Construction of Exit 119A would be completed in phases because part of the new overpass overlaps with the existing overpass. One half of the new bridge would be built next to the existing bridge to maintain

interchange ramp functions and access to JBLM. After the first half of the new bridge is opened to traffic, the existing structure would be removed and the second half of the new bridge would be completed. Short-term ramp and intersection closures would be necessary when interchange ramp movements are shifted from one location to another. These short-term closures would occur either overnight for small switchovers or on a weekend when more involved grading and paving is necessary. The on-ramp to southbound I-5 from Steilacoom-DuPont Road would likely need to be closed for up to five days to complete grading at the new Exit 119A bridge. At times when the JBLM DuPont Gate would be impacted by these closures, traffic would be detoured to nearby gates in consultation with JBLM. During ramp closures, detours would be provided on the State highway system to provide connectivity.

#### *Local Street Closures during Construction*

The new Steilacoom-DuPont Road alignment location would minimize the potential for long-term temporary closures of local streets because it is being constructed on currently undeveloped land. However, some short-term closures (likely at night) may be needed to connect traffic from the existing Steilacoom-DuPont Road to the new intersection. The existing Steilacoom-DuPont Road connection to I-5 would not be closed until the new Steilacoom-DuPont Road connection to Exit 119B interchange is open to traffic.

Access to Clark Road and the JBLM DuPont Gate would always be maintained except for short-term closures for traffic shifts during construction. These closures would match with regular nighttime DuPont Gate closures to the extent possible.

#### *Effects of Construction on Existing Transit Service and Bus Routing*

There are currently no public transit routes that pass through the Steilacoom-DuPont Road interchange, nor along local streets in the vicinity of the interchange (including Steilacoom-DuPont Road, Wilmington Drive, Barksdale Avenue or Clark Road). However, several public transportation carriers currently travel along I-5 through the interchange area. Additionally, long-haul carriers such as Greyhound and Bolt Bus use I-5 through the Project area for trips between the Seattle area and destinations to the south. All public transportation service on I-5 will pass through the construction work zone and may be affected by construction-related activity.

There are currently several Steilacoom Historic School District bus routes that pass through the Steilacoom-DuPont Road interchange or through the existing intersection of Steilacoom-DuPont Road with Barksdale Avenue/Wilmington Drive. There are approximately 16 school bus trips through the intersection of Steilacoom-DuPont Road with Barksdale Avenue/Wilmington Drive every school day. Twelve of these trips also pass through the Exit 119 interchange. This service would be impacted, along with other users of these roads, by construction activity at the Steilacoom-DuPont Road interchange and along Steilacoom-DuPont Road. Impacts could include some delays, but there is no expectation that current school bus routes would need to be reconfigured.

### **Construction Haul Routes**

With secure military installations on both sides of the Project area, I-5 would be the primary route used to access the construction sites. SR 512, SR 510, Steilacoom-DuPont Road, and Nisqually Road may also be used to haul construction materials to and from the construction area, depending on the location of material sources, off-site manufacturing areas, and staging areas used by the selected contractor.

### **Implementation of HOV Lanes**

I-5 does not currently have HOV lanes within the full study area. Upon completion of widening I-5 within the South Study Area, the new travel lanes would be striped and signed as HOV lanes. This would include re-striping and signing of the new lanes currently under construction within the North Study Area. The North Study Area I-5 lanes will be initially opened as general purpose lanes because the segment length would be too short to be effective as an HOV lane. With completion of the South Study Area widening, the HOV lanes would be long enough to function effectively. Since HOV lanes do not exist to the north or south, transitions from general purpose to HOV lanes would be striped and signed at each end of the study area.

### **3.3.9 How Would Construction Traffic Impacts Be Addressed?**

Specific mitigation measures would be identified as part of the Design-Build contract process. Mitigation measures that could be implemented to manage construction traffic include:

- ◆ Allowing the contractor to close only one ramp at a time.
- ◆ Providing advance communications to all affected parties about closures including times and dates.
- ◆ Signing for detour routes to optimize routing and minimize impacts to residential streets and neighborhoods.

In order to identify mitigation measures tailored to construction sequencing and methods, transit agencies, local governments, school districts, JBLM, and others as appropriate would be invited to participate in development of the draft mitigation approach prior to advertisement of the Design-Build contract for the improvements. This draft would be used to develop specific contract requirements for the Design-Build contract documents. The draft approach would define strategies to manage traffic through the Project's construction work zones during each construction phase. The Design-Builder would be responsible for developing a Transportation Management Plan (TMP) prior to the beginning of construction activities. The TMP would be monitored and amended over time as necessary during the Design-Build contract.

### **3.3.10 Would the Build Alternative Cause Unavoidable Adverse Transportation Impacts?**

No unavoidable adverse impacts are anticipated. Designed to improve I-5 operations in the near-term, the Build Alternative is expected to reduce congestion while accommodating more demand along portions of the I-5 mainline and area interchanges in 2025. Mobility would be improved for area residents, persons needing access to the adjacent military installations, and the general traveling public with the proposed Build Alternative improvements. With I-5 widened through the Build Alternative area, transit service and freight service would be more reliable and have shorter travel times.

In the southbound direction, the proposed Build Alternative would transition the added travel lane back to the existing three lane cross-section at the Mounts Road interchange. This transition of travel lanes requires drivers to merge into fewer lanes, which would increase congestion during peak traffic periods in the area between the Mounts Road and Main Gate interchanges, as compared to the Baseline Condition.

### 3.4 AIR QUALITY

Highway improvement projects have the potential to affect air quality by changing traffic volumes and/or vehicle operating characteristics at specific locations. The air quality impacts of highway construction projects range from intensifying existing air pollution problems to improving ambient air quality. Potential air quality impacts of the South Study Area improvements were included in the *I-5 Mounts Road to Thorne Lane Corridor Improvements Air Quality Technical Memorandum* (October 2016). The air quality analysis in this section addresses the status of the Build Alternative's conformity with the NAAQS and transportation conformity rules. This section also includes a discussion of Project effects on greenhouse gas emissions.

*The U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and the Puget Sound Clean Air Agency (PSCAA) all regulate air quality. The EPA sets air quality standards, which are found in the National Ambient Air Quality Standard (NAAQS), and has oversight authority over the PSCAA and Ecology. PSCAA has local authority for the regulation and permitting of stationary sources and construction emissions. Ecology regulates mobile sources such as cars and trucks.*

#### 3.4.1 What are the Primary Air Quality Pollutants of Concern?

The primary pollutants from motor vehicles that affect air quality in the South Study Area are:

- ♦ **Hydrocarbons (HC) and Nitrogen Oxides (NO<sub>x</sub>)** – These pollutants can combine in a complex series of reactions triggered by sunlight and heat to produce ozone and nitrogen dioxide (NO<sub>2</sub>). Because these reactions take place over a period of several hours, maximum concentrations are often found far downwind of the original source. The Build Alternative is in an area that meets air quality standards for these pollutants, and no conformity determination is required.
- ♦ **Carbon Monoxide (CO)** – An analysis of carbon monoxide (CO) impacts was conducted as part of the October 2016 Air Quality Technical Memo for existing and future years at six study area intersections as part of conformity demonstration for the Project. Since then, the requirement to

**Table 3.4-1 Annual Air Quality Data Summary for Particulates (PM<sub>2.5</sub>)**

Year	3 Year Average at 98th Percentile	3 Year Average Annual Mean
2006	42.7	10.6
2007	43.1	10.2
2008	44.2	9.6
2009	45.7	9.8
2010	37.7	8.8
2011	34.9	8.3
2012	28.3	7.5
2013	31.7	7.9
2014	30.8	7.5
2015	31.8	7.4
2016	28.2	7.0
2017	31.0	7.5

*Source: Puget Sound Clean Air Agency's PM<sub>2.5</sub> Monitoring Station located at 7802 L Street S., Tacoma, July 2018; <https://www.pscleanair.org/DocumentCenter/View/3337/Air-Quality-Data-Summary-2017>*

demonstrate CO conformity has ended for the Puget Sound region and no further analysis is necessary.

- ♦ **Particulate Matter (PM<sub>2.5</sub>)** – This pollutant is comprised of particulates with a diameter of less than 2.5 micrometers. The South Study Area is located outside of the Tacoma PM<sub>2.5</sub> maintenance area. Thus, no analysis of conformity of PM<sub>2.5</sub> with the NAAQS is required. For information purposes, Table 3.4-1 documents recent annual air quality data collected for PM<sub>2.5</sub> at the monitor nearest the Build Alternative – Puget Sound Clean Air Agency's (PSCAA) PM<sub>2.5</sub> monitor in Tacoma. This data illustrates that levels of PM<sub>2.5</sub> have dropped over the past decade and more.

*Maintenance Area is an area that has a history of not meeting air quality standards for a particular air pollutant, but is now meeting the standards and has a maintenance plan for monitoring levels of that pollutant and ensuring continued conformity to the appropriate standards.*

- ◆ **Particulate Matter (PM<sub>10</sub>)** – This pollutant is comprised of particulates with a diameter of less than 10 micrometers. PM<sub>10</sub> particulates are coarse particles, such as windblown dust from fields and unpaved roads. Automobiles are not regarded as significant sources of PM<sub>10</sub>. Nationwide, highway sources account for less than seven percent of particulate matter emissions. PM<sub>10</sub> emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Because emissions of PM<sub>10</sub> from automobiles are very low, there is no reason to suspect that traffic in the Project area will cause air quality standards for particulate matter to exceed the NAAQS. PM<sub>10</sub> effects of the Build Alternative would be largely limited to airborne dust from construction activity.
- ◆ **Mobile Source Air Toxics (MSATs)** – In the 2007 report, *Control of Hazardous Air Pollutants from Mobile Sources*, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA). These are: 1) acrolein, 2) benzene, 3) 1,3-butadiene, 4) diesel particulate matter plus diesel exhaust organic gases (diesel PM), 5) formaldehyde, 6) naphthalene, and 7) polycyclic organic matter. While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules.

FHWA's *Updated Interim Guidance Update on Mobile Sourced Air Toxic Analysis in NEPA Documents* (FHWA, 2016) groups projects into the following categories: exempt projects and projects with no meaningful potential MSAT effects (requires no analysis); projects with low potential MSAT effects (requires qualitative analysis); and projects with higher potential MSAT effects (requires quantitative analysis). FHWA defines "Projects with Higher Potential MSAT Effects" as projects that "add capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year." Because the Build Alternative's traffic volumes are estimated to be well over 140,000, an MSAT analysis was completed for the entire Project area as part of the October 2016 *Air Quality Technical Memorandum*<sup>1</sup>. The study area for the MSAT analysis

<sup>1</sup> It should be noted this analysis was based on prior FHWA analysis for MSAT study dated 2014.

was defined as I-5 between the Steilacoom-DuPont Road interchange and the Gravelly Lake Drive interchange, and the major roadways crossing I-5 on which traffic volumes would be affected by the Build Alternative.

EPA has recently updated guidance for the analysis of MSAT levels including a major revision to the model used in the 2016 analysis. The new model includes new data and emission standards. New data is provided for emissions, vehicle fleet and activity (including light- and heavy-duty vehicles), exhaust and evaporative emissions, and fuel effects. Data has also been updated to reflect current trends in vehicle sales, population, age distribution, and vehicle miles traveled (VMT). As indicated in guidance published by FHWA, even if VMT were to increase by 45 percent from 2010 to 2050<sup>2</sup>, "a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for a same time period." This is a result of ongoing improvements in motor vehicle technology as mandated by current EPA control programs.

### 3.4.2 Would the No Build Alternative Impact Air Quality?

#### *Criteria Pollutants*

As noted in Section 4.4.1, no analysis of potential air quality impacts is necessary for primary pollutants of concern within the South Study Area including hydrocarbons, NO<sub>x</sub>, Carbon Monoxide or PM<sub>2.5</sub>. Since the No Build Alternative does not include improvements in the South Study Area beyond those previously addressed in the October 2016 *Air Quality Technical Memorandum*, there would be no construction-related impacts on PM<sub>10</sub>. Effects of the No Build Alternative on Mobile Source Air Toxics are discussed in the following paragraph.

#### MOBILE SOURCE AIR TOXIC (MSAT) EMISSIONS

Based on results from the quantitative MSAT analysis conducted in 2016, emissions with the No Build Alternative are predicted to be slightly lower than the existing condition. This is due to implementation of EPA's vehicle and fuel regulations coupled with fleet turnover which, over time, will cause substantial reductions in region-wide MSAT levels in comparison with today.

<sup>2</sup> "Updated Interim Guidance on Mobile Source Air Toxic Analysis on NEPA Documents," Federal Highway Administration, October 18, 2016.

### 3.4.3 Would the Build Alternative Impact Air Quality?

#### Criteria Pollutants

Based on the air quality analysis completed for the proposed improvements, the Build Alternative would not cause or contribute to any violation of the NAAQS for any of the priority pollutants including CO or PM<sub>2.5</sub>. Potential impacts on PM<sub>10</sub> are discussed in Section 3.4.4 under construction-related impacts.

#### MOBILE SOURCE AIR TOXIC (MSAT) EMISSIONS

A quantitative analysis of MSAT emissions was performed in 2016 to identify potential effects of the Project. Emissions in the Build Alternative are predicted to be slightly higher than the No Build Alternative. This is due to an expected increase in Vehicle Miles of Travel (VMT) with the Build Alternative. Any reduction in emissions as a result of reduced congestion and improved traffic flow are expected to be offset by the increase in emissions resulting from a higher VMT. However, over time and on a regional basis, substantial reductions in region wide MSAT levels in comparison with today are expected as a result of EPA's vehicle and fuel regulations, coupled with fleet turnover.

### 3.4.4 How Would Construction Affect Air Quality?

Construction of the Build Alternative has the potential to create short-term localized increases in particulate matter (fugitive dust) and small amounts of other construction-related air emissions such as CO and NO<sub>x</sub> from construction equipment, however, these increases would be short in nature and would be temporary during construction. Dust would be associated with demolition, land clearing, ground excavation and fill activities, and construction of new lanes and interchanges. Particulate emissions would vary from day to day depending on the level of activity, specific operations, and weather conditions. During rainy periods particulate emissions would be lower than in dry weather.

In addition to particulate emissions, heavy trucks and gas- or diesel-powered construction equipment would generate CO and NO<sub>x</sub> in exhaust emissions. These emissions would be limited to the immediate area surrounding the construction site and would contribute a small amount compared to automobile traffic in the Build Alternative area. During paving activities volatile organic compounds and odorous compounds would be present on

the Build Alternative site. Odors might be detectable to some people near the construction sites but would be diluted as distance from the site increases.

### 3.4.5 What Mitigation Measures Are Proposed for Air Quality Effects?

Since the Build Alternative is located entirely within Pierce County, particulate emissions (in the form of fugitive dust during construction activities) are regulated by the Puget Sound Clean Air Agency (PSCAA). The operator of a source of fugitive dust is required to take reasonable precautions to prevent fugitive dust from becoming airborne and must maintain and operate the source to minimize emissions. Construction impacts would be minimized by incorporating mitigation measures per the WSDOT standard specifications into the construction specifications for the South Study Area. WSDOT will comply with the procedures outlined in the Memorandum of Agreement between WSDOT and the PSCAA for controlling fugitive dust and will employ the following types of actions where warranted by site conditions:

- ◆ Design construction phases to keep disturbed areas to a minimum.
- ◆ Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris.
- ◆ Spray exposed soil with water or other dust suppressant.
- ◆ Use only allowed dust suppressants.
- ◆ Plant vegetative cover as soon as possible after grading.
- ◆ Minimize dust emissions during transport of excavated or fill materials by wetting loads or by ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks.
- ◆ Promptly clean up spills of transported material on public roads.
- ◆ Restrict traffic onsite to reduce soil upheaval and the tracking of material onto roadways.
- ◆ Place quarry spall aprons or wheel washers where trucks enter public roads to remove particulate matter from vehicles before it is carried offsite.

- ◆ Locate construction equipment and staging areas away from sensitive receptors as practical and in consideration of potential effects on other resources.
- ◆ Develop streamlined staging/work zone areas to minimize construction equipment back-ups and idling.
- ◆ Minimize hours of operation near sensitive receptor areas and route the diesel truck traffic away from sensitive receptor areas.
- ◆ Minimize delays to traffic during peak travel times.
- ◆ Educate vehicle operators to shut off equipment when not in active use to reduce idling.
- ◆ Use cleaner fuels and newer equipment with add-on emission controls as appropriate.

### 3.4.6 How Would the Build Alternative Affect Greenhouse Gas Emissions?

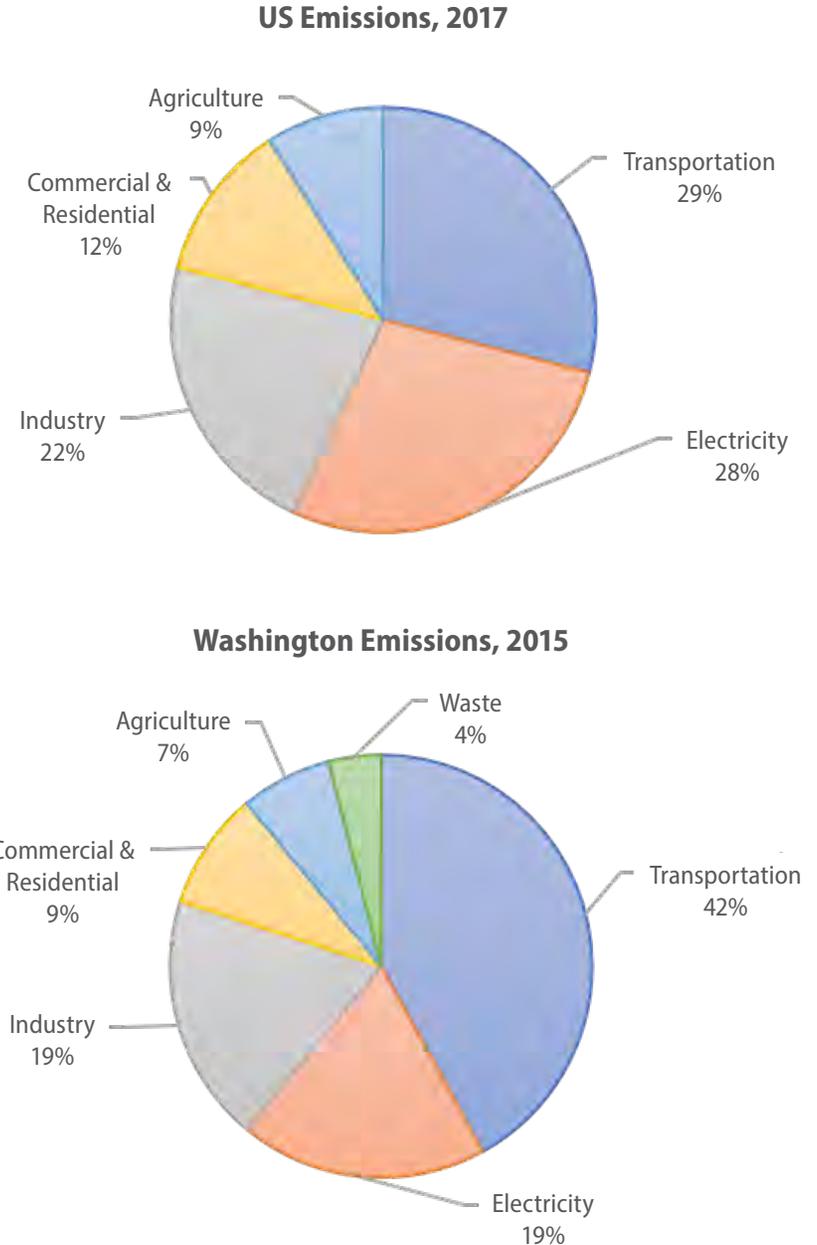
Vehicles emit a variety of gases during their operation; some of these are greenhouse gases (GHGs). The GHGs associated with transportation are water vapor, carbon dioxide (CO<sub>2</sub>), methane, and nitrous oxide. Any process that burns fossil fuel releases CO<sub>2</sub> into the air. Carbon dioxide makes up the bulk of the emissions from transportation.

Vehicles are a significant source of greenhouse gas emissions and contribute to global warming. National estimates show that the transportation sector (including on-road vehicles, construction activities, airplanes, and boats) accounts for almost 30 percent of total domestic CO<sub>2</sub> emissions. In Washington State, transportation accounts for over 40 percent of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total GHG emissions in Washington are fossil fuel combustion in the residential, commercial, and industrial sectors. Figure 3.4-1 shows the gross GHG emissions by sector, nationally<sup>3</sup> and for Washington State<sup>4</sup>.

<sup>3</sup> "Inventory of U.S. Greenhouse Gas Emissions and Sinks", US Environmental Protection Agency, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

<sup>4</sup> "Washington State Greenhouse Gas Emissions Inventory: 1990-2015 Report to the Legislature", Publication 18-02-043, Washington State Department of Ecology, December 2018

**Figure 3.4-1** GHG Emissions by Sector, National (2017) and Washington State (2015)



WSDOT works in partnership with numerous organizations to implement projects that reduce transportation greenhouse gas emissions across the state. Many of these actions reduce emissions by providing active transportation alternatives (including bicycle and pedestrian facilities), improving highway system efficiency, or improving access to alternative fuels.

### ***What is WSDOT's Approach to Addressing Climate Change at the Project Level?***

GHG emissions from a single project action are usually very small. However, overall, users of the transportation system contribute close to half of the state's GHG emissions (see Figure 3.4-1). WSDOT believes transportation GHG emissions are better addressed at the regional, state, or transportation systems level where multiple projects can be analyzed in the aggregate. It is recognized that most existing regional or statewide plans do not yet provide the necessary emissions analysis to put the proposed Build Alternative into a larger context. It is also recognized that the public has an interest in these issues.

### ***Would the Build Alternative Affect GHG Emissions?***

State and federal investments in transportation projects are made to improve the multimodal transportation network, and to address expected future needs associated with growing travel demand. In general, project-level actions that can help reduce greenhouse gas emissions include:

- ◆ Reducing stop-and-go conditions.
- ◆ Improving roadway speeds to a moderate level.
- ◆ Improving intersection traffic flow to reduce idling.
- ◆ Creating more safe and efficient freight movement.
- ◆ Expanding transit and non-motorized options for travelers.
- ◆ Increasing the reliability of transit and HOV travel times.
- ◆ Increasing vegetation density over pre-project conditions to sequester carbon.

The Build Alternative would improve traffic operations at study area intersections and along the I-5 mainline, thereby reducing traffic congestion and the rate of expected collisions. By reducing chronic traffic congestion throughout the South Study Area, vehicles would be able to operate at consistent and moderate speeds where they run most efficiently. Safety improvements would reduce non-reoccurring congestion. New travel lanes that add capacity to the freeway and improve traffic weaving and merging conditions would reduce collisions along the corridor. Fewer collisions would lead to reductions in periodic traffic congestion, thereby also reducing emissions.

### ***How Would Emissions Be Minimized during Construction?***

Construction of the Build Alternative is currently planned to last approximately two years from 2021 to 2023. The initial construction traffic management approach includes strategic timing (like night work) to continue moving traffic through the area and reduce backups to the traveling public to the maximum extent possible. WSDOT would work with the Design-Build Contractor to set up active construction areas, staging areas, and material transfer sites in a way that reduces standing wait times for equipment. WSDOT would work with partnering stakeholders to promote ridesharing and other commute trip reduction efforts for employees working on the Build Alternative.

### **3.4.7 Would the Build Alternative Have Unavoidable Adverse Impacts?**

The Build Alternative in the South Study Area would not have unavoidable adverse effects on air quality that could not be mitigated.

## 3.5 NOISE

Noise is generally defined as unwanted sound. Highway congestion relief projects have the potential to create noise impacts on the surrounding community. The potential for adverse impacts is greatest where there are noise sensitive land uses such as residential areas, places of worship, schools, parks, and golf courses.

Highway noise is composed of sounds generated by vehicle engine and exhaust systems, tires, and brakes. Other contributors to highway noise include traffic volumes and speed, the percentage of heavy trucks on the roadway, defective mufflers, the type of pavement and its condition, and the terrain adjacent to the highway. Vegetation, earthen berms, barriers, and buildings affect noise levels, as does distance from the road.

### 3.5.1 How Were Noise Impacts Evaluated?

A traffic noise analysis is required whenever a Type I project is federally funded or requires FHWA approval. A Type I project is one that includes construction of a new highway or roadway, increases the number of traffic lanes, significantly realigns (horizontal or vertical) an existing highway, or makes significant changes to the existing topography adjacent to the roadway. The Build Alternative would include a new interchange at Exit 119 with significant changes in the height of the overpass and therefore meets the requirement for a detailed noise study.

#### *How Is Traffic Noise Measured?*

Sound is generated on streets and highways by motor vehicles. The relative loudness of sound is described in units called decibels (dB), a measure of sound pressure on a logarithmic scale. The human ear does not respond to all frequencies or changes in noise levels equally. As a result, sound levels (measured in dB) are adjusted to better reflect how an average person hears. The adjusted sounds are called “A-weighted levels” (or dBA). The A-weighted decibel scale begins at zero and represents the threshold of human hearing. Typical noise levels begin as soft as normal breathing at 10 dBA which is barely audible. Normal conversation at 3 feet away is 60 dBA while highway traffic is typical at 70 dBA at 50 feet. Noise levels over 80 dBA are typically described as annoying. Perception of loudness varies from person to person, so there is no precise definition of loudness. Subjectively, a 10-dBA change in noise level

is judged by most people to be approximately a doubling of loudness (e.g. an increase from 50 dBA to 60 dBA causes the loudness to double). A 3-dBA increase is a barely perceptible increase.

Traffic noise is averaged over peak traffic periods and expressed as an equivalent noise level (Leq). Thus, traffic noise conditions are generally discussed in terms of hourly average weighted noise levels in decibels, or Leq dBA.

#### *How Are Traffic Noise Impacts Identified?*

The FHWA has established criteria for identifying when noise impacts occur and when abatement should be considered. These Noise Abatement Criteria (NAC) are identified for varying land activity categories. FHWA defines a traffic noise impact for a land use category as a predicted traffic noise level that approaches or exceeds the NAC in the table below, or a substantial increase above the existing noise levels, but leaves the definition of “approach” and “substantial increase” to the individual states. The WSDOT 2011 Traffic Noise Policy and Procedures Manual defines “approach” as 1 dBA below the FHWA NAC and a “substantial increase” as an increase of 10 dBA or more over the existing noise levels, even if it does not approach the FHWA NAC (WSDOT 2012).

#### *How Was the Noise Study Area Determined?*

The 2016 Noise Report used a starting point of 650 feet from the existing edge of pavement along I-5 for the noise study area. This study area was reduced to 500 feet or less in some locations because the noise measurements indicated that all noise levels above the impact threshold were contained within this area. The Build Alternative footprint for the South Study Area is decreased from what was evaluated in the 2016 Noise Report so impacts are not expected to exceed the study area in the previous analysis. Therefore, the 2018 Supplemental Noise Report used the same study area as the 2016 Noise Report.

#### *What Are Current Land Uses in the Study Area?*

Land uses in the South Study Area include single- and multi-family dwelling units, an emergency 911 Call Center, the JBLM Fire Department, two hotels, and commercial uses. Near the new Exit 119 interchange, west of I-5, there are two hotels and a large apartment complex. The historic DuPont neighborhood is also located to the west of the new interchange, along with lafrati Park and

Sellers Park and Lake. Other land uses west of I-5 include an active railway, the historic Lewis Army Museum, storage facilities, and undeveloped lands.

Land uses east of I-5 on JBLM property include commercial and office uses, single-family and multi-family residential units, the 911 Call Center, the JBLM Fire Department, and the JBLM Family Resource Center. Near the new interchange land use is mainly commercial except for a historic Quartermaster Gasoline Filling Station (Gas Station) and JBLM Memorial Arboretum, which are located just north of the Clark Road entrance to the base. Located just north of the historic Gas Station are the 911 Call Center and the JBLM Fire Department. Residential land use is located along most of 9th Division Road, between Pendleton Avenue and Idaho Avenue. There are additional multi-family structures and a park and community center between Idaho Road and Colorado Avenue. North of Colorado Avenue is a large area of duplex structures in the Davis Hill neighborhood. The Davis Hill neighborhood is located on a hillside that is elevated above I-5.

### How Was the Noise Analysis Conducted?

A supplemental noise analysis was performed for the South Study Area utilizing more detailed topographic information and the proposed Build Alternative for Exit 119. The previous noise discipline report (June of 2016) identified two noise walls within the South Study Area that were potentially feasible and reasonable:

- ◆ The Greenwood Noise Wall (Noise Wall 2) to address noise in the JBLM housing area along Idaho and Colorado Avenues.
- ◆ The Davis Hill Noise Wall (Noise Wall 3) to address noise levels in this JBLM housing area.

Confirmation of the need for noise walls is dependent on identification of a Build Alternative. The supplemental noise analysis compared, verified, and identified traffic noise impacts resulting from the proposed Build Alternative and evaluated future noise levels with and without noise abatement measures.

**Table 3.5-1 FHWA Noise Abatement Criteria by Land Use**

Activity Category	Activity Criteria in Hourly Leq (dBA)		Evaluation Location	Activity Description
	FHWA NAC	WSDOT NAC		
Category A	57		Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
Category B*	67		Exterior	Residential (single and multi-family units)
Category C*	67		Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
Category D	52		Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
Category E*	72		Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
Category F	--		--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
Category G	--		--	Undeveloped lands that are not permitted

\* Includes undeveloped lands permitted for this activity category.

The primary FHWA categories applicable to the study area are Categories B, C, and E, which includes exterior noise levels at residential land uses, the JBLM Fire Department, the 911 Call Center, and the two hotels. Undeveloped parcels, regardless of zoning, are not considered noise-sensitive uses and, therefore, do not require a traffic noise impact analysis; however, undeveloped parcels that have an approved building permit at the time the Project has been publicly announced are analyzed based on the proposed use.

The FHWA approved noise model (TNM2.5) was used to characterize the existing noise environment and predict future traffic noise levels with the No Build and Build Alternatives. TNM2.5 accounts for roadway and receiver location and roadway geometry, traffic volumes and speeds, intersection control, vehicle classifications, and surface and topographic features affecting noise propagation. From these data, the model calculates hourly equivalent sound levels (Leq dBA) from vehicular traffic. The PM peak traffic hour on weekdays has the highest total traffic volumes and, therefore, was used throughout the analysis to ensure the worst-case noise levels were predicted.

Noise measurements were taken at 70 locations representing 128 residences, two hotels, one park, the JBLM Fire Department, the 911 Call Center, the Memorial Arboretum and Historic Gas Station, and several commercial structures. The study area was divided into three areas for the purpose of the supplemental noise analysis: the Exit 119 area, the Greenwood neighborhood, and the Davis Hill neighborhood. These areas, and the noise measurement locations, are shown in Figure 3.5-1.

### 3.5.2 What Are Existing Noise Conditions in the Study Area?

Traffic from I-5 is the primary noise source in the study area and results in existing noise levels above the 66 dBA WSDOT Noise Abatement Criteria at some locations. Other sources of noise include traffic on local streets, JBLM flight operations, rail activity, and JBLM artillery operations. This document addresses only the noise associated with freeway traffic on I-5 and its effects on noise-sensitive land uses in the study area.

### What Areas Are Currently Experiencing Noise Impacts?

The noise study identified three analysis areas where sensitive noise receivers are present: the Exit 119 area, the Greenwood neighborhood and the Davis Hill neighborhood. The noise conditions in each analysis area are described below and shown in Figures 3.5-2 and 3.5-3.

#### EXIT 119 AREA

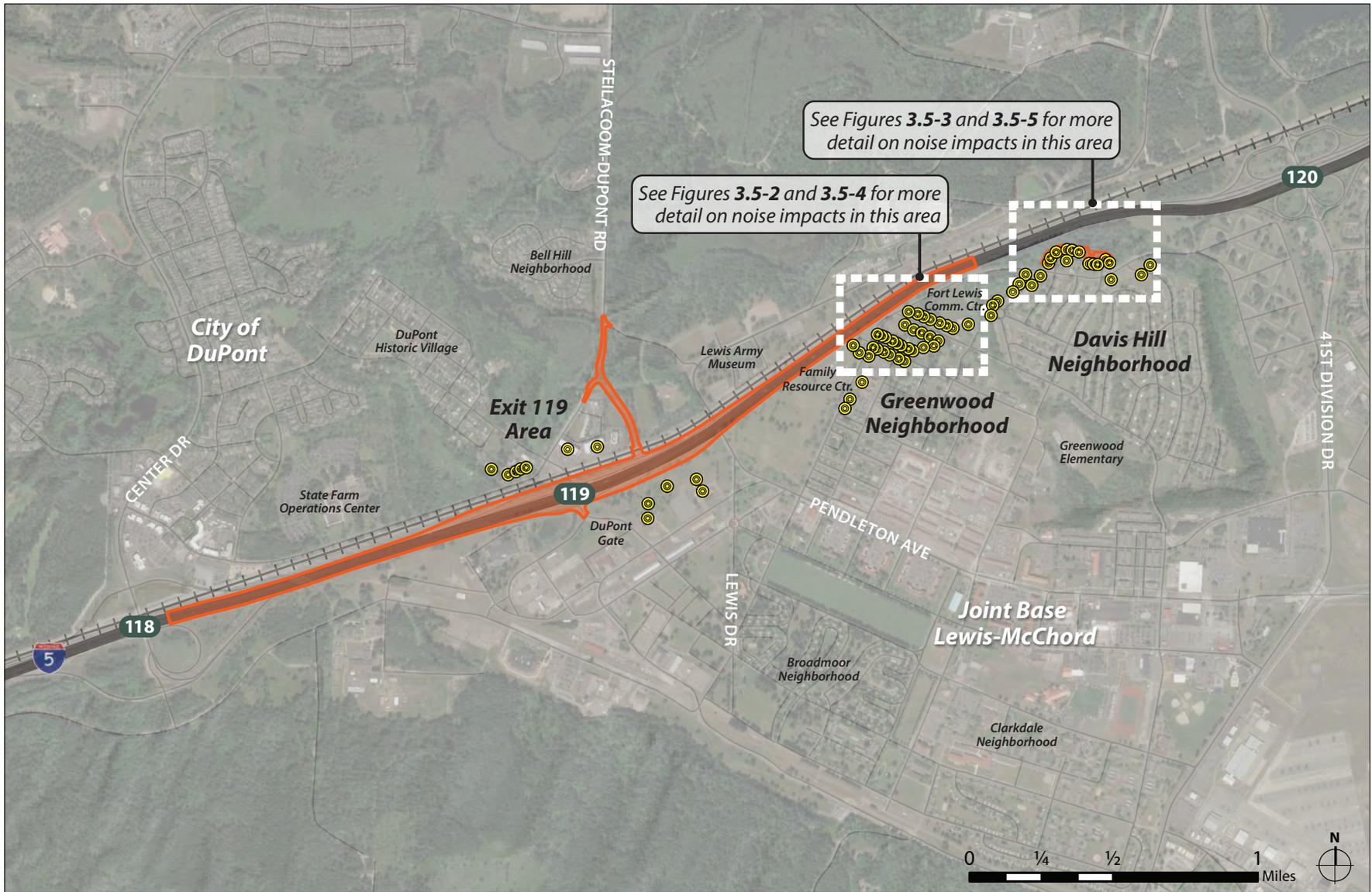
This area represents both sides of I-5 south of Pendleton Avenue. On the west side of I-5 noise receivers in the area include single family homes near Barksdale Avenue, the Wilmington Village Apartments, and two hotels. On the east side of I-5 the area is completely within JBLM. Noise receivers on the east side of I-5 include the Fort Lewis Memorial Arboretum, the historic Stone Station building, the JBLM Fire Department and 911 Call Center. Existing noise levels ranged from 58 to 65 dBA Leq. No residences or other noise sensitive uses meet or exceed the NAC in this portion of the study area; therefore, consideration of noise abatement is not required.

#### GREENWOOD NEIGHBORHOOD

The highest noise levels were found in the Greenwood neighborhood within JBLM. Within this neighborhood 35 sites were monitored representing 54 residential units, one park, and several commercial sites. Noise levels ranged from 60 to 73 dBA Leq. Twenty-one residences in the Greenwood neighborhood currently have noise levels which meet or exceed the NAC, and therefore warrant consideration of noise abatement. The Fort Lewis Community Center and historic Red Cross Hostess House (now the Family Resource Center) are in the Greenwood neighborhood analysis area.

#### DAVIS HILL NEIGHBORHOOD

The Davis Hill neighborhood is entirely residential and extends from the Fort Lewis Community Center and Park to North 11th and North 12th Streets. The neighborhood is on the top of a hill above I-5. Twenty-three locations were monitored representing 33 residential units (18 duplexes, one fourplex, one triplex, and eight single family residences). Noise levels ranged from 58 to 72 dBA Leq. Seven of the 23 sites meet or exceed the NAC with levels ranging from 67 to 72 dBA Leq.

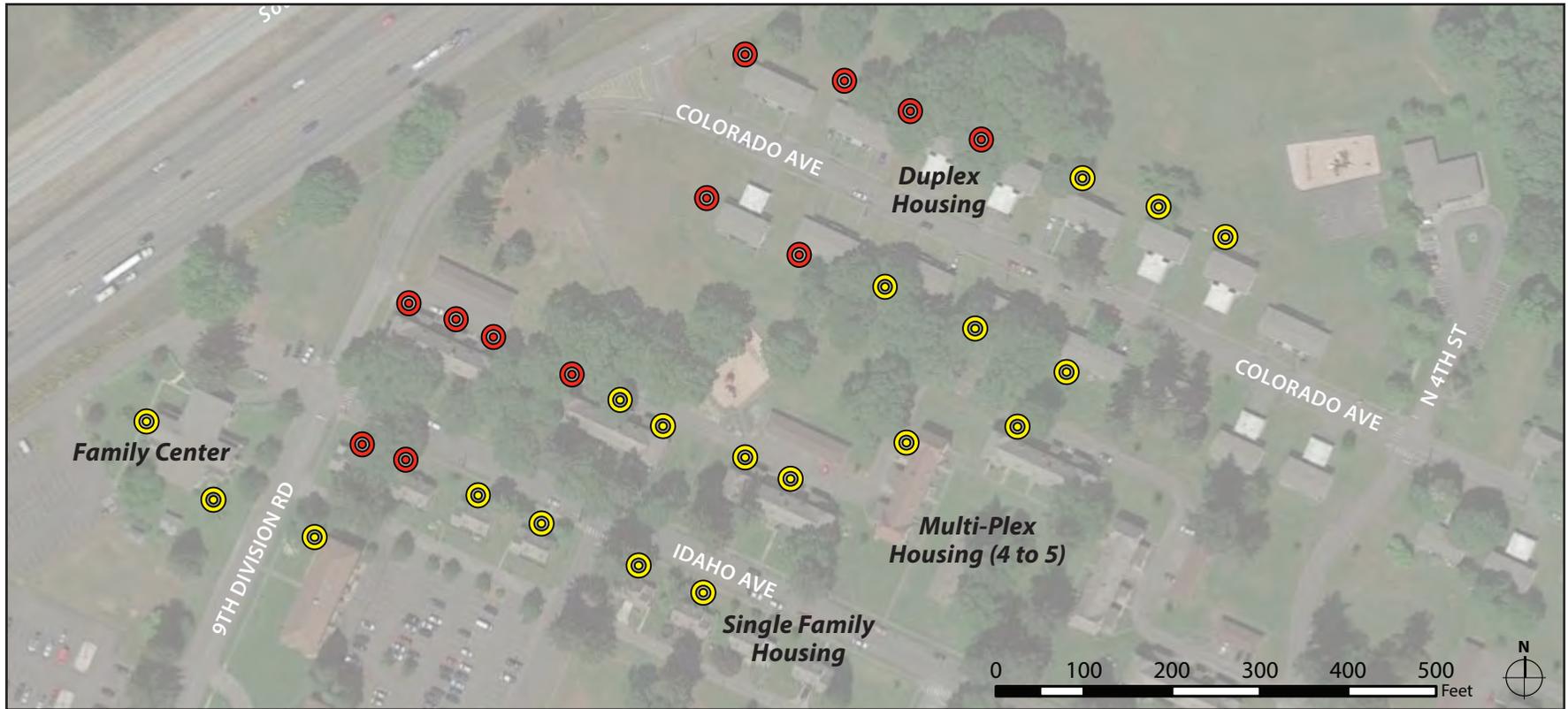


- Build Alternative Footprint
- Noise Receiver Location

**INTERCHANGES**

- Center Drive interchange
- Steilacoom-DuPont Road interchange
- Main Gate interchange

**Figure 3.5-1**  
*Noise Receiver Locations*



#### NOISE RECEIVER LOCATIONS

- ⊙ Receivers with Impacts
- ⊙ Receivers without Impacts

**Figure 3.5-2**

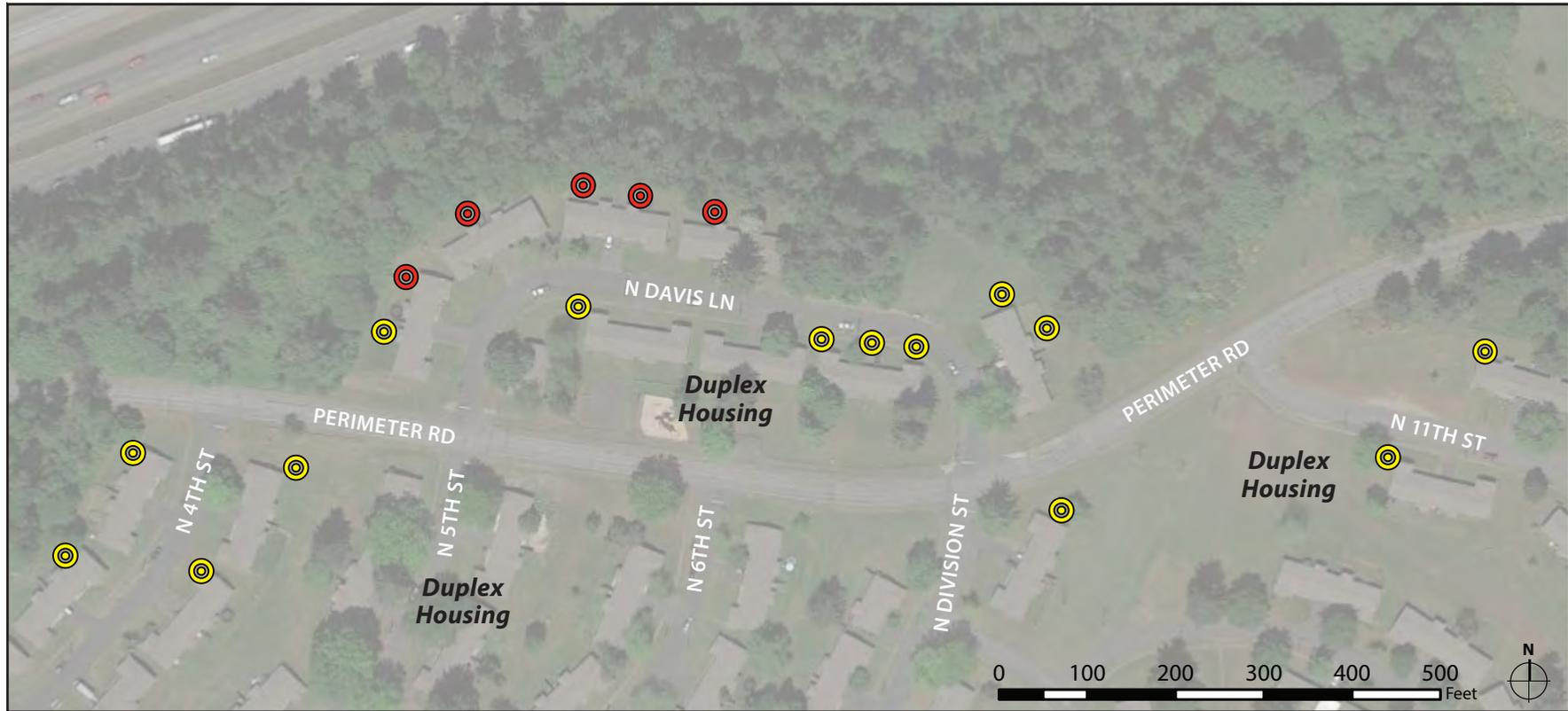
*Noise Receivers with Impacts, Greenwood Neighborhood – Existing Conditions*

### 3.5.3 What Noise Impacts Would Occur with the No Build Alternative?

Noise levels were modeled for the No Build condition using traffic volumes projected for 2040 with no changes to any of the roadways in the Project corridor. Like existing conditions, the 2040 modeled traffic noise levels for the No Build Alternative in residential portions of the South Study Area would range from 58 to 72 dBA Leq. All residences (28) that currently exceed the NAC would continue to exceed it in the No Build Alternative. Roadway traffic noise levels under the No Build Alternative would not result in a noticeable change in noise levels compared to existing conditions. Most receivers in proximity to

I-5 would remain unchanged or increase by one to three dB over existing noise levels. Such changes are typically not discernible to the human ear.

One residence in the Greenwood neighborhood and three residences in the Davis Hill neighborhood would experience noise level increases of 5 or 6 dB. These increases would likely be perceptible to the human ear.



**NOISE RECEIVER LOCATIONS**

-  Receivers with Impacts
-  Receivers without Impacts

**Figure 3.5-3**  
*Noise Receivers with Impacts, Davis Hill Neighborhood – Existing Conditions*

**3.5.4 Would the Build Alternative Have Noise Impacts?**

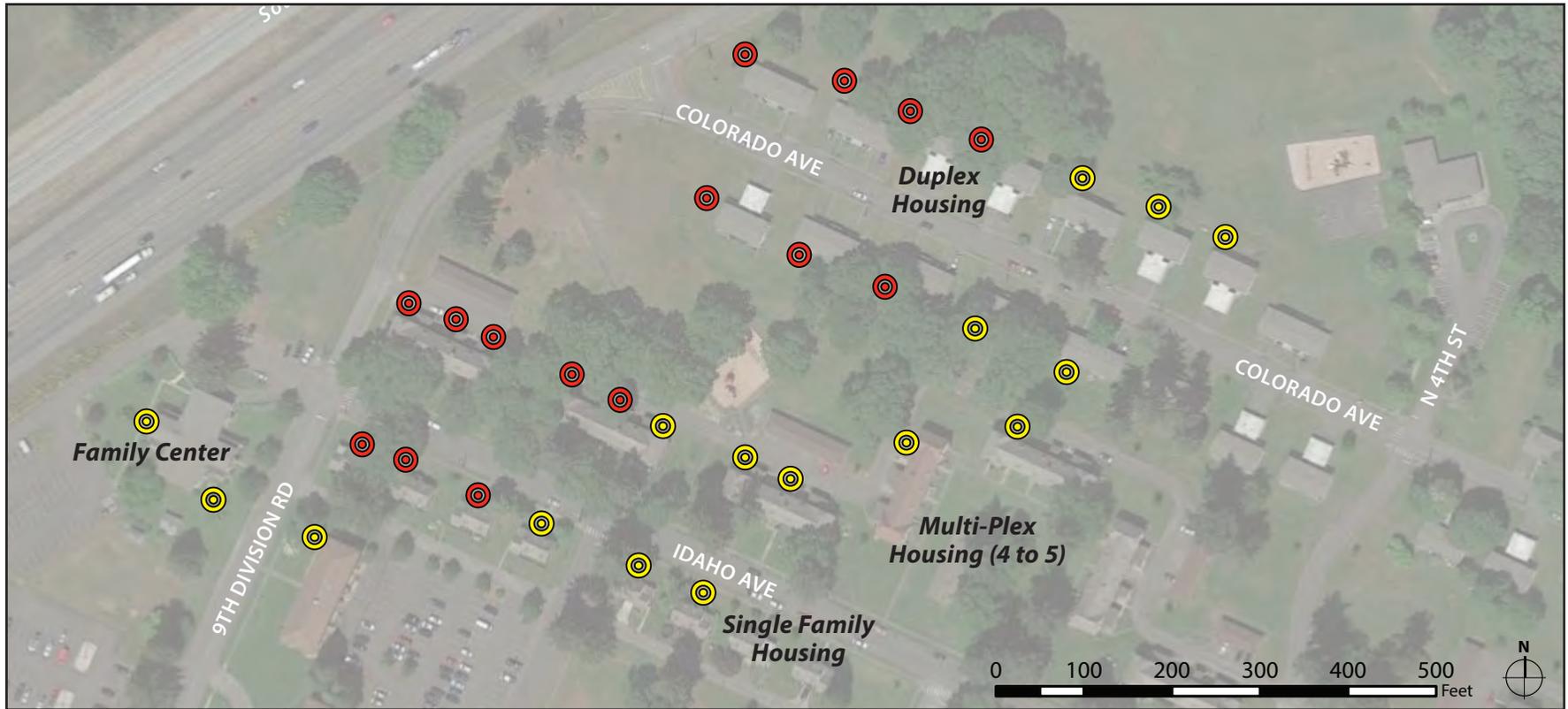
Future traffic noise levels are predicted to range from 58 to 75 dBA Leq during the PM peak hour. With the Build Alternative, 35 residential units would exceed the NAC in the PM peak hour, an increase of seven compared to the No Build Condition. Five of the new impacts are in the Greenwood neighborhood and two are in the Davis Hill neighborhood.

The grade-separated overpass would require construction of retaining walls to accommodate the new higher on and off ramps. The retaining walls provide a noise benefit in the Exit 119 area by shielding the adjacent land from traffic

noise on I-5. Anticipated noise conditions in the Build Alternative for each analysis area is summarized below and shown in Figures 3.5-4 and 3.5-5.

**EXIT 119 AREA**

Noise levels are predicted to fall in the Exit 119 area with construction of the Build Alternative. On the west side of I-5 noise reductions of 3 to 5 dB are predicted at the two hotels at Barksdale Station due to the shielding effects of the new ramps on mainline I-5. On the east side of I-5, the proposed elevated ramps and 8-foot-high security wall shield traffic noise, resulting in predicted noise levels up to 3 dBA lower near the Historic Arboretum and 1 to 2 dB at the JBLM Fire Station and 911 Call Center.



#### NOISE RECEIVER LOCATIONS

- Receivers with Impacts
- Receivers without Impacts

**Figure 3.5-4**

*Noise Receivers with Impacts, Greenwood Neighborhood – Build Alternative*

#### GREENWOOD NEIGHBORHOOD

The Build Alternative would result in an increase in traffic noise levels of 1 to 2 dB compared to the No Build Alternative. Noise levels are predicted to range from 61 to 75 dBA Leq, and 26 of the 54 residences evaluated are predicted to meet or exceed the NAC. This reflects five additional residences exceeding the NAC compared to the No Build Alternative. Noise levels at the Fort Lewis Community Center remain below the NAC in the Build Alternative.

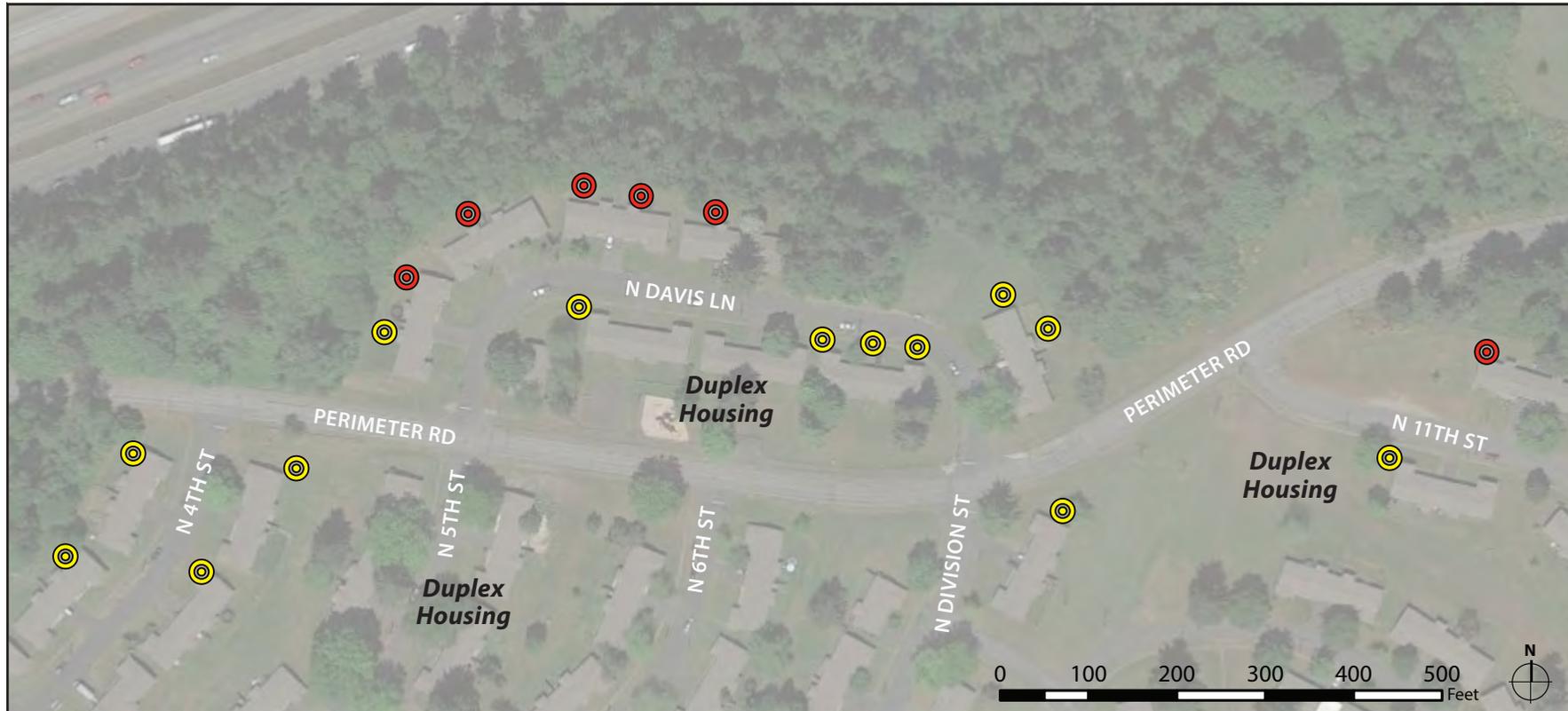
#### DAVIS HILL NEIGHBORHOOD

Noise levels in the Davis Hill neighborhood are expected to increase by up to 2 dB, with future noise levels ranging from 58 to 73 dBA Leq. Nine residences are

predicted to exceed the NAC in the Build Alternative, two more than meet the NAC under existing conditions.

#### 3.5.5 Would the Build Alternative Have Construction Related Impacts?

Construction noise impacts refer to the noise levels generated by the construction equipment and activities that are required to construct the Build Alternative. Construction noise effects are temporary and would cease after the Build Alternative has been completed. Typical activities during construction would involve structure demolition, excavation, bridge and retaining wall



**NOISE RECEIVER LOCATIONS**

-  Receivers with Impacts
-  Receivers without Impacts

**Figure 3.5-5**  
*Noise Receivers with Impacts, Davis Hill Neighborhood – Build Alternative*

construction activities, placement of embankment material, pavement grinding and removal, and utility relocation.

The most constant noise source at construction sites is typically internal combustion engines, generators, and compressors. Engine powered equipment includes excavation equipment, material-handling equipment and stationary equipment. Mobile equipment operates at varying noise levels, while stationary equipment, such as generators and compressors, operate at sound levels that are fairly constant over time at one location. Trucks associated with construction often affect more receivers because they travel around within the construction area. Other noise sources would include impact equipment,

which could be pneumatically powered, hydraulic, or electric. The typical noise range of construction equipment is from 68 dBA to 95 dBA at 50 feet from the sources. The use of jack hammers, pavement and hydraulic breakers, and excavators can increase the noise up to 98 dBA at 50 feet from the source.

Traffic noise and construction noise are exempt from property line noise limits during daytime hours, but noise limits still apply to construction noise at night (between 10 PM and 7 AM). At night, construction noise must meet Washington State Department of Ecology property line regulations that set limits based on the Environmental Designation for Noise Abatement (EDNA) of

the land use: residential (Class A), commercial (Class B), and industrial (Class C) (WAC 173-60-040).

### 3.5.6 How Would Impacts of the Build Alternative Be Minimized or Mitigated?

Roadway projects in Washington State must consider noise abatement when the noise levels reach 66 dBA or greater. Under the Build Alternative, 35 Class A land uses (residences) exceed the 66 dBA threshold in the South Study Area. Twenty-six of these are in the Greenwood neighborhood and nine in the Davis Hill neighborhood. The 2017 EA evaluated several noise walls, including several in the South Study Area. That evaluation found that two walls, identified as Noise Wall 2 (Greenwood neighborhood) and Noise Wall 3 (Davis Hill neighborhood) could provide enough noise level reduction within state mandated construction cost constraints.

In order to mitigate noise via construction of noise walls, WSDOT standards require that the wall(s) are both reasonable and feasible. Feasibility requires that the noise barrier is physically constructible and provides a minimum of 5 dBA reduction in noise levels at the majority of the first row of affected receivers. Once the barrier is determined feasible, it is evaluated for reasonableness. Two primary criteria are used in considering the reasonableness of abatement measures: cost-effectiveness and meeting the WSDOT Design Goal Achievement. Cost effectiveness is determined by calculating the allowable cost per square foot by the allowable wall size for the receiver benefiting from the wall. Higher noise levels or larger sound level increases are allowed higher construction costs. The minimum design goal for abatement is that at least one receiver has a minimum 7 dBA of noise reduction. Noise walls cannot be recommended if this design goal is not met. If noise walls are feasible, cost-effective, and are desired by the benefiting receivers, they are deemed reasonable and can be included as part of a project.

#### **Proposed Noise Walls**

The Greenwood neighborhood and Davis Hill neighborhood were two locations evaluated for noise abatement. The 2018 Supplemental Noise Discipline Report reevaluated noise walls in both neighborhoods for the purpose of more precisely determining the optimal location, length, and height

**Table 3.5-2 Noise Wall Recommendations**

Wall #	Location	Average Height (ft)	Length (ft)	Cost	Reasonable?	Feasible?
2	Greenwood	15	1,425	\$993,493	Yes	Yes
3	Davis Hill	7	1,100	\$399,978	Yes	Yes

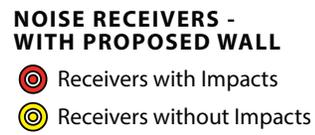
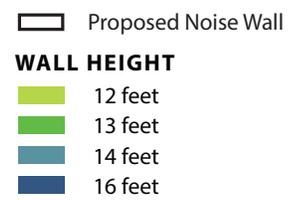
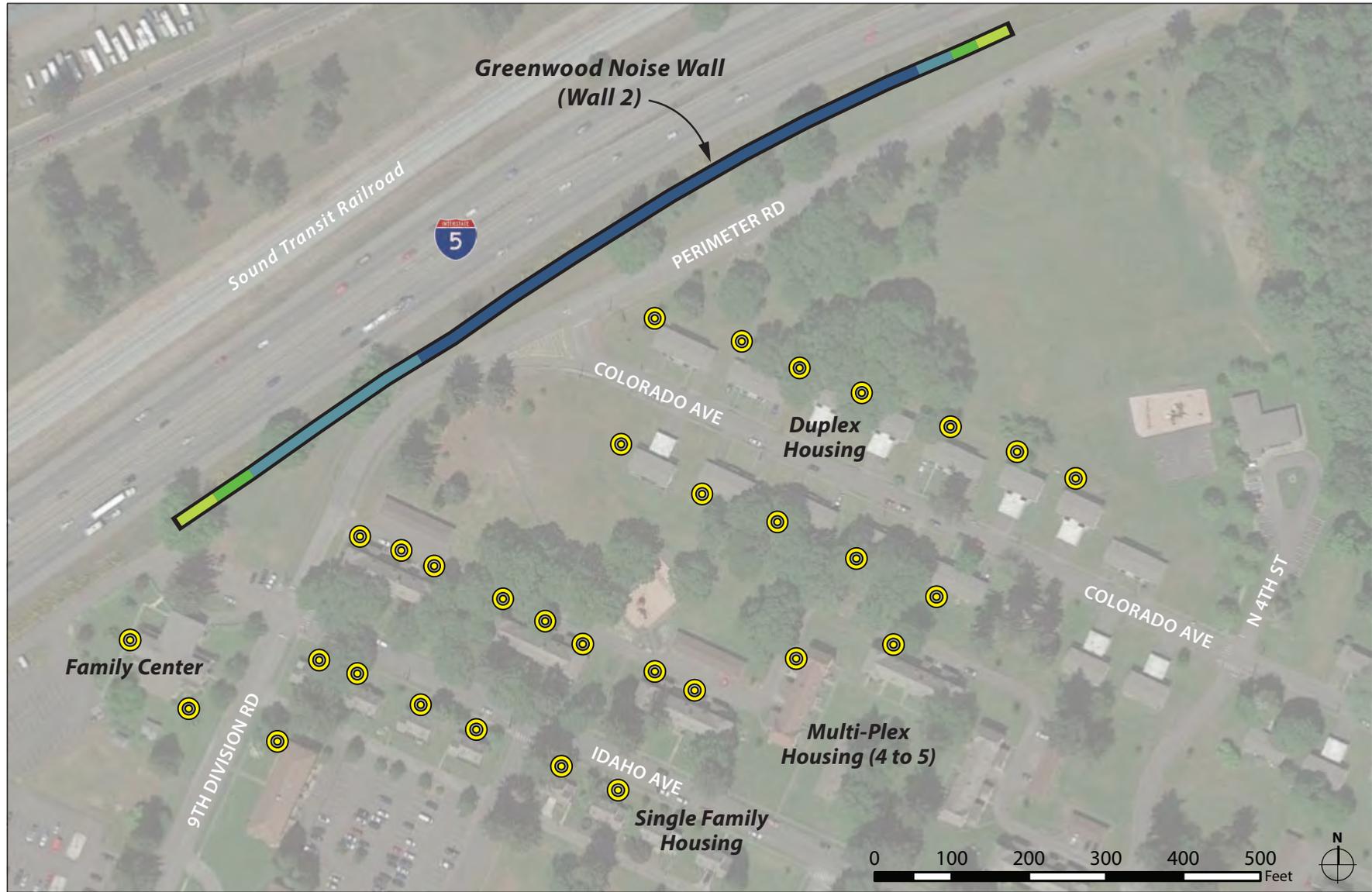
of each wall. The proposed wall locations are shown in Figures 3.5-6 and 3.5-7 and described in Table 3.5-2.

#### **NOISE WALL 2 (GREENWOOD NEIGHBORHOOD)**

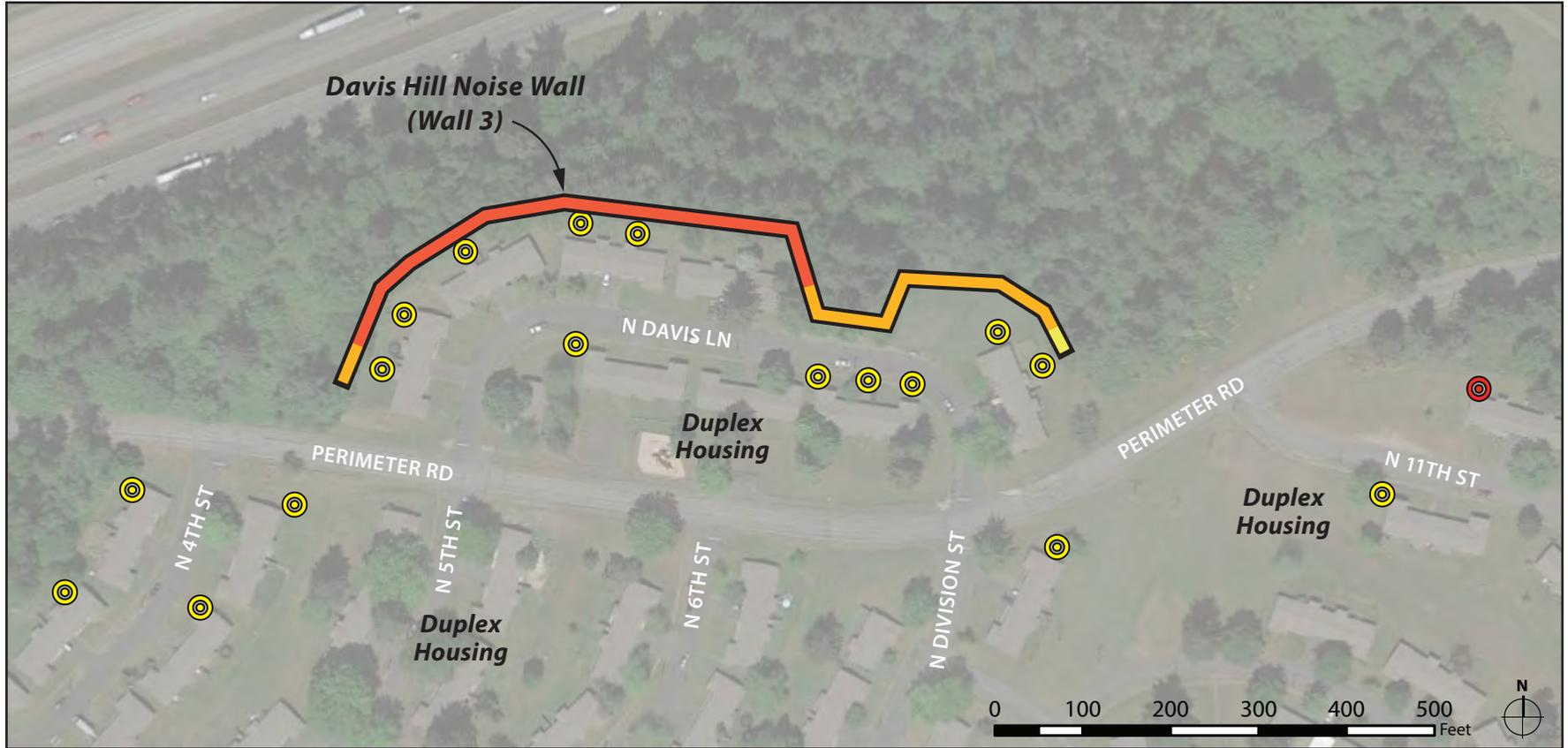
Proposed Noise Wall 2 would be located within WSDOT right of way. It would start on the north side of the dead end of Idaho Street, just north of the Family Resource Center and continue along the northbound side of I-5 for 1,425 feet ending on the west side of Perimeter Road north of Colorado Avenue. The height of the wall would range between 12 and 16 feet. The wall achieves an average reduction of 7 dB at front-line receivers, with two residences achieving 8 dB of noise reduction. The wall would eliminate all noise impacts in the Greenwood neighborhood; 2040 traffic noise levels within the neighborhood would be reduced by 1 to 8 dBA to a range of 58 to 65 dBA Leq. The cost to construct the wall falls within the WSDOT allowable range. Because the wall meets the size allowance, cost allowance, and required noise reduction standards, it is deemed reasonable and eligible for inclusion in the Build Alternative construction.

#### **NOISE WALL 3 (DAVIS HILL NEIGHBORHOOD)**

Proposed Noise Wall 3 would be located on JBLM property at the top of Davis Hill. It would start at the south end of Davis Lane near Perimeter Road and continue northerly along the back yards of the duplexes on Davis Lane for 1,100 feet. The height of the wall would range from 4 to 8 feet. The wall would provide an average reduction of 9 dB at front-line receivers, with three residences achieving 10 dB or more in noise reduction. The wall would eliminate noise impacts in seven duplex units in the Davis Hill neighborhood. 2040 noise levels with the wall would be reduced by 3 to 12 dBA to a range of 55 to 62 dBA Leq. The first-row receivers would have noise reductions of 6 to 12 dB, with an average reduction of 9 dB which meets the WSDOT reasonableness standard for noise reduction. The cost to construct the wall also falls within the



**Figure 3.5-6**  
Proposed Greenwood Noise Wall  
(Wall 2)



Proposed Noise Wall

**WALL HEIGHT**

- 4 feet
- 6 feet
- 8 feet

**NOISE RECEIVERS - WITH PROPOSED WALL**

- Receivers with Impacts
- Receivers without Impacts

**Figure 3.5-7**  
*Proposed Davis Hill Noise Wall (Wall 3)*

WSDOT allowable range. Because the wall meets the size and cost allowances as well as the required noise reduction standards, it is deemed reasonable and eligible for inclusion in the Build Alternative construction. One duplex unit on Davis Hill currently exceeds the NAC and will continue to do so in the Build Alternative. A noise wall at this location is not reasonable or feasible due to its isolated location and low number of affected units.

**Summary of Recommended Traffic Noise Abatement**

In the South Study Area, noise abatement was evaluated for two locations near noise sensitive receivers with outside usage areas where traffic noise impacts were predicted. Noise barriers #2A and #3B were found to meet WSDOT feasibility and reasonableness criteria and are recommended for construction predicated on the results of coordination between WSDOT and JBLM to allow walls outside WSDOT right of way. The noise barriers shown in Table 3.5-2 are proposed as mitigation for the Build Alternative.

## Construction Noise Abatement

Construction noise would be reduced by the following methods:

- ◆ Using construction vehicles with adequate mufflers, intake silencers, and engine enclosures to reduce their noise.
- ◆ Turning off construction equipment during prolonged periods of non-use.
- ◆ Locating stationary equipment away from receiving properties to decrease noise from that equipment in relation to the increased distance.
- ◆ Requiring contractors to maintain all equipment and train their equipment operators to reduce noise levels and increase efficiency of operation.
- ◆ Using Occupational Safety and Health Act (OSHA)-approved ambient sound sensing backup alarms to reduce the noise for equipment backing during quieter times.

WSDOT would comply with applicable noise ordinances for jurisdictions adjacent to the construction site. Where appropriate, this would include applying for variances or exemptions from local noise ordinances for nighttime construction. Such noise variances or exemptions require noise abatement measures that vary by jurisdiction.

### 3.5.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

Without the analyzed noise walls, the Build Alternative would result in noise levels exceeding the NAC at 35 residences – 26 in the Greenwood neighborhood and nine in the Davis Hill neighborhood. The recommended noise walls would reduce traffic noise at 33 of the residences to below the NAC.

The Build Alternative would not cause any substantial unavoidable adverse noise impacts related to construction. FHWA guidance stipulates temporary noise impacts related to construction are not considered substantial. Also, none of the remaining impacts would result in a substantial increase over existing noise levels, nor would they meet the criteria for severe noise impacts. As a result, the traffic noise levels are not substantially increased by the Build Alternative.

## 3.6 GEOLOGY AND SOILS

The *Geology and Soils Technical Memorandum* (Shannon & Wilson, June 2016) prepared as part of the 2017 EA is being incorporated by reference; refer to these documents for more information. The 2017 EA and 2016 technical memorandum describe the existing soil and geologic conditions, methodology and information sources used to evaluate existing conditions, and include a detailed discussion of potential impacts with and without the Build Alternative.

## 3.7 WATER RESOURCES

Water is a beneficial resource essential to agriculture, industry, recreation, and human and ecological health. Water sources are typically subdivided into two types: surface water and groundwater. Surface water resources are essential to maintaining human health, fish and wildlife habitat, and vegetation. Groundwater resources serve as underground storage of fresh water that can be used for drinking, irrigation, recharge areas, and general water supply. Floodplains are related water resource areas where surface water inundates low-lying ground during a flood event. Floodplains provide essential habitat for wildlife, sedimentation and filtering areas for improving water quality and groundwater recharge, and protect communities against flooding and erosion.

### 3.7.1 How Were Water Resource Impacts Evaluated?

#### *How Was the Water Resources Study Area Defined?*

Surface water, groundwater, and floodplains were each analyzed using a study area defined specifically to evaluate potential impacts to each resource. The study area for each resource is described further below.

#### SURFACE WATER

The Washington State Department of Ecology (Ecology) has divided the state into 62 Water Resource Inventory Areas (WRIAs) based on the state's major watersheds. The Build Alternative is located in WRIAs 11 (Nisqually Watershed) and 12 (Chambers/Clover Watershed), two of Washington's major watersheds draining to the Puget Sound. The study area for surface water encompasses the Build Alternative footprint and the downstream surface water resource receiving water bodies identified in WRIAs 11 and 12.

#### GROUNDWATER

The study area for groundwater encompasses the Build Alternative footprint and areas within 1/2 mile of the Build Alternative footprint. Groundwater supply sources that are greater than 1/2 mile from the Build Alternative footprint but whose Wellhead Protection Area (WHPA) lies within 1/2 mile of the Build Alternative footprint, are also included in the Build Alternative groundwater study area. A WHPA is an area where development is limited to protect well water.

#### FLOODPLAINS

The study area for floodplains was delineated based on Flood Insurance Rate Maps (FIRMs) provided by FEMA that show Special Flood Hazard Areas (SFHA). Floodplain resource areas were cataloged by the adjacent local government boundaries and floodplain ordinances that intersect with the Build Alternative footprint.

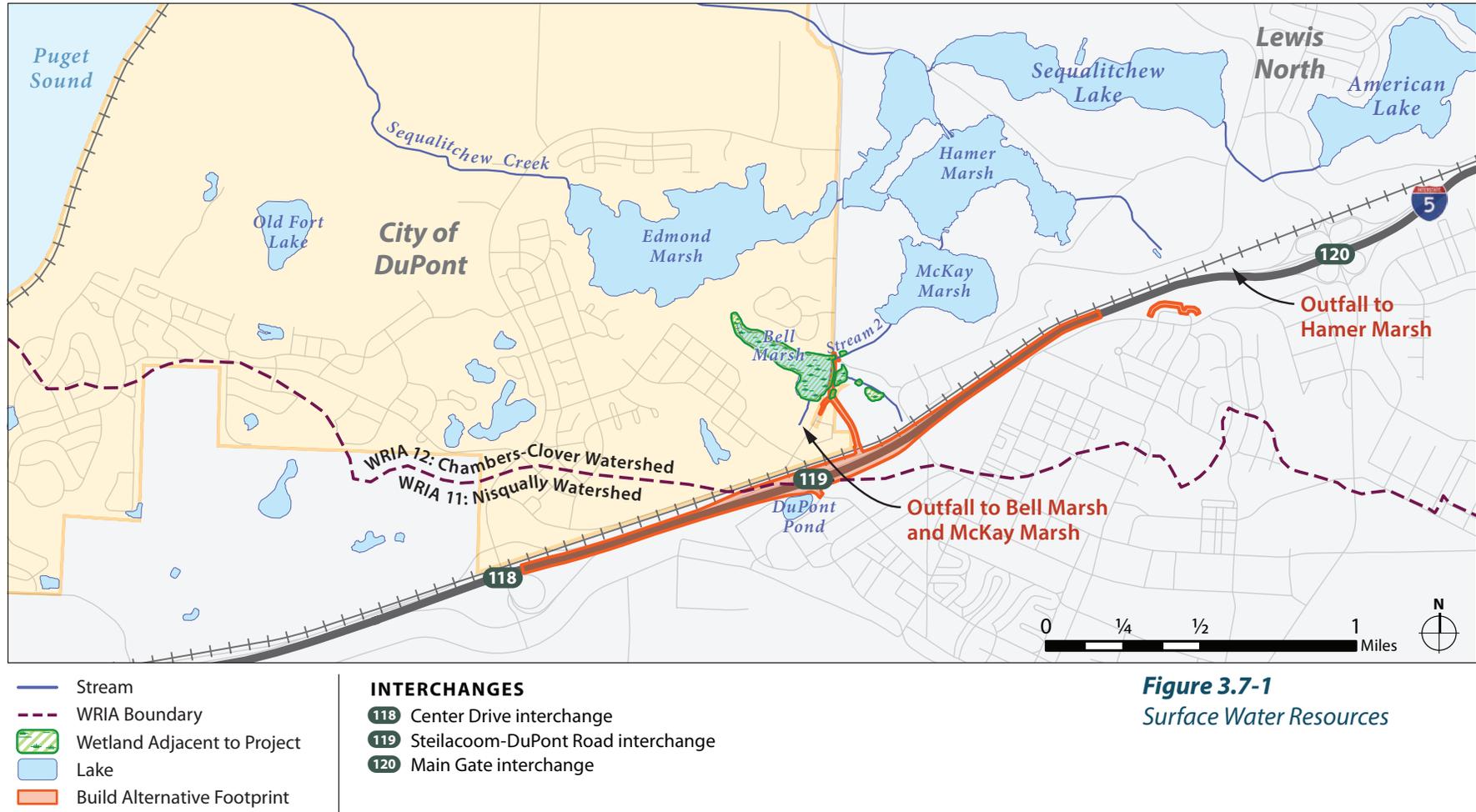
#### *How Was the Water Resource Analysis Conducted?*

Discipline reports were prepared pertaining to surface water (Shannon & Wilson, 2016) and floodplain resources (Shannon & Wilson, 2015) as well as a technical memorandum for groundwater resources (Osborn, 2016) for the 2017 EA. A supplemental *Surface Water Discipline Report* (Osborn, 2019) was prepared for analysis of the updated Build Alternative footprint for the South Study Area.

### 3.7.2 What Water Resources Currently Exist in the Study Area?

#### *Surface Water*

Surface water resources located within the study area, including lakes, streams, wetlands, stormwater outfalls, and WRIA boundaries are depicted in Figure 3.7-1. These include DuPont Pond (also known as Hanna Lake), Stream 2, Bell Marsh and six wetlands near the Steilacoom-DuPont Road interchange. In general, the surface waterbodies (streams, creeks, and wetlands) in the study area are highly altered from their natural states as a result of residential, commercial, and industrial development and land uses. The majority of surface water runoff within the study area infiltrates on site in grass side slopes/infield areas and ditches within the I-5 corridor.



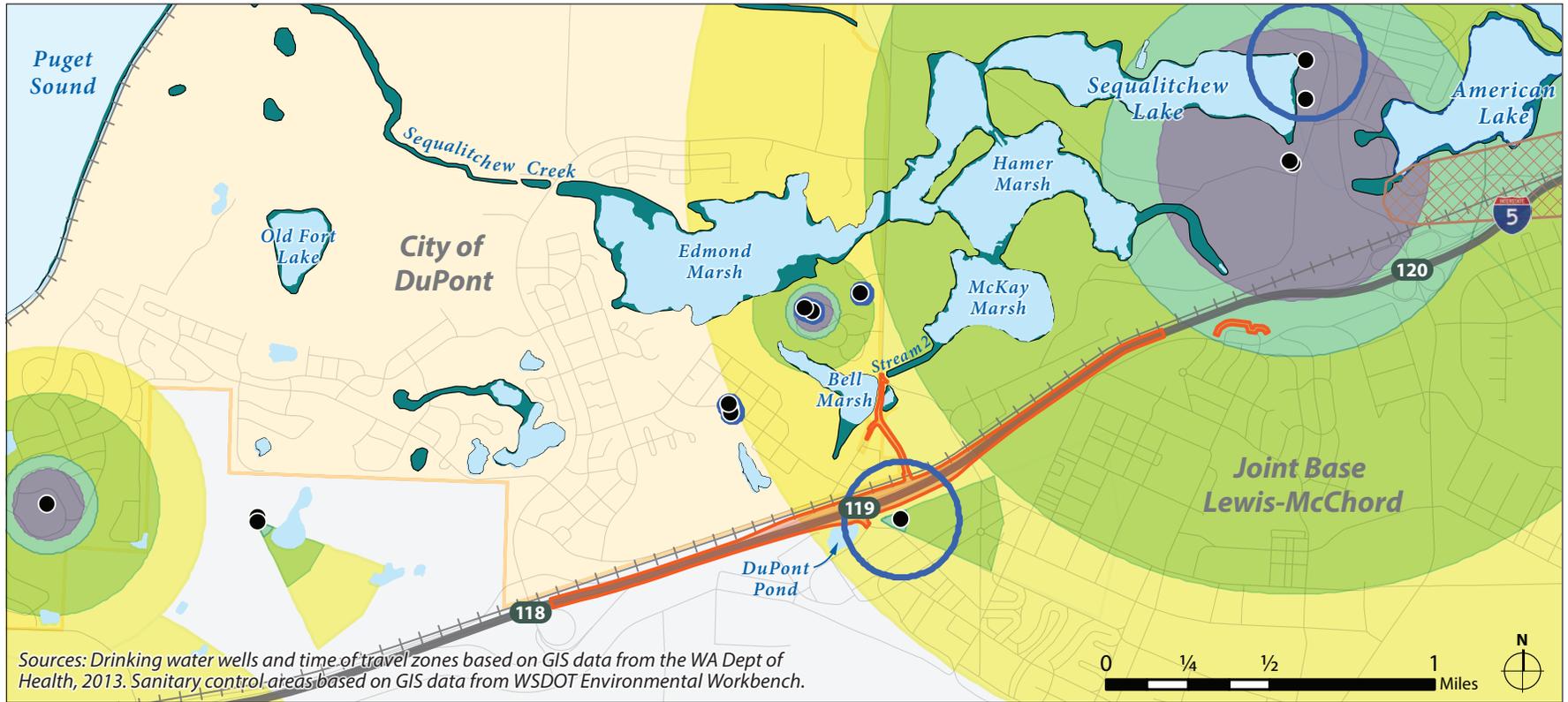
**Figure 3.7-1**  
Surface Water Resources

**Groundwater**

The study area is located within the Central Pierce County Aquifer (sole source). Within the groundwater study area there are seven Group A wellheads. Figure 3.7-2 shows the water supply sources and WHPAs within the groundwater resources study area.

Groundwater within the study area has been impacted by past industrial activities. Of the 13 hazardous materials sites located in the South Study Area, one has potential groundwater issues that may need special consideration during construction:

- ◆ Former location of a 500-gallon heating oil underground storage tank. This tank was removed in 1996, residual contamination is present in both soil and groundwater. Six monitoring wells were installed to evaluate groundwater impacts. The initial listing for this site, as described in the *I-5 Joint Base Lewis-McChord Hazardous Materials Analysis Report* (Shannon and Wilson, 2016) was moderate risk because of its location within the Build Alternative footprint. The Build Alternative footprint has since been reduced and no longer includes this site within the footprint limits. This site is still listed as a moderate risk due to the possibility of encountering impacted soils during construction.



Build Alternative Footprint

**INTERCHANGES**

- 118 Center Drive interchange
- 119 Steilacoom-DuPont Road interchange
- 120 Main Gate interchange

**FLOODPLAINS**

- Lake
- 100-Year Floodplain (FEMA Special Flood Hazard Area)

**GROUNDWATER RESOURCES**

- Group A Well
- Sanitary Control Area
- Sea Level Aquifer TCE Plume
- Time of Travel Zones
  - 6 mo
  - 1 yr
  - 5 yr
  - 10 yr

**Figure 3.7-2**  
*Floodplains and Groundwater Resources*

**Floodplains**

Floodplain resources in the vicinity of the Build Alternative include the Sequalitchew Creek floodplain located in the vicinity of Bell Marsh west of Steilacoom-DuPont Road within the City of DuPont. The mapped floodplain resources within and adjacent to the Build Alternative are located within FEMA Special Flood Hazard Areas labeled as Zone A. Figure 3.7-2 depicts the floodplain resources identified within the vicinity of the Build Alternative.

**3.7.3 Would the No Build Alternative Impact Water Resources?**

The No Build Alternative assumes the Build Alternative would not be constructed. Only routine maintenance and repair would occur in the study area. Therefore, the No Build Alternative would not result in any modifications to impervious surfaces or stormwater facilities.

### 3.7.4 Would the Build Alternative Have Water Resources Impacts?

Long-term effects resulting from the Build Alternative may include increased runoff due to expansion of impervious areas. The Build Alternative would also result in effects to wetland habitat and impacts to water quality as described in the Wetlands section (3.8) in this chapter of this SEA, as well as the respective discipline reports.

Construction and operation of the Build Alternative is expected to add just over 16 acres of Pollution Generating Impervious Surfaces (PGIS). Automotive-related pollutants, such as petroleum hydrocarbons and heavy metals, would deposit onto the roadway from daily traffic use. While PGIS would increase relative to existing conditions, both the existing and future PGIS would meet local, state, and federal regulations for stormwater treatment to enhance water quality. Thus, surface water quality and quantity may result in positive benefits after construction of the Build Alternative due to implementation of measures that treat water runoff.

The Build Alternative adds impervious surfaces to the study area that would increase the surface water runoff volumes. The increase in impervious surface and associated surface water runoff may decrease the ability for localized groundwater recharge, depending upon the Best Management Practices (BMPs) used for the Build Alternative. The impacts of increased impervious surfaces and increased surface water runoff would be offset by construction of new and updated stormwater control facilities and BMPs that intercept surface water runoff, provide water quality treatment, and infiltrate some or all of the additional flow. These facilities must meet the WSDOT's National Pollutant Discharge Elimination System (NPDES) during construction and the State Waste Discharge Municipal Stormwater General Permit requirements for operation. The Build Alternative would follow the WSDOT *Highway Runoff Manual* and the Ecology *Stormwater Management Manual for Western Washington*, which specifies BMPs for stormwater runoff, to protect surface and groundwater resources. Thus, the Build Alternative is expected to have no significant negative impact to groundwater.

### 3.7.5 Would the Build Alternative Have Construction Related Impacts?

Under the Build Alternative, water quality of adjacent waterbodies could be temporarily affected by construction activities such as materials staging and equipment access, earthwork and grading, replacing or extending culverts, and building roadway lanes, ramps, retaining walls, and other structures.

Surface waters may be temporarily impacted by construction activities occurring within or directly adjacent to waterbodies which may increase turbidity and Total Suspended Solids (TSS) levels by either directly depositing sediments within surface waters or by increasing the amount of erosion that would occur during storm events. Construction equipment operating within the area may also spill fuel, hydraulic fluids, wet concrete or other pollutants. Construction excavation activities may increase the risk that these contaminants impact groundwater as they remove the portion of the unsaturated soils above the groundwater table, reducing the unsaturated zone thickness and decreasing the time it takes for a contaminant spill at the ground surface to reach groundwater.

Dewatering of excavations and surface waterbodies in order to construct Build Alternative features may temporarily impact surface and groundwater quantity. Reductions in surface water quantity or lowering of the groundwater table may impact aquatic and riparian species that rely on these resources. Construction-related spills could result in pollutant transport into groundwater recharge areas.

### 3.7.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

#### *Surface Water*

#### CONSTRUCTION IMPACT MITIGATION

Effects to surface water resources during construction would be avoided, minimized, and mitigated through the development and implementation of temporary erosion and sediment control (TESC) measures and spill prevention, control and countermeasures (SPCC) plans. A TESC plan would address the risk of erosion and BMPs to be implemented during construction. A SPCC plan would provide BMPs for preventing and controlling spills of hazardous

materials. The Build Alternative will be subject to a Construction Stormwater General Permit that would require installation of BMPs to prevent surface water pollution and contamination during construction. Monitoring of surface and groundwater quality monitoring activities will be part of a Stormwater Pollution Prevention Plan (SWPPP) and SPCC, as required by the Construction Stormwater General Permit.

BMPs are methods used to minimize or avoid construction effects to water quality such as sediment getting into streams. Examples include installation of filter fabric fence downstream of all exposed slopes, around existing drainage inlets, and stream and drainage channels near work areas to prevent sediment-laden stormwater from entering streams. Both the TESC and SPCC plans would include performance standards and monitoring requirements based on state regulations, such as standards for turbidity and total suspended solids (TSS) levels in stormwater discharged from construction staging and work areas.

Effects during construction of the Build Alternative would additionally be avoided or minimized through the development and implementation of diversion and dewatering plans, aquatic life relocation and protection plans, a concrete containment and disposal plan (CCDP) for handling and managing concrete onsite, and other permit conditions.

#### LONG-TERM IMPACT MITIGATION

The increase in impervious surfaces and associated runoff would be mitigated by implementing the stormwater management controls required by the *Highway Runoff Manual* (HRM). The South Study Area shall maintain existing drainage patterns to existing waterbodies to minimize impacts downstream. All other stormwater runoff is expected to be designed to infiltrate on-site similar to existing conditions. Potential BMPs would include compost-amended vegetated filter strips (CAVFS), compost-amended biofiltration swales (CABS), and media filter drains (MFDs). These facilities would be designed to meet or exceed the minimum requirements of the HRM.

### **Groundwater**

Construction impacts to groundwater resources would be mitigated through the use of BMPs and compliance with applicable regulations and permit conditions, including implementation of a spill prevention, control, and countermeasures plan (SPCC) as described above. These measures aim to reduce chances of contaminants entering the groundwater system. Mitigation measures may include decommissioning four monitoring wells that are located within the Build Alternative footprint. Dewatering operations for construction may also have varying types of discharges that will require treatment, similar to construction surface water BMPs.

### **Floodplains**

Short-term effects on floodplains would be reduced through design specifications and regulatory permit conditions that require the contractor to provide mitigation measures to reduce floodplain effects and elevated flood risks. Example mitigation measures include working during dry seasons and avoiding placement of construction materials within the floodplain and floodway. The contractor may also be required to develop and implement diversion and dewatering plans to manage surface water flows during flood periods. These actions would mitigate effects on floodplain storage capacity during construction periods and associated potential impacts to wildlife. Complete avoidance or mitigation of floodplain effects during construction is not likely feasible, and some minor effects may be incurred.

### **3.7.7 Would the Build Alternative Have Unavoidable Adverse Impacts?**

Risks to surface water and groundwater posed by construction of the Build Alternative can be avoided through design and controlled through the use of BMPs. Therefore, no unavoidable direct or indirect adverse effects are expected to these resources.

## 3.8 WETLANDS

Wetlands are areas where water is present at or near the ground surface either all year or for varying periods of time during the year. Wetlands are important because they provide essential ecological functions and also help protect human communities. Wetlands improve water quality in streams, rivers, and lakes by filtering pollutants; they protect neighboring areas by retaining flood waters; and they often recharge groundwater. Wetlands provide fish and wildlife habitat and host a wider variety of plant and animal species compared to other land types. Wetlands are protected in the environment by wetland buffers, land encircling the wetland that helps protect it from human disturbance.

### 3.8.1 How Were Wetland Impacts Evaluated?

The wetland study area was defined using a 300-foot offset from the Build Alternative footprint. Wetlands within the Build Alternative footprint were delineated in the field. In order to identify potential impacts of the Build Alternative to wetlands, wetland boundaries beyond the footprint but within 300 feet from the Build Alternative were visually estimated. The distance of 300 feet was used because it is the maximum buffer width possible for the highest category wetland, as identified in the critical areas codes of DuPont and Pierce County.

Wetlands were delineated using the routine methodology described in the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region Version 2.0* (May 2010). A wetland and stream delineation report describing the wetlands present within the study area was completed in October 2015.

An additional effort was undertaken in 2018, using the same methodology described above, to update the existing information and reflect current site conditions. The aim of this effort was to verify wetland boundaries and conditions have not changed since 2016, confirm that no additional wetlands are present in the study area, and evaluate potential impacts of the proposed Build Alternative footprint on wetlands. Each of the previously mapped wetlands was visited in August 2018. Field flagging from 2015 that was still evident, in conjunction with Global Positioning System (GPS)-based mapping, was used to determine the location of previous delineations. Any boundary

modifications were noted and mapped using GPS and field flagging for survey data collection. In addition, the remainder of the study area was visually reviewed to determine if any additional wetlands had occurred.

### How Is the Value of Wetlands Measured?

Delineated wetlands were classified according to the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee [FGDC] 2013; Cowardin et al. 1979) and the hydrogeomorphic (HGM) approach (Brinson 1993). Wetland ratings were updated by applying the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014).

Buffer widths were assigned in accordance with the City of DuPont Code (Section 25.105.070; City of DuPont 2018). Wetland functions were evaluated with WSDOT's *Wetland Functions Characterization Tool for Linear Projects* (Null et al. 2000).

### 3.8.2 What Wetlands Currently Exist in the Study Area?

There are six wetlands located within the study area. The wetlands include depressional areas that are located in topographic depressions and riverine wetlands that receive over bank flooding from adjacent streams. Wetlands within the study area have a combination of forested, shrub, and herbaceous vegetation.

One of the wetlands in the study area, Bell Marsh, was rated as a Category I wetland. The other five wetlands were rated as Category III. No Category II or Category IV wetlands were identified in the study area. Table 3.8-1 summarizes the wetlands within the study area.

### 3.8.3 Would the No Build Alternative Impact Wetlands?

The No Build Alternative assumes I-5, associated connector roads, and overpasses within the study area would remain in their current configuration except for improvements to I-5 that are already planned and funded. The No Build Alternative would not affect wetlands or wetland buffers.

### 3.8.4 Would the Build Alternative Have Wetland Impacts?

The Project team refined the Build Alternative footprint to avoid or minimize impacts to wetlands and their buffers (see section 3.8-6 for more details on mitigation). However, the Build Alternative would result in unavoidable permanent direct and indirect impacts and temporary impacts to wetlands and their buffers. Permanent wetland impacts are generally defined as a disturbance that affects the existing wetland soils, such as fill placement or excavation. South Study Area impacts are summarized in Table 3.8-1, mapped in Figure 3.8-1, and described in detail below.

#### Permanent Impacts

The Build Alternative would permanently impact 0.30 acres of wetland and 1.59 acres of wetland buffer. The Build Alternative would fill a portion of Wetland 11 and all of Wetland 12 and would permanently affect portions of their buffers.

The impacts to Wetland 11 would reduce the area of the wetland available to provide hydrologic (flood storage and groundwater recharge) and water quality (sequester sediments and filter water) functions. Habitat functions would be modestly impacted.

The impacts to Wetland 12 would completely eliminate all hydrologic, water quality, and habitat functions currently provided by the wetland.

Permanent impacts to wetland buffers (1.59 acres) would remove mainly high-quality native forested habitats, composed of Douglas-fir (*Pseudotsuga menziesii*), Oregon white oak (*Quercus garryana*), black cottonwood (*Populus balsamifera*), Oregon ash (*Fraxinus latifolia*), and native shrub and herbaceous understory. These buffer conditions provide wildlife habitat and provide hydrologic and water quality functions that protect the wetland from stormwater surges, erosion, and pollution from overland runoff.

#### Indirect Impacts

As described in the *Wetland Conceptual Mitigation Memorandum* (Shannon & Wilson 2016), the Build Alternative would not result in any land use-related indirect effects. The investigations conducted in support of this addendum did not change that conclusion.

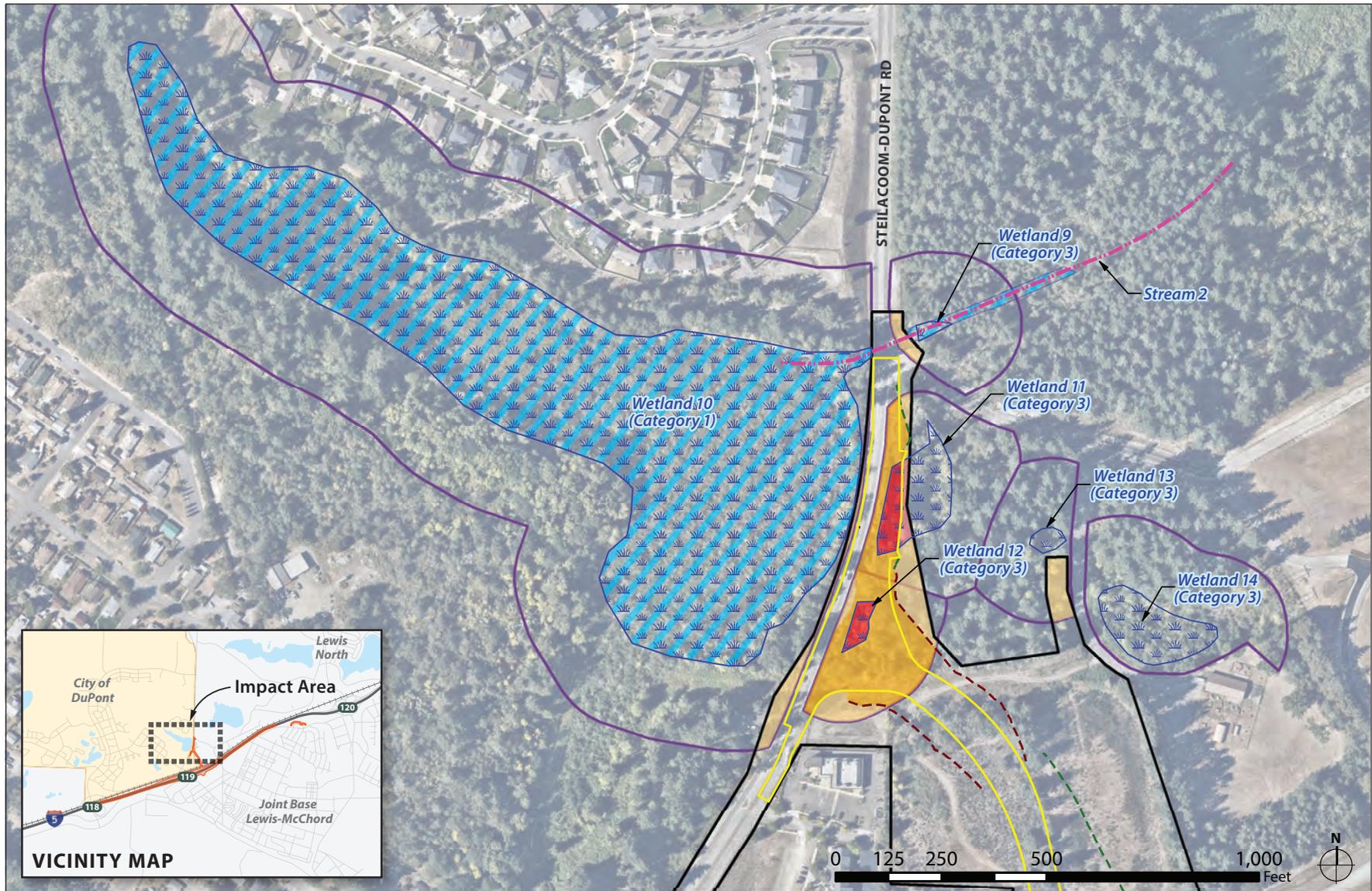
#### Cumulative Impacts

As described in the *Wetland Conceptual Mitigation Memorandum*, the Build Alternative would not contribute to cumulative effects on fish, wildlife, and

**Table 3.8-1 Wetlands within Study Area and Project Impacts to Wetlands, Streams, and Their Buffers**

Resource	USFWS Classification <sup>a</sup>	HGM Classification <sup>b</sup>	Rating <sup>c</sup>	Wetland Size (ac)	Permanent Impacts (ac)	Temporary Impacts (ac)	Permanent Buffer Impacts (ac)	Temporary Buffer Impacts (ac)
Wetland 9	PFO	Depressional Outlet and Riverine	III	0.05	None	None	None	0.09
Wetland 10	PAB/EM/SS/FO	Depressional Outlet	I	15.13	None	None	None	0.26
Wetland 11	PAB/SS/FO	Depressional Closed	III	0.73	0.19	0.08	0.38	0.17
Wetland 12	PFO	Depressional Closed	III	0.11	0.11	None	1.21	0.35
Wetland 13	PAB/FO	Depressional Closed	III	0.08	None	None	None	0.17
Wetland 14	PSS/FO	Depressional Closed	III	0.07	None	None	None	None
Stream 2	R4SBC	Not applicable	F	-	None	None	None	None <sup>d</sup>
<b>Total</b>				<b>16.98</b>	<b>0.30</b>	<b>0.08</b>	<b>1.59</b>	<b>1.04</b>

<sup>a</sup> FDGC 2013, Cowardin 1979. PFO = Palustrine Forested Wetland, PSS = Palustrine Scrub-shrub wetland, PEM = Palustrine emergent wetland, PAB = Palustrine aquatic bed wetland; R4SBC = Riverine Intermittent Stream Bed Seasonally flooded; <sup>b</sup> Brinson 1993; <sup>c</sup> Hruby et al. 2014; <sup>d</sup> The area of impacts to the buffer of Stream 2 falls entirely within the area of impact to the buffer of Wetland 9. See *Wetland Impact and Mitigation Technical Memorandum* (Parametrix 2019) for explanation.



- |                             |                |                          |
|-----------------------------|----------------|--------------------------|
| Build Alternative Footprint | Stream         | Permanent Wetland Impact |
| Extent of Temporary Impacts | Wetland        | Temporary Wetland Impact |
| Cut Line                    | OHWM           | Permanent Buffer Impact  |
| Fill Line                   | Wetland Buffer | Temporary Buffer Impact  |

**Figure 3.8-1**  
*Wetland and Stream Impacts*

vegetation habitats in the Build Alternative area or vicinity. The investigations conducted in support of this addendum did not change that conclusion.

### 3.8.5 Would the Build Alternative Have Construction Related Impacts to Wetlands?

Short-term, temporary impacts are impacts that are able to be restored over time and would not result in a permanent change or alteration of the wetlands or associated buffers. Examples of temporary impacts include vegetation removal or temporary fill or excavation associated with construction of support structures located within the wetland. The Build Alternative would temporarily impact a total of 0.08 acres of wetland and 1.04 acres of wetland buffer as shown in Table 3.8-1. Additional discussion and a detailed listing of the anticipated mitigation for temporary impacts are provided in the *Wetland Impact and Mitigation Technical Memorandum* (Parametrix 2019).

### 3.8.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

The Build Alternative would impact wetlands and wetland buffers within Pierce County and JBLM. In accordance with Pierce County Code Chapter 18E.30.050 and the 2006 *Interagency Wetland Mitigation Guidance for Washington State: Agency Policies and Guidance* developed by Ecology, the U.S. Army Corps of Engineers (USACE), and the U.S. Environmental Protection Agency (EPA), the conceptual mitigation strategy for the Build Alternative was developed in the following priority order:

3. Avoid impact.
4. Minimize impact.
5. Rectify by repair, rehabilitation or restoration.
6. Compensation for unavoidable impacts.

The *Wetland Impact and Mitigation Technical Memorandum* describes anticipated impacts to the study area wetlands and wetland buffers and associated potential mitigation measures. Mitigation planned to address wetland impacts of the Build Alternative is described in the following paragraphs.

### **Avoidance**

The Build Alternative would avoid impacts to the stream and most of the wetlands within the South Study Area. Impacts to Wetland 10, a Category I wetland, would be avoided by moving the Build Alternative impacts east to impact Wetland 11, which has a lower classification (Category III), thereby eliminating impacts to a higher quality wetland's habitats and functions.

### **Minimization**

A wall was added to the design to limit permanent wetland impacts to Wetland 11. Build Alternative impacts were minimized in general by reducing project footprints in wetlands to the minimum allowed by design standards.

This Build Alternative would provide flow control and water quality treatment for runoff from the impervious areas added and would retrofit some of the currently untreated impervious surface area. Stormwater would be discharged from the Build Alternative at two locations, maintaining the existing flow patterns and discharge locations as required by Ecology. These two existing outfall locations are (1) the JBLM culvert outfall to Bell Marsh, and (2) discharge to Bell Marsh from Steilacoom-DuPont Road. Discharges to wetlands would meet current stormwater design standards. As a result, there are no anticipated impacts to wetland hydrology or water quality.

### **Rectification**

All areas temporarily impacted would be restored. The sites would be returned to their original grade and replanted with native vegetation. Areas currently vegetated with native plants would be replanted with the same species. Areas with invasive species would be controlled and planted with suitable native species.

### Compensatory Mitigation

The Build Alternative would result in a total of 0.30 acre of unavoidable permanent impacts to wetlands (0.19 acre of Wetland 11 and 0.11 acre [the entirety] of Wetland 12). The 2008 Federal Rule for mitigating losses to aquatic areas established the following hierarchy for compensatory mitigation options (73 Federal Register 19594, April 10, 2008):

- ◆ Mitigation bank credits
- ◆ In-lieu fee (ILF) program credits
- ◆ Permittee-responsible mitigation under a watershed approach
- ◆ Permittee-responsible mitigation through onsite and in-kind mitigation
- ◆ Permittee-responsible mitigation through off-site and/or out-of-kind mitigation

Given this hierarchy, combined with the absence of a mitigation bank from the Build Alternative area, the *Wetland Conceptual Mitigation Memorandum* (Shannon & Wilson 2016) determined that an ILF program is the most ecologically preferable option for offsetting losses. ILF programs generally provide consolidated compensatory mitigation projects that carry less risk and uncertainty than permittee-responsible mitigation. The South Study Area lies within the service area of Pierce County's approved ILF Program. Pierce County staff confirmed the ILF Program offers credits for the HGM and Cowardin classes that would be affected by project construction, and the program would likely be a viable option for compensatory mitigation.

### 3.8.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

Unavoidable permanent wetland impacts to two wetlands (totaling 0.30 acres) would be mitigated. Mitigation for permanent wetland buffer impacts to two wetlands (totaling 1.59 acres) would be determined during permitting. Therefore, the Build Alternative would not result in unavoidable adverse effects on wetlands that cannot be mitigated.

### 3.9 FISH, WILDLIFE, AND VEGETATION

Transportation projects that receive federal funding or require federal permits must consider their effect to threatened and endangered species and habitats. Therefore, as part of this SEA, the presence of and potential impacts to fish, wildlife, and vegetation were evaluated. Analysis focused on mapping and characterizing habitat, and evaluating the potential for fish, wildlife, and vegetation to be present.

#### 3.9.1 How Were Fish, Wildlife, and Vegetation Impacts Evaluated?

The study area includes all areas within 300 feet of the Build Alternative and includes the vegetation communities likely to be affected, potential downstream effects during construction and operation, and areas where project-related noise could disturb sensitive wildlife. Information on fish, wildlife, and vegetation was collected using background research and review of available studies, including review of previous discipline reports prepared for the 2017 EA, local government and agency mapping resources, and site visits, including rare plant surveys conducted in July, August, and September 2018.

The following data sources were used to develop descriptions of existing conditions in the study area and provide updated mapping of vegetation communities:

- ◆ United States Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) Trust Resource Report
- ◆ Washington Department of Fish and Wildlife (WDFW) Species of Concern list
- ◆ WDFW Priority Habitats and Species geospatial database
- ◆ Washington Department of Natural Resources (WDNR) Natural Heritage Program (NHP) rare plant distribution data
- ◆ National Marine Fisheries Service (NMFS) Endangered Species Act (ESA) status of West Coast Salmon and Steelhead
- ◆ WDFW SalmonScape database
- ◆ Pierce County Noxious Weed List
- ◆ Pierce County critical areas map
- ◆ Aerial photography
- ◆ Previous assessments in the corridor

Additional sources of information used to support the effects analysis include:

- ◆ Wetland delineation and rating information from the 2017 EA
- ◆ Information within the Addendum to the Wetland & Stream *Delineation Report: Interstate 5 JBLM Vicinity Congestion Relief Project, South Study Area* (Parametrix, October 2018)
- ◆ Land cover and vegetation community geographic information system (GIS) data developed for the 2017 EA
- ◆ The *Fish, Vegetation, and Wildlife Discipline Report*, and *Wetland and Stream Report* prepared for the 2017 EA (Shannon & Wilson 2015, 2016, 2017)
- ◆ The *Addendum to the Fish, Wildlife, and Vegetation Discipline Report: Interstate 5 JBLM Vicinity Congestion Relief Project, South Study Area* (Parametrix, February 2019)

Field investigations were conducted to confirm the location and condition of streams, wetlands or other waterbodies in the study area, and vegetation communities. Field observations also included reviewing areas with high potential to provide suitable habitat for species of concern or rare plant populations.

#### 3.9.2 What Fish, Wildlife, and Vegetation Currently Exist in the Study Area?

A *Fish, Wildlife, and Vegetation Discipline Report* was completed in February 2016 (Shannon & Wilson, 2016), and an addendum to that report was completed in February 2019 (see Appendix B for access information). These reports provide more detailed descriptions of the existing resources present in the study area. Highlights of information about existing species are described below.

##### *Fish Habitat and Presence*

The South Study Area is in Water Resource Inventory Area (WRIA) 12 (Chambers-Clover Watershed) and WRIA 11 (Nisqually Watershed). The study area for fish, wildlife, and vegetation includes the freshwater Bell Marsh, several small isolated wetlands, and an unnamed stream (Stream 2). Cutthroat trout are known to be present in Stream 2 (WDFW 2018a). The stream characteristics,

**Table 3.9-1** Streams within the Study Area

Stream Name	Associated Wetland	Fish Presence <sup>1</sup>	Stream Type <sup>2</sup>	Jurisdiction	Stream Buffer
Stream 2	9 and 10	Cutthroat trout	"N" west of Steilacoom-DuPont Road	City of DuPont	100
			"F" east of Steilacoom-DuPont Road	JBLM	164

Notes: 1 WDFW Salmonscape Mapping (2018b); WDFW Priority Habitats and Species data (2018b)

2 Based on WDNR stream typing definitions (2018); N = Non-fish-bearing, F = Fish-bearing

Source: Addendum to Fish, Wildlife, and Vegetation Discipline Report: Interstate 5 JBLM Congestion Relief Project, South Study Area (Parametrix, 2019)

**Table 3.9-2** Potential Species of Concern in South Study Area

Species	Status*
<b>Amphibians</b>	
Oregon spotted frog ( <i>Rana pretiosa</i> )	FT, SE
Western toad ( <i>Anaxyrus boreas</i> )	SC
<b>Birds</b>	
Marbled murrelet ( <i>Brachyramphus marmoratus</i> )	FT, ST
Northern goshawk ( <i>Accipiter gentilis</i> )	SC
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	FT, SE
Pileated woodpecker ( <i>Dryocopus pileatus</i> )	SC
Streaked horned lark ( <i>Eremophila alpestris strigata</i> )	FT, SE
Vaux's swift ( <i>Chaetura vauxi</i> )	SC
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	FT, SC
<b>Mammals</b>	
North American wolverine ( <i>Gulo gulo</i> )	FPT, SC
Pacific fisher ( <i>Martes pennanti</i> )	SC
Roy Prairie pocket gopher ( <i>Thomomys mazama glacialis</i> )	FT, ST
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	SC
Western gray squirrel ( <i>Sciurus griseus griseus</i> )	ST
<b>Invertebrates</b>	
Mardon skipper ( <i>Polites mardon</i> )	SE
Taylor's checkerspot ( <i>Euphydryas editha taylori</i> )	FE, SE
<b>Reptiles</b>	
Western pond turtle ( <i>Actinemys marmorata</i> )	SE

\*(FE) Federal Endangered; (FT) Federal Threatened; (FPT) Proposed for Federal Listing as Threatened; (SE) State Endangered; (ST) State Threatened; (SS) State Sensitive; (SC) State Candidate

Sources: Shannon & Wilson 2016; WDFW 2018a, b; USFWS 2018; Hallock and McAllister 2005; Hallock et al. 2017; Desimone and Hays 2003; Lewis et al. 2002; Lewis and Azerrad 2003; Woodruff and Ferguson 2005

type, and required buffers are summarized in Table 3.9-1. None of the wetlands nor the stream in the study area are known or expected to support anadromous salmonids. The nearest stream with anadromous salmonids is Sequelitchew Creek located approximately 1.6 miles downstream of the Build Alternative area. No ESA-listed fish are known or expected to use streams in the Sequelitchew Creek watershed.

### Wildlife Habitat

The study area encompasses the I-5 corridor and the surrounding commercial and residential properties, a federal military base, a parallel railroad line, and parallel and perpendicular roadways. As a result, most of the wildlife habitat within the study area is a fragmented mosaic of isolated patches, primarily second-growth forest and wetlands, that are subject to high levels of noise and other human disturbance. Except for wetlands, the study area contains suitable habitat primarily for species with high tolerances for noise and human activity, or species that are attracted by some of the byproducts of development. The riparian area adjacent to Stream 2 may provide connectivity to other less-disturbed habitat areas outside of the study area.

There are four WDFW priority habitats that occur within the Build Alternative footprint: (a) wetlands, (b) streams, (c) riparian, and (d) Oregon white oak woodlands. Wetlands and stream habitats were mapped in the South Study Area by the WDFW Priority Habitat and Species Database (WDFW 2018a). One other WDFW priority habitat type (riparian) is not mapped in the WDFW Priority Habitat and Species Database, but is present, by definition, adjacent to Stream 2. Oregon white oak was identified and mapped in the study area and is another WDFW priority habitat type. Oak trees and stands of oak trees provide an important source of food, cover, nest sites, and arboreal movement routes for more than 200 species of vertebrate wildlife, including several species that are protected by state or federal law, such as the western gray squirrel (Larsen and Morgan, 1998).

### Wildlife Presence

Table 3.9-2 lists the species of concern potentially occurring in the South Study Area. Species of concern are defined as those with a regulatory status that prompts individual attention through federal, state, and/or local permitting processes. The species listed in Table 3.9-2 were identified by USFWS, WDFW, under state law, Federal ESA and Migratory Bird Treaty Act (MBTA).

**Table 3.9-3** Distribution of Land Cover within the Build Alternative

Land Cover Category	Acres within Study Area
Developed	114.95
Stormwater Pond	1.91
Lawn	16.96
Grass (not lawn)	45.08
Urban Forest	34.14
Shrubs (invasive)	31.39
Shrubs (landscaping)	0.11
Shrubs (native)	0.15
Remnant/ Naturalized Forest	66.19
Burned Forest	2.61
Wetlands	4.04
Streams	0.05
<b>Total Acreage in Study Area</b>	<b>317.59</b>

**Table 3.9-4** Listed or Priority Plant Species Potentially in the Build Alternative Footprint

Species	Status*	Suitable Habitat in Build Alternative Footprint	Known Presence in Build Alternative Footprint
Golden paintbrush, <i>Castilleja levisecta</i>	FT, SE	No	No
Marsh sandwort, <i>Arenaria paludicola</i>	FE, X	No	No
Water howellia, <i>Howellia aquatilis</i>	FT, ST	Yes, Marginal	No
Torrey's peavine, <i>Lathyrus torreyi</i>	FSC, ST	Yes, Marginal	No
White-top aster, <i>Aster curtus</i>	FSC, SS	Yes, Marginal	No

\* (FE) Federal Endangered; (FT) Federal Threatened; (FC) Federal Candidate; (FSC) Federal Species of Concern; (SE) State Endangered; (ST) State Threatened; (SC) State Candidate; (SS) State Sensitive; (X) possibly extinct or extirpated from Washington

## Vegetation

The South Study Area includes a variety of vegetation communities. Table 3.9-3 summarizes the distribution of land cover observed in the study area. Land cover types are divided into developed (pavement and other impervious surfaces) and eleven vegetation communities that represent habitat types or qualities.

## Listed and Priority Species in Study Area

Table 3.9-4 identifies five listed or priority plant species potentially occurring in the vicinity of the Build Alternative. Rare plant surveys conducted in 2018 did

not find any populations of the listed/priority species within the study area. Suitable wetland habitats (Wetlands 9 to 14) were specifically searched for the presence of water howellia in June and July 2018. Upland habitats were reviewed for the presence of golden paintbrush, Torrey's peavine, and white-top aster during vegetation assessments in July, August, and September 2018.

Consultation with local experts (conducted as part of the 2015 *Wetland Delineation Report* and 2017 EA) concluded the occurrence of these species within the Build Alternative footprint would be extremely unlikely given their association with native prairie, prairie edge, and wetland habitats, in addition to the extensive and ongoing disturbance within the study area.

There are no federally-listed fish or amphibians, or suitable habitat for such in the study area. The potential for listed mammals and listed or priority plants to be in the Build Alternative's footprint is low, but still feasible. A Biological Assessment (BA) has been prepared for the South Study Area Build Alternative to assess impacts on listed species and their habitat. USFWS issued a Letter of Concurrence in response to the BA.

### 3.9.3 Would the No Build Alternative Impact Fish, Wildlife, and Vegetation?

No permanent direct, indirect, temporary or cumulative effects to fish, wildlife, or vegetation would result in the South Study Area from the No Build Alternative.

### 3.9.4 Would the Build Alternative Have Fish, Wildlife, and Vegetation Impacts?

Long-term impacts of the Build Alternative include conversion of land cover from potential habitat area such as forested areas to pavement, other impervious area or grass; tree removal; and potential water quality impacts.

As discussed in Section 3.9.2, habitat for several listed or priority plants and a small mammal species could be located in the Build Alternative's footprint. The potential nature and extent of adverse permanent impacts to those species or their habitats is described below. Table 3.9-5 summarizes the anticipated alterations to existing land cover within the Build Alternative's ground disturbance footprint.

Based on the current information available, the Build Alternative would restore many of the disturbed areas to an equivalent or better condition over time consistent with WSDOT's *Roadside Policy Manual* (WSDOT, 2015b). The Build Alternative would result in 4.94 acres of permanent impacts and 2.05 acres of temporary impacts to Oregon white oak habitats. Most of the impacts are focused on highly disturbed habitat directly adjacent to I-5 and interchange ramps. Impacts to this habitat type would be mitigated by planting Oregon white oak trees in accordance with replacement standards and ratios specified in applicable local codes. Given the time for a newly planted tree to provide the habitat functions provided by an existing mature tree, a temporal loss of the habitats is anticipated for decades while these trees grow to maturity.

The Build Alternative could have adverse effects on water quality and aquatic life if construction-related stormwater runoff were allowed to reach stream and wetland systems without proper control and treatment. A project-specific Stormwater Pollution Prevention Plan (SWPPP) and accompanying Temporary Erosion and Sediment Control (TESC) plans would be prepared and implemented prior to beginning earthwork under the Project's National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit. It is anticipated the sediment and flow control Best Management Practices (BMPs) described in the TESC and SWPPP would minimize the potential for water quality impacts to wetland and stream resources within the study area.

To the extent feasible, the Build Alternative would use low impact development BMPs to capture runoff at least equivalent to the area of new pollution-generating impervious surface, consistent with the design standards in *WSDOT's Highway Runoff Manual* (WSDOT, 2019). The currently anticipated flow control and runoff treatment measures for the Build Alternative would meet or exceed the minimum requirements.

No additional negative effects on fish, vegetation, or wildlife habitat are expected during operation of the completed Build Alternative. Vegetated areas located within the right of way and presently subject to routine maintenance activities would likely continue to be affected by these practices and conditions.

### 3.9.5 Would the Build Alternative Have Construction Related Impacts?

The Build Alternative would have temporary, short-term impacts to land cover and tree removal. Table 3.9-5 summarizes the anticipated temporary impacts. Additionally, there would be temporary impacts related to construction related noise.

**Table 3.9-5 Permanent and Temporary Impacts to Vegetation Land Cover Types Expected for the South Study Area**

Land Cover Category	Permanent Conversion to Paved/Built (Acres)	Permanent Conversion to Other Vegetation Types (Acres)	Temporary Impacts
Developed	4.53	0	0.20
Stormwater Pond	0.04	0	0
Lawn	2.64	0	0.85
Grass (not lawn)	12.86	0	1.30
Urban Forest			
<i>Oregon White Oak</i>	0.75	0	0.20
<i>All Other Types</i>	5.39	0	2.81
Remnant Naturalized Forest			
<i>Conifer-dominated</i>	0.46	0	0.16
<i>Oak Community</i>	4.19	0.21	1.85
<i>Deciduous (non-oak)</i>	0.02	0	0
<i>Burned</i>	0	0	0
Shrubs			
<i>Invasive</i>	12.82	0	5.02
<i>Native</i>	0	0	0
<i>Landscaping</i>	0	0	0
Wetlands	0.24	0	0.05
Streams	0	0	0
<b>Total</b>	<b>43.94</b>	<b>0.21</b>	<b>12.44</b>

Based on quantitative noise analysis using the methodology in WSDOT's *Biological Assessment Preparation for Transportation Projects – Advanced Training Manual* (2015), areas within 0.29 mile from construction activities in the South Study Area are where construction noise is anticipated to occasionally exceed ambient noise or traffic noise, respectively. The species vulnerable to adverse effects from noise are generally birds and larger mammals. As indicated in Section 3.9.2, there are no federally-listed bird or large mammal species documented or expected to be found within 2.5 miles of construction activity. While there would be noise impacts to local wildlife, no federally listed species would be affected by noise.

### 3.9.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

The following measures for the Build Alternative focus on minimization of impacts:

- ◆ Construction effects would be confined to the minimum area necessary for Build Alternative construction and clearing limits would be clearly marked by staking completed by the contractor's surveyor. Areas of landscape or vegetative preservation would be protected with construction fencing.
- ◆ Removal of native vegetation and Oregon white oak habitat would be minimized to the greatest extent possible.

- ◆ A TESC Plan and SWPPP would be developed and implemented. The BMPs in the plans would be used to control sediments from all vegetation- or ground-disturbing activities.
- ◆ When feasible, contractor staging areas would be at least 300 feet from any wetland, stream, river, or drainage.
- ◆ Based on the current information available, the Build Alternative would restore as many of the temporarily disturbed areas to an equivalent or better condition over time consistent with WSDOT's *Roadside Policy Manual* (2015).
- ◆ Removal of Oregon white oak habitat would be mitigated by replanting in accordance with replacement standards and ratios specified in applicable codes.
- ◆ Additional surveys for Roy Prairie pocket gopher should be completed prior to construction in potentially suitable habitat areas.

### 3.9.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

The Build Alternative would not have any adverse effects on fish, wildlife, and vegetation that could not be mitigated.

## 3.10 HAZARDOUS MATERIALS

Hazardous materials are those items or agents that can potentially cause harm to humans, animals or the environment. For a construction project, these materials may already be present at a project site in the form of contaminated groundwater or soil. Hazardous materials could also be present in structures such as buildings that might be demolished as part of a construction project. When performing construction where potentially hazardous materials are present, there is a risk of spreading the contamination if proper construction procedures are not followed. Assessment for the potential of contamination is necessary to ensure proper measures are taken during construction to prevent further contamination, and contaminated materials are properly handled and disposed.

Environmental conditions in the study area were assessed to identify both existing and potential locations where hazardous materials are or may be present. These locations were evaluated to assess their potential impact on construction of the Build Alternative. The South Study Area has 13 sites of concern. These sites were screened and ranked based on their potential risk to the Build Alternative associated with hazardous materials. The North Study Area was evaluated in the 2017 EA; see that document for additional details.

### 3.10.1 How Were Impacts to Hazardous Materials Evaluated?

The study area for hazardous materials was defined using the standards identified in Chapter 447 (Section 447.04) of the WSDOT *Environmental Manual*. The hazardous materials study area includes the Build Alternative footprint and areas within one mile of the footprint.

### 3.10.2 What Existing Hazardous Materials Are in the Study Area?

#### *Site Screening*

The sites were screened based on the historical records and regulatory database review findings. The 2017 EA and the 2016 *Hazardous Materials Analysis Report* document the screening criteria used to compile a list of potential sites of concern.

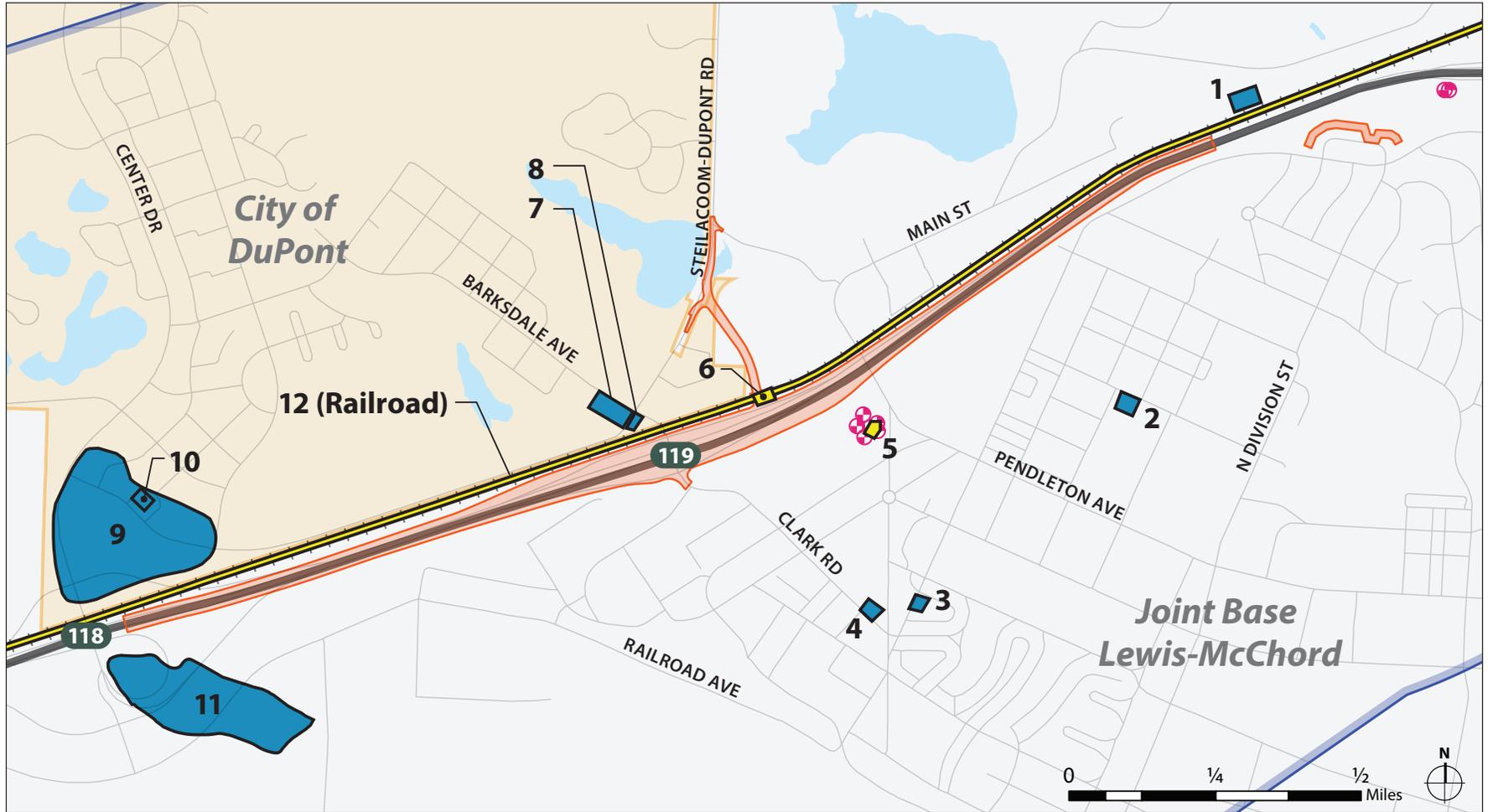
#### *Sites of Concern*

Thirteen sites of concern that have or may have soil and/or groundwater contamination were identified within the study area. The sites were screened and ranked based on their potential risk to the Build Alternative associated with hazardous materials. The screening and ranking were conducted in general accordance with WSDOT's *Guidance and Standard Methodology for WSDOT Hazardous Material Discipline Reports* (2009a). Figure 3.10-1 shows the location of each of the identified sites.

The sites were ranked as having either low, moderate, or high-risk potential to the Build Alternative. Nine of the sites in the South Study Area were ranked as having a low risk to the Build Alternative and four were ranked with a moderate risk. No high-risk sites were identified in the South Study Area.

The moderate risk sites include:

- ♦ Site #6: An above ground storage tank located on the railroad right of way adjacent to the southbound Steilacoom-DuPont Road exit from I-5. This site is listed as a moderate risk because it is located within the Build Alternative footprint. The above ground storage tank may need to be removed prior to construction.
- ♦ Site #5: Former location of a 500-gallon heating oil underground storage tank. This tank was removed in 1996 but residual contamination is present in both soil and groundwater. Six monitoring wells were installed to evaluate groundwater impacts. The Build Alternative footprint has been reduced and no longer includes this site within the footprint limits. This site is still listed as a moderate risk due to the possibility of encountering impacted soils during construction.
- ♦ Site #12: The former BNSF Railway (now Sound Transit) property runs adjacent to the alignment on the west side of I-5. The railroad corridor has been operating for about 130 years. Due to the location of the railway and potential for contamination, this site is listed as a moderate risk.
- ♦ The Tacoma Smelter Plume (site not mapped) is associated with the former Asarco copper smelter that operated north of Tacoma for approximately 100 years. Large quantities of contaminants were emitted in the form of air pollution during operations. Particles in the air settled in surface soils in an area stretching north to Seattle and south to Lacey. This



- Hazardous Materials Study Area
- Build Alternative Footprint
- Vicinity Monitoring Wells

**HAZARDOUS MATERIALS SITES BY RISK\***

- Moderate
- Low

\*Tacoma Smelter Plume not shown

**INTERCHANGES**

- 118 Center Drive interchange
- 119 Steilacoom-DuPont Road interchange

**Figure 3.10-1**  
*Hazardous Materials Sites*

site is listed as a moderate risk because concentrations of arsenic and lead may have the potential to exceed Method A cleanup criteria.

A complete list of the sites of concern is included in the 2016 *Hazardous Materials Analysis Report*.

### 3.10.3 What Would Be the Impact of the No Build Alternative?

No construction would occur under the No Build Alternative; therefore, no impacts would occur.

### 3.10.4 Would the Build Alternative Impact Hazardous Materials?

Soil and/or groundwater contamination is known to be present at several sites within the study area and may be present at several other sites adjacent to and potentially within the Build Alternative footprint. Contaminants that may be found in the soil, groundwater, and/or in surface waters may include petroleum products, metals, polyaromatic hydrocarbons (PAHs), and solvents including trichloroethylene (TCE).

With the exception of drilled shafts, the majority of excavation associated with the Build Alternative construction are expected to be no greater than ten feet deep. These types of excavations would not be expected to encounter groundwater or affect migration of contaminants.

### 3.10.5 Would the Build Alternative Have Construction Impacts?

Proposed construction activities within the Build Alternative footprint and in areas around the interchange may include cut slopes, retaining walls, over excavation of unsuitable soils, installation of stormwater features, utility lines, spread footings, and drilled shafts. Contaminated soil may be encountered during excavation associated with some of these Build Alternative elements.

### 3.10.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

To reduce the potential for hazardous materials being released into the environment during construction and operation, construction plans would include procedures to help mitigate, avoid, control, and manage hazardous materials where encountered. These plans provide BMPs to help prevent or minimize environmental risks and would be employed during construction. The plans would include direction for Spill Prevention, Control and Countermeasure (SPCC) Plans, Temporary Erosion and Sedimentation Control (TESC) Plans, Stormwater Pollution Prevention Plans (SWPPPs), and project-specific hazardous material management plans for handling and disposal of known and unanticipated contamination.

Environmental impacts to the Build Alternative could potentially be associated with unanticipated releases or spills that may occur during construction or are related to construction activities, equipment, and materials associated with the Build Alternative. Prior to the start of construction, a SPCC Plan would need to be prepared following requirements of the WSDOT *Standard Specifications for Road, Bridge and Municipal Construction* (2018).

With respect to portions of the Build Alternative within the Tacoma Smelter Plume, areas of soil disturbance will be screened for arsenic and lead content. Results of soil analysis will inform appropriate worker health and safety measures, and solid waste handling and disposal procedures.

### 3.10.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

No unavoidable adverse effects are expected to result from the Build Alternative.

### 3.11 VISUAL QUALITY

Visual resources are those physical features that define the visual and aesthetic character of an area. Because people are continuously exposed to visual stimuli, visual resources are an important aspect of environmental quality. Visual resources can influence viewers' perception of an area, provide a sense of community, and contribute to overall quality of life. Transportation projects often alter the physical appearance of surrounding environments, which can result in both beneficial and adverse impacts to overall visual quality.

A *Visual Impact Assessment* (SCJ 2019) was prepared for the South Study Area. The assessment describes the potential impacts to surrounding communities and visual characteristics of the South Study Area.

#### 3.11.1 How Were Visual Quality Impacts Evaluated?

State and federal guidelines for visual quality assessments were used to identify potential impacts and develop mitigation recommendations. Primary guidance was provided by Chapter 459 of the WSDOT *Environmental Manual* (M 31-11.18; 2018). The procedures in this manual are consistent with FHWA's

*Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA-HEP-15-029; 2015) and WSDOT's *Roadside Policy Manual* (M3110; 2015).

The Area of Visual Effect (AVE) encompasses areas from which changes associated with the Build Alternative would be potentially visible. The South Study Area includes landscapes ranging from dense stands of trees which restrict views along much of the route, to wide-open spaces containing buildings and landscaped areas. For the South Study Area, the AVE includes areas within approximately 0.25 miles of the edge of the Build Alternative footprint.

The spatial units typically used for assessing visual impacts are known as landscape units. The AVE contains three visually distinct areas, each of which has been identified as a landscape unit. For each landscape unit, views in all directions toward the highway and away from the highway were analyzed. The study area landscape units are shown in Figure 3.11-1.

The process for identifying and assessing visual impacts is divided into four phases: identification of existing conditions, inventory of visual character and resources, evaluation of visual quality impacts, and design measures and mitigation.

**Figure 3.11-1** Landscape Units in the Study Area



## IDENTIFICATION OF EXISTING CONDITIONS

This phase identifies existing visual character, defines the Area of Visual Effect (AVE), and determines the regulatory context. Site visits, examination of Google Earth images, and reviews of the *I-5 JBLM Vicinity Congestion Relief Visual Impact Assessment* (June 2016) served as the basis for establishing the AVE and describing existing visual character. The regulatory context was established by reviewing plans and ordinances developed by the City of DuPont, Pierce County, and JBLM to determine if any of these entities had identified specific protected or valued visual resources such as view corridors, viewpoints, scenic areas, or historic districts that may be influenced by the Build Alternative.

## INVENTORY OF VISUAL CHARACTER AND RESOURCES

The inventory phase describes the visual character and quality of the visual resources within the AVE. It also identifies the affected populations and their viewer exposure and awareness. The FHWA guidelines recognize three types of visual resources:

- ◆ **Natural Visual Resources** include landforms and land cover such as trees, vegetation, and water.
- ◆ **Cultural Visual Resources** include manmade elements such as roadways, embankments, bridges, and buildings.
- ◆ **Project Visual Resources** include the existing highway's geometrics, structures, and fixtures, as well as those that will be placed in the environment as part of a proposed project. Project visual resources are the project components that would be within the Build Alternative footprint.

## EVALUATION OF VISUAL QUALITY IMPACTS

The perception and value judgment that viewers make about the landscape is evaluated as part of the visual quality analysis. Viewer categories generally include “neighbors” (people with views to the road) and “travelers” (people with views from the road). Impacts that would reduce visual quality are defined in FHWA's visual quality analysis guidance as adverse or slightly adverse impacts. A project would have adverse or slightly adverse impacts if it would degrade visual quality, obstruct or alter views. Beneficial impacts would

include enhancing visual resources, blocking undesirable views (such as views of traffic on I-5) or creating better views and improving visual quality.

Corresponding to the three types of visual resources, the FHWA guidelines recognize three types of visual perception:

- ◆ **Natural Harmony** is what viewers like and dislike about the natural environment. Visual resources of the natural environment are either harmonious or inharmonious. Harmony is considered desirable; disharmony is undesirable. The analysis documented the degree of natural harmony expressed as high (harmonious), average (neutral), or low (inharmonious).
- ◆ **Cultural Order** is what viewers like and dislike about the cultural environment. Visual resources of the cultural environment are either orderly or disorderly. Order is considered desirable; disorder is undesirable. The analysis documented the degree of cultural order as high (orderly), average (neutral), or low (disorderly).
- ◆ **Project Coherence** is what viewers like and dislike about a project's environment. For highway projects, this includes what viewers like or dislike about existing highway features and how a proposed project would change, not change, or be consistent with those features. A highway project's coherence would usually apply only to features within the project footprint and/or within the highway right of way, not on lands adjacent to the highway. The visual resources of the project environment are either coherent or incoherent. Coherence is considered desirable; incoherence is undesirable. The analysis documented the degree of project coherence as high (coherent), average (neutral), or low (incoherent).

## DESIGN MEASURES AND MITIGATION

Visual perceptions can be determined by considering visual resources through the lens of viewer preferences. People have innate concepts of what constitutes natural harmony, cultural resources, and visual coherence. The greater the degree to which visual resources meet the viewer's preferred concepts, the higher the value placed on the resource. Visual quality is determined by what people value – like or dislike – about the overall visual character of a scene or

landscape. Viewer sensitivity is the degree to which viewers react to changes in visual character and is a combination of the following factors:

- ◆ **Viewer Exposure** is a measure of proximity (the distance between viewer and the visual resource being viewed), extent (the number of viewers viewing), and duration (the length of time over which visual resources are viewed). The greater the exposure, the more viewers will be concerned about visual impacts. Viewer exposure is classified as high, average, or low.
- ◆ **Viewer Awareness** is a measure of attention (level of observation based on routine and familiarity), focus (level of concentration), and protection (legal and social constraints on the use of visual resources). The greater the awareness, the more viewers will be concerned about visual impacts. Viewer awareness is classified as high, average, or low.

### 3.11.2 What Are the Existing Visual Resources in the Study Area?

The South Study Area is located in south Pierce County, between the Mounts Road interchange (Exit 116) and the Main Gate/41st Division Drive Interchange (Exit 120). I-5 bisects the JBLM military base in this area and is flanked on the west by the Sound Transit railroad line. The study area includes the three types of visual resources outlined in the FHWA guidelines – natural, cultural, and project visual resources. These visual resources are valuable to the character of the roadside corridor and are described below.

#### *Visual Resources and Character*

The study area contains three visually distinct landscape units, shown in Figure 3.11-1, which were used to assess the existing character of the study area. The visual resources and character of each landscape unit are described below.

#### LANDSCAPE UNIT 1

Landscape Unit 1 spans approximately the northern third of the study area, extending along I-5 from 41st Division Drive southwest to Pendleton Avenue, and contains a variety of visual resources. On the east side of I-5 (Lewis Main), the northern portion of this landscape unit contains a large forested area with Douglas fir, western red cedar, alder, and cottonwood; the density of trees

decreases toward the southern portion of the landscape unit. The cultural features in this area include multi-family residential buildings, grassy open spaces, and on the east side of I-5 the historic JBLM Family Resource Center building. The visual character in this area ranges from a natural character with a high degree of natural harmony to a historic campus/residential character with a high degree of cultural order.

On the west side of I-5 (Lewis North), Landscape Unit 1 contains cultural features such as the Sound Transit railroad tracks (running parallel to the freeway), a JBLM roadway (Main Street), and storage facilities (buildings and parking lots), set among scattered groupings of trees. Views from I-5 include the historic Fort Lewis Red Shield Inn/Military Museum, although chain-link security fencing next to I-5 somewhat interferes with views of the surrounding grounds and other visual resources in the area. Most of this area has a commercial visual character with a low to average degree of cultural order and a low to average degree of natural harmony. The museum and its grounds have a historic visual character. Views from the adjacent land toward I-5 have a transportation visual character with an average degree of cultural order and a low degree of natural harmony.

Within the I-5 right of way, the elements that can be viewed from the highway have a transportation visual character and an average degree of visual coherence. In general, views toward I-5 from within areas of Landscape Unit 1 have a low to average degree of cultural order and a low degree of natural harmony.

#### LANDSCAPE UNIT 2

Landscape Unit 2 extends from Pendleton Avenue southwest to the State Farm Operations Center. On the east side of I-5 (Lewis Main), cultural features include the Red Cross Field House, Fort Lewis Memorial Arboretum, and an area of historic warehouses. The buildings in this area are visually notable and can be partially seen from I-5. Most of this area is open and has both prairie-like and park-like areas with scattered groupings of trees. The area containing the Memorial Arboretum is more heavily vegetated, with large trees that effectively screen views of I-5. South of the arboretum, training facility buildings can be seen from the freeway. The arboretum area has a natural to park-like visual character, while the rest of the area has a historic/military to military/industrial visual character. In general, this portion of Landscape Unit 2

has an average to high degree of cultural order and an average to high degree of natural harmony.

On the west side of I-5 (City of DuPont), cultural features include the Barksdale Station commercial area (commercial/transportation visual character), a small multifamily residential complex (residential visual character), and the Sound Transit railroad tracks (industrial visual character). In general, this area has a low to average degree of cultural order. In contrast, a large, heavily wooded area at the southern end of the landscape unit has a forested character with a high degree of natural harmony.

Within the I-5 right of way, the major highway element that can be seen from this section of I-5 is the Steilacoom-DuPont Road overpass; several mature conifers are also located within the right of way, and on clear days Mount Rainier can be seen to the east. This part of I-5 has a transportation visual character and an average degree of visual coherence. In general, views toward I-5 from within areas of Landscape Unit 2 have a low to average degree of cultural order and a low degree of natural harmony.

### LANDSCAPE UNIT 3

Landscape Unit 3 extends from the State Farm Operations Center southwest to just south of the Center Drive interchange. On the east side of I-5 (Lewis Main), the landscape mainly consists of a heavily vegetated Douglas fir forest and open prairie-like areas with small groupings of trees, along with the JBLM dog park, which is adjacent to the highway. These areas have a natural to park-like visual character and an average to high degree of natural harmony.

On the west side of I-5 (City of DuPont), cultural features include the State Farm Operations Center, the DuPont Station commercial area, and the southbound exit ramp to Center Drive, which is elevated over the Sound Transit tracks. The State Farm Operations Center has a campus-like visual character and a high degree of cultural order, and a large, heavily landscaped area between the complex and I-5 provides screening and a high degree of natural harmony. The DuPont Station commercial area and the Center Drive ramp are quite visible within this part of Landscape Unit 3; they have a commercial/transportation visual character, and they produce views with an average to low degree of cultural order.

Within the I-5 right of way, the elevated southbound off-ramp and Center Drive overpass are the primary visual elements; there are also mature trees present in the right of way in several locations. This part of I-5 has a transportation visual character and an average degree of visual coherence. In general, views toward I-5 from within areas of Landscape Unit 3 have a low to average degree of cultural order and a low degree of natural harmony.

### 3.11.3 Would the No Build Alternative Impact Visual Quality?

Because no construction would take place, there would be no visual changes to the area in the No Build Alternative. The existing visual quality would not decrease in value with the No Build Alternative.

### 3.11.4 Would the Build Alternative Impact Visual Quality?

Potential impacts of the Build Alternative include three primary long-term changes to visual character in the study area:

- ◆ Retaining walls, bridges, and noise walls related to the reconstruction of a new interchange at Exit 119 would be prominent in the views toward I-5 from adjacent residences and businesses and for travelers on I-5.
- ◆ Increased pavement width and modified geometry associated with an added travel lane in each direction on I-5, as well as additional entry and exit circulation at the interchange, would be visible in places from adjacent properties and to travelers on I-5.
- ◆ Loss of existing trees, primarily at the location of the reconfigured Steilacoom-DuPont Road interchange (Exit 119) and the realigned Steilacoom-DuPont Road, would be necessary. At other locations, the loss of mature trees in the Build Alternative footprint would be limited; several trees in the arboretum area would be removed to accommodate the new interchange ramps, and several trees north of the Family Resource Center would be removed to accommodate construction of the noise wall.

### ***Impacts Associated with Specific Elements of the Build Alternative***

The Build Alternative would impact visual character at the locations of the new interchange and noise walls. The additional heights, widths, elongated ramps, and proposed retaining walls would dominate the views from both drivers' and neighbors' perspectives. A brief summary of visual quality impacts associated with the modified interchange included in the Build Alternative is provided below.

#### **STEILACOOM-DUPONT ROAD INTERCHANGE**

Currently the roadside visual character of the Steilacoom-DuPont Road interchange is prairie to the east with a semi-urban character to the west due to the presence of the City of DuPont. The Sound Transit railroad is

located between the western edge of I-5 and the City of DuPont. The existing interchange area has low natural harmony. The area is predominantly developed with commercial areas and military infrastructure interspersed with undeveloped forested areas (see Figure 3.11-2).

The new interchange would modify the visual character of the landscape unit by adding a second overpass that would be higher than the existing overpass bridge structure. The new bridges would also be larger than the existing one to accommodate the additional lanes on I-5. Most viewers in this location would be in their vehicles and would be focused on driving, limiting the impact of the visual changes on travelers. The change in the existing view would be more noticeable to neighbors who live and work within JBLM.

***Figure 3.11-2 View Toward Steilacoom-DuPont Road Interchange – Existing and with Build Alternative Photosimulation***



*Existing view from Wilmington Drive toward railroad tracks and I-5*



*View from Wilmington Drive toward railroad tracks and I-5 with Build Alternative*

### Impacts of the Build Alternative at Specific Locations

Several locations were identified for additional analysis of potential impacts. These locations are discussed below.

#### JBLM MEMORIAL ARBORETUM

Figure 3.11-3 shows the current and future views from within JBLM looking west toward I-5 at the JBLM Memorial Arboretum. The Build Alternative is adjacent to and utilizes a linear strip of land currently within the Fort Lewis Memorial Arboretum to construct the proposed improvements. The Build Alternative improvements would include a retaining wall topped with an 8-foot high security wall along the new northbound on-ramp in this location. The presence of densely planted trees would limit views of the new retaining wall when viewed from within JBLM at this location. The retaining wall would be somewhat visible to viewers (who have high to moderate degrees of viewer exposure and awareness) in the winter when deciduous trees would be without leaves (see Figure 3.11-2). Views of the retaining wall through the trees would not contrast with the park-like visual character of most parts of the arboretum and would not reduce the high degree of cultural order. The Build Alternative would produce a neutral change to the visual quality of views internal to JBLM toward I-5.

Travelers on I-5 (who have a low degree of viewer exposure and a moderate degree of viewer awareness) would experience reduced exposure to views of the Fort Lewis Memorial Arboretum and other areas in JBLM because they would be blocked by retaining walls and an 8-foot high security wall. Due to reduced views in this area, the current high degree of cultural order would be reduced closer to average for travelers in the area. The Build Alternative would result in a neutral to slightly adverse change to the visual quality of views toward this part of JBLM from I-5.

**Figure 3.11-3** View Toward I-5 through Arboretum – Existing and with Build Alternative Photosimulation



*Existing view from south of Arboretum looking toward I-5*



*View from south of Arboretum looking toward I-5 with Build Alternative*

## PENDLETON AVENUE

In the vicinity of Pendleton Avenue, the Build Alternative footprint would widen to accommodate a new I-5 bridge over Pendleton Avenue and the new northbound I 5 on-ramp from the Exit 119 interchange. Approximately four mature trees adjacent to I-5 in the open area between the Family Resource Center and Pendleton Avenue would be removed. The top of the northbound I-5 on-ramp retaining wall and the Pendleton Avenue underpass would be clearly seen from within this part of JBLM (see Figures 3.11-4 and 3.11-5).

The current views toward I-5 of the Pendleton Avenue underpass would be replaced with a view of the new underpass and the existing railroad bridge behind it. The ramp wall would somewhat change the park-like visual character of this view toward I-5. The viewers in this area, who have high to medium degrees of viewer exposure and low to medium degrees of viewer awareness, would likely notice the changes.

Design measures such as those described above, along with the additional planting of trees, would reduce the visual presence of the walls and improve the compatibility of the walls and overpass with views toward I-5. If the design measures are implemented, the existing average degree of cultural order would be retained. The Build Alternative would produce a neutral change to the visual quality of views toward I-5 in this area.

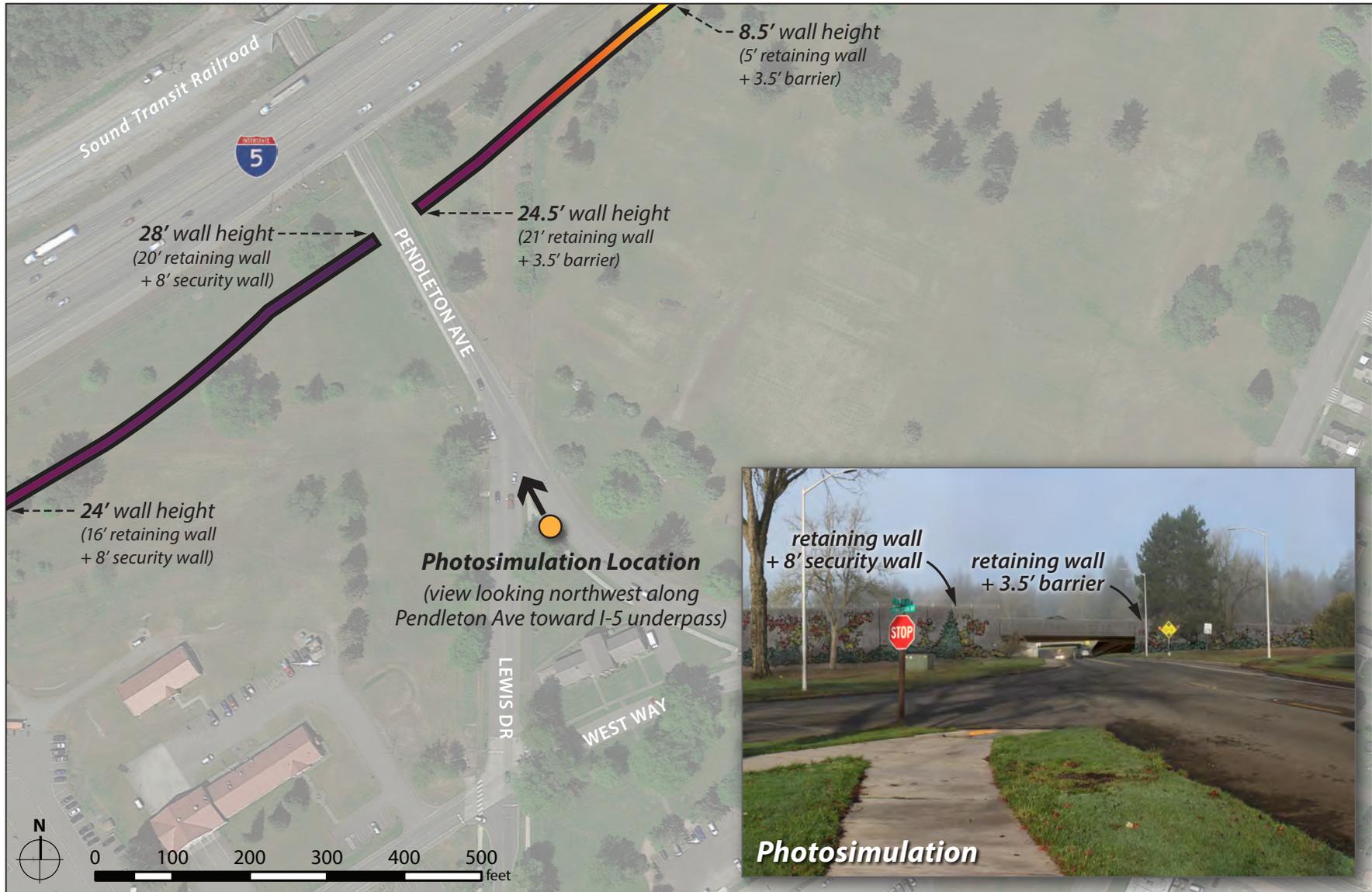
**Figure 3.11-4** View Toward Pendleton Avenue Underpass from JBLM – Existing and with Build Alternative Photosimulation



*Existing view toward Pendleton Avenue underpass*



*View toward Pendleton Avenue underpass with Build Alternative and plantings*



Proposed Retaining Wall

**WALL HEIGHT** (overall height including retaining wall + barrier)



**Figure 3.11-5**  
Proposed Retaining Wall Height  
at Pendleton Avenue Underpass

### FAMILY RESOURCE CENTER

The Build Alternative would alter views to the west from within JBLM, toward the entrance to the Family Resource Center and I-5 (see Figures 3.11-6 and 3.11-7). A mature big leaf maple located in the field just north of the Family Resource Center would be removed, opening up views of trees to the far side of I-5, and the southeastern end of the proposed noise wall would be seen by viewers. In this area, viewers on JBLM have a moderate degree of viewer exposure and a high degree of viewer awareness. The average degree of natural harmony of the view toward the Family Resource Center and I-5 from within JBLM would be slightly decreased, but not enough to change the existing degree of natural harmony.

The Build Alternative would produce a neutral change to the visual quality of views toward I-5, and views of the Family Resource Center from areas east of the building. Travelers on I-5 (who have a low degree of viewer exposure and a moderate degree of viewer awareness) would lose existing views of the Greenwood neighborhood due to the proposed noise wall but would continue to have views of the Family Resource Center. Because of the view blockage, the current high degree of cultural order of views toward this part of JBLM from I-5 would be reduced closer to average. By obstructing views of some of this area from I-5, the Build Alternative would result in a neutral to slightly adverse change to the visual quality of views toward this part of JBLM from I-5.

### RECOMMENDED NOISE ABATEMENT WALL

An approximately 1,200-foot long, 12- to 16-foot high noise wall topped with security wire would be constructed adjacent to I-5, north of the Family Resource Center, in the vicinity of the Greenwood neighborhood and the Fort Lewis Community Center playground. Several mature trees north of the Family Resource Center would be removed for construction of the noise wall. The removal of these trees would likely be noticed by viewers (residents) in the Greenwood neighborhood (who have a high degree of viewer exposure and awareness) as well as by passing motorists on I-5 (who have a low degree of viewer exposure and moderate degree of viewer awareness). The noise wall would block views and noise associated with I-5 and passing vehicles from the Greenwood residential area and open space.

The visual impact of the noise wall without aesthetic treatment could be adverse. Impacts would be improved to neutral because the noise wall would obstruct views of I-5 and passing vehicles from the adjacent Greenwood neighborhood, and landscape improvements or aesthetic treatments that would

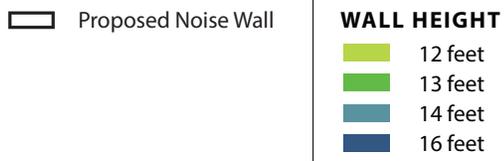
**Figure 3.11-6** View from Family Resource Center Toward I-5 – Existing and with Build Alternative Photosimulation



*Existing view from Family Resource Center toward I-5*



*View of recommended noise wall from Family Resource Center*



**Figure 3.11-7**  
Proposed Greenwood Noise Wall (Wall 2) Height

be applied to the wall. The Build Alternative would result in a neutral change to visual quality for views toward I-5 from the JBLM Greenwood neighborhood (including views to the north along I-5 from the Family Resource Center).

### ***Other Impacts to Visual Quality under the Build Alternative***

As part of the Build Alternative, all roadside areas within the Build Alternative footprint would receive a minimum of Treatment Level 2 as described in the WSDOT *Roadside Policy Manual*. This would entail replanting of all roadside areas disturbed by construction with native vegetation.

The existing visual quality in this study area ranges from a low degree of natural harmony and cultural order (e.g. in the area of Lewis North where storage facilities and railroad tracks are visible adjacent to the freeway) to a high degree of natural harmony and cultural order (e.g. in the vicinity of the Family Resource Center or the Garrison Historic District). Construction of the Build Alternative would result in neutral effects on visual quality throughout the study area, with the exception of the specific locations discussed above. Within the I-5 right of way, the Build Alternative would not change the average degree of visual coherence found in the existing setting of I-5.

### **3.11.5 Would the Build Alternative Have Construction Related Impacts?**

Impacts on visual resources are typically highest during the construction phase of a project, and the Build Alternative would be no exception. Construction activities typically detract from visual quality because construction sites are often dynamic and hectic. The majority of construction activities associated with the Build Alternative would occur within the highway right of way, especially along I-5. Construction-related impacts would be expected to last between 24 and 30 months.

Construction activities that are anticipated to occur would include:

- ◆ Clearing and grading that would detract from the natural character of the roadside.
- ◆ Use of heavy construction equipment within the Build Alternative footprint that would be visible to highway users and from adjacent land uses. This equipment would likely create dust and distractions affecting drivers in the vicinity.
- ◆ Use of construction staging for the storage and preparation of construction materials. Construction staging areas typically detract from visual quality

**Figure 3.11-8** Potential Mitigation Measures at Proposed Noise Wall



**Figure 3.11-9** Potential Mitigation Measures at Pendleton Avenue Underpass Retaining Wall



and reduce the overall visual quality of the Build Alternative area. Construction staging areas would be identified during final design.

- ◆ Narrowing of existing travel lanes along I-5 during construction of the proposed new lanes. This may entail use of jersey barriers or traffic cones, and/or restriping of the roadway.
- ◆ Removing vegetation and trees to accommodate the widened roadway and proposed interchanges. Tree and vegetation removal would be kept to a minimum whenever possible.
- ◆ Use of lighting to allow a contractor to work at night. The Build Alternative would use directional lighting to minimize night sky impacts.

Construction-related impacts are temporary in nature and do not require mitigation for impacts to visual quality.

### 3.11.6 How Can Impacts of the Build Alternative Be Minimized or Mitigated?

Potential impacts of the Build Alternative could include adverse, beneficial, and neutral effects to visual quality. Mitigation recommendations were developed in response to the specific impacts identified in the analysis. Potential mitigation measures for impacts to visual quality, in accordance with the *WSDOT Roadside Policy Manual* and in coordination with JBLM, would include:

- ◆ Minimize the removal of trees and shrubs and the pruning needed to accommodate proposed noise barriers.
- ◆ Replace landscaping, fencing, privacy walls, and other similar features for private properties, to the degree possible.
- ◆ Implement tree replacement ratios found in the *Roadside Policy Manual*.
- ◆ Implement roadside (or project) landscaping.
- ◆ Apply aesthetic treatments to visible structures.
- ◆ Apply aesthetic treatments to the design of bridges and grade-separated crossings over roadways and/or the Sound Transit railroad.
- ◆ Construct walls and barriers with aesthetic treatments, and low-sheen and non-reflective surface materials.
- ◆ Implement retaining wall aesthetics.

In addition, mitigation options follow the *WSDOT Roadside Policy Manual*, which are intended to replace the functional characteristics of the vegetation removed from the roadside as much as practicable. Key elements of revegetation would include:

- ◆ Use native vegetation to provide visual unity.
- ◆ Plant grass and shrubs within the clear zone of the roadway. Native grasses and forbs seed mixture would be selected to blend cut and fill slopes within the Build Alternative footprint with adjacent land uses. These grasses would also be selected to promote pollinator habitat.
- ◆ In sensitive areas and buffers, the following actions are considered:
  - Disturbance to native plant communities and specimen trees would be minimized by clearly identifying clearing and grading limits. In critical areas and their buffers temporarily disturbed by construction, roadside restoration with densely planted native trees and shrubs would be considered (as long as it is not within the highway clear zone).
  - As many trees as possible would be maintained by allowing minimal fill around the base of existing trees.
  - Tree species would be selected for replacement that are native and in context.

### 3.11.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

The Build Alternative would temporarily decrease the visual quality in the I-5 corridor during construction, but the decrease would not be significant. Removal of vegetation and trees would be kept to a minimum, and native vegetation would be replanted on all disturbed roadside areas outside of roadway zones.

With implementation of design measures, the Build Alternative would produce beneficial changes to the visual quality of views toward I-5 from the Greenwood neighborhood and neutral changes from other areas adjacent to I-5. Views toward JBLM would be blocked to motorists along parts of I-5, which in several locations would produce slightly adverse changes to the visual quality of those views.

## 3.12 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Projects that receive federal funding or are subject to federal approval must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966. Section 106 requires federal agencies to identify and evaluate the effects of federally-funded or permitted projects on historic properties and to consult with stakeholders to avoid, minimize, or mitigate adverse effects. A historic property is typically 50 years or older, and includes prehistoric or historic districts, sites, buildings, structures, objects, and properties of traditional religious and cultural importance that are listed or eligible for listing on the National Register of Historic Places (NRHP) maintained by the U.S. Secretary of the Interior. If historic properties are identified, potential adverse effects must be assessed, and resolution methods recommended. The Build Alternative is located on federal lands managed by JBLM and requires FHWA approval; therefore, it is subject to Section 106.

### 3.12.1 How Were Archaeological and Historic Resources Evaluated?

The procedures under Section 106 require identification of an Area of Potential Effects (APE), identification of historic properties located within the APE, and evaluation of a project's effects on historic properties. An APE is the geographic area within which a project may directly or indirectly cause alterations in the character or use of historic properties.

The Build Alternative APE was determined by WSDOT, in consultation with JBLM and the Washington Department of Archaeology and Historic Preservation (DAHP) and is illustrated in Figure 3.12-1. The APE consists of a 200-foot-wide buffer around the Build Alternative footprint (otherwise known as the extent of ground disturbance or EOD) to account for both direct and indirect effects on historic properties. In the Fort Lewis Garrison Historic District, the APE is wider to account for potential visual, noise, or other indirect effects on historic properties within the District. The APE is 406.2 acres in size.

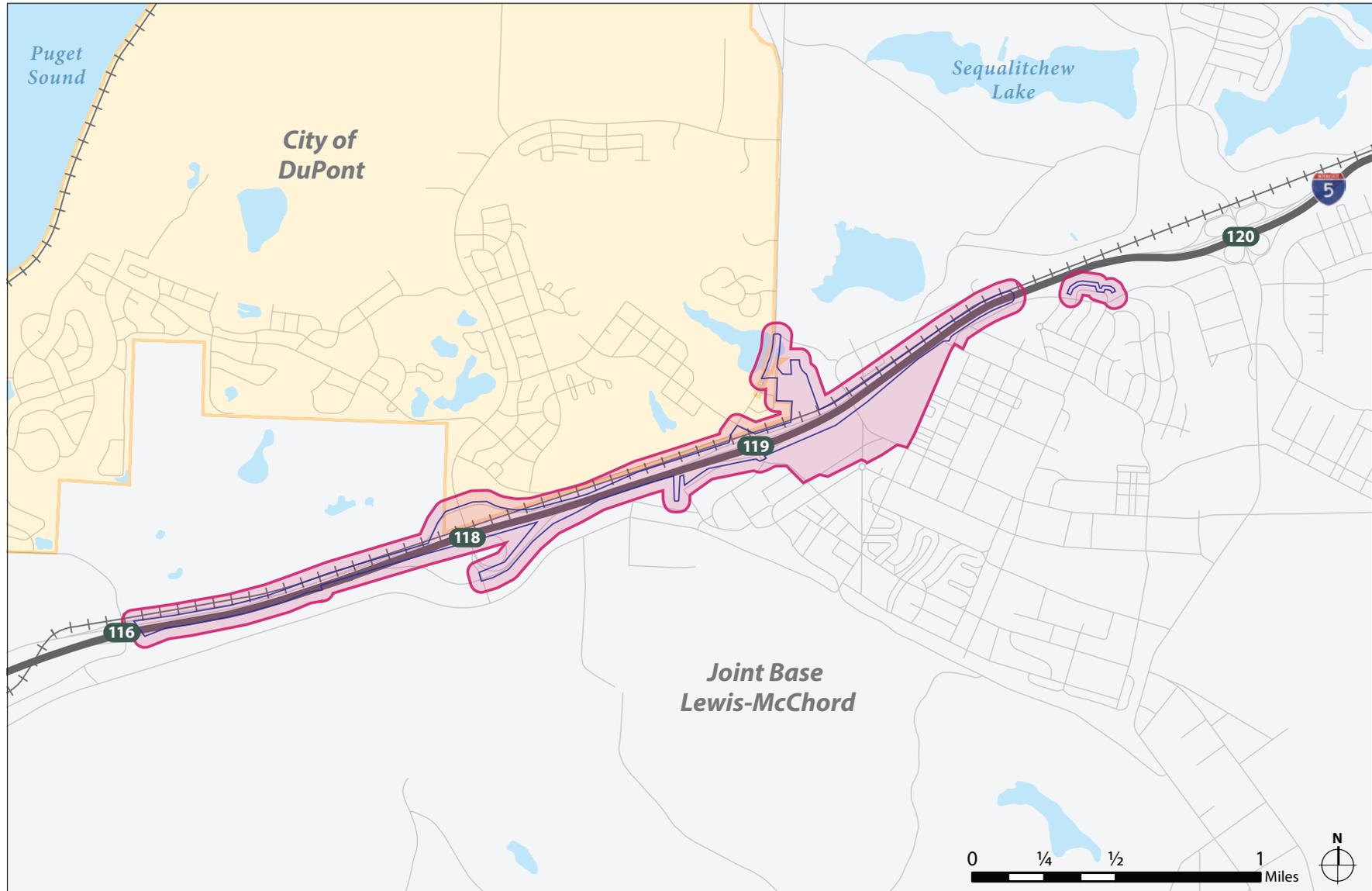
Much of the South Study Area was previously investigated for archaeological and historic resources as part of the 2017 EA. Data from previous cultural resource surveys, documented historic properties, and information on the local environment and cultural settings were compiled to create a database

of documented archaeological and historic sites, and identify research gaps within the APE. Since completion of the 2017 EA, a project footprint has been established in the South Study Area and a detailed evaluation of potential impacts associated with the Build Alternative has been conducted. Research methods included an archival record search, a pedestrian survey, and subsurface testing.

A variety of archival resources were consulted to create an inventory of cultural resources in the APE and assess the potential for encountering undocumented historic properties within the APE. The record search included previous resource surveys; documented archaeological sites, historic sites, structures, and objects; and historic maps, including:

- ◆ Information available on the DAHP online database (WISAARD)
- ◆ Archival information available from JBLM including historic property inventory forms from surveys conducted in the 1970s and 1980s, archaeological site forms associated with previous studies, previously prepared reports, copies from JBLM's map collection, and additional records for resources not fully recorded in WISAARD
- ◆ Historic-period plats from the General Land Office (GLO), historic-period land patents, and historic-period maps and atlases that were reviewed for the presence of structures, sites, and features that might be within the APE, and as indicators of potential archaeological sites and past land use patterns
- ◆ Online county atlases through [www.HistoricMapWorks.com](http://www.HistoricMapWorks.com)
- ◆ Ethnographic sources regarding place names, burials, and land use practices
- ◆ Additional resources, including contexts and federal guidance on the treatment of Capehart-Wherry housing and supplemental noise and visual effects studies prepared by Michael Minor & Associates and SCJ Alliance; this information was reviewed to assist with evaluating NRHP eligibility and effects assessments for architectural resources within the APE

Investigation of the South Study Area included an archaeological inventory generally conducted within the previously unstudied portions of the EOD. A resurvey was conducted of a portion of the EOD near Exit 119 at the request of JBLM. The archaeological inventory encompassed 33.8 acres and consisted



○ Extent of Ground Disturbance (EOD)  
○ Area of Potential Effects (APE)

**INTERCHANGES**

- 116** Mounts Road interchange
- 118** Center Drive interchange
- 119** Steilacoom-DuPont Road interchange
- 120** Main Gate interchange

**Figure 3.12-1**  
*Area of Potential Effects for  
Archaeological and Historic  
Resources*

of a pedestrian survey that covered the archaeological survey area and the excavation of 124 shovel probes.

An architectural inventory was conducted of potential historic resources at all locations within the South Study Area APE where resources have not been previously documented or have no up-to-date determinations of eligibility on file with DAHP and will be 50 years old prior to construction of the Build Alternative.

Further information about the identification and evaluation of archaeological and historic resources is included in the *Cultural Resources Inventory for I-5 JBLM Vicinity Congestion Relief Project – South Study Area* (HRA, 2019).

### **How Are Properties Determined to Be Historic?**

The National Park Service (NPS) administers the NRHP, which is the official list of the nation's historic places worthy of preservation. In order to be eligible for listing on the NRHP, a historic property must be significant in American history, architecture, archaeology, engineering, or culture. Additionally, a historic property must meet one or more of the four NRHP criteria:

- ◆ **Criterion A:** Be associated with events that have made a significant contribution to the broad patterns of our history.
- ◆ **Criterion B:** Be associated with the lives of persons significant in our past.
- ◆ **Criterion C:** Embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- ◆ **Criterion D:** Have yielded, or may be likely to yield, information important in prehistory or history.

The integrity of a historic property is a key consideration in NRHP eligibility. Integrity is the ability of a historic property to convey its significance through historic qualities such as location, design, setting, materials, workmanship, feeling, or association. The degree of integrity is taken into consideration when evaluating resources under the NRHP criteria. For example:

- ◆ If eligible for historic associations under **Criterion A**, a resource should **retain substantial aspects of its overall integrity**, although design and workmanship may not weigh as heavily as those aspects related directly to its historic associations.
- ◆ To be eligible for association with a prominent person under **Criterion B**, the resource should **retain some aspects of integrity**, although design and workmanship may not be as important as the other considerations.
- ◆ To be eligible under **Criterion C**, a resource must **retain its physical features that constitute a significant construction technique or architectural style**. Critical aspects of integrity for such properties are design, workmanship, and materials. Location and setting are also important for those resources whose design reflects their immediate environment.
- ◆ Resources significant under **Criterion D** may not have the type of integrity described under the other criteria. **Location, design, materials, and workmanship are generally the most important aspects of integrity** for Criterion D resources.

Sites on the NRHP are automatically added to the Washington Heritage Register (WHR). Likewise, the criteria used to evaluate historic properties for possible inclusion in the Pierce County Register of Historic Places (PCRHP) are based on those used for the NRHP and WHR. The process for listing in the PCRHP is codified in Chapter 2.88 of the Pierce County Code.

As the criteria for listing in the WHR and PCRHP are virtually identical to the criteria for listing in the NRHP, unless stated otherwise, resources that meet the criteria for the NRHP are likewise eligible for listing in the WHR and PCRHP. Those that do not meet the criteria for listing in the NRHP are typically not eligible for listing in the WHR or PCRHP.

### **3.12.2 What Archaeological and Historic Resources Are in the APE?**

The Project area has hosted a variety of significant historic events of local, regional and national importance. It is the traditional territory of the Nisqually Indian Tribe, Puyallup Tribe of Indians, Squaxin Island Tribe, and Steilacoom Indian Tribe. The 1854 Medicine Creek Treaty secured certain rights of the

Nisqually, Puyallup, and Squaxin tribes, while ceding traditional territories to the United States. Traditional use of the area is generally oriented toward resource locations such as fresh water, terrestrial and marine food resources, forests, and other suitable terrain. Coast Salish villages were often located along major waterways and at heads of bays or inlets, where abundant resources supported a relatively rich, diverse, and reliable subsistence base.

The first non-native immigrants to the area were European, Hawaiian, and Metis employees of the Hudson's Bay Company who arrived in the early 1800s with the development of trading posts and agricultural stations. Fort Nisqually, located approximately one mile west of the APE, served as the headquarters for the agricultural subsidiary of the Hudson's Bay Company. Encouraged by the Donation Land Claim Act and Homestead Acts, a wave of Euro-American settlers arrived in the later part of the 1800s to settle the area.

The advent of Fort Lewis and McChord Air Force Base in the early 20th century had a substantial long-term impact on the development of the local economy and landscape. The history of Fort Lewis can be summarized by three periods of development: World War I (1917–1919), building permanent Fort Lewis (1927–1939), and World War II (1940–1948). Camp Lewis was established in 1917, following the condemnation and purchase of 70,000 acres of tribal and private land by Pierce County, and subsequent donation to the Army. Camp Lewis served as a mobilization, training, and supply station in anticipation of U.S. entry into World War I (WWI). Following WWI, Fort Lewis developed into a permanent Army post. In the years leading up to World War II (WWII), the fort rapidly expanded as troops prepared for war. Thousands of buildings were constructed during this period, but few remain at JBLM. The development of McChord Air Force Base closely followed in the 1920s.

The area has contained important transportation features for at least 170 years. Although accurate maps of the local landscape were not available until surveys of the area began in the 1870s, Hudson's Bay Company era maps indicate a transportation network was well developed by the 1840s. By 1893, local routes had shifted into the Project corridor. State Route (SR) 1, the precursor to I-5, was designated by the Washington State Legislature as one of the first of a handful of important state transportation routes. In 1913, at a time when few automobiles were on roads, SR 1 was recognized as a Primary State Highway and named Pacific Highway. In the lead-up to America's entry into WWII,

local population and traffic increased dramatically creating bottlenecks on Pacific Highway at Fort Lewis. The 1941 Defense Highways Act supported construction of a viaduct spanning Pacific Highway, connecting Fort Lewis to the new 41st Division Cantonment on the west side of Pacific Highway. Further improvements were made following the National System of Interstate and Defense Highways Act of 1956, which provided for a system of limited access interstate highways as a means of alleviating congestion caused by driving hazards related to new technology and rapidly expanding roadside developments. At this time, I-5 was built on the alignment of Pacific Highway between Mounts Road and Gravelly Lake Drive. The long history of use of the area for transportation and military operations results in a concentration of archaeological and historic resources along the corridor.

### *Archaeological and Historic Resources in the APE*

#### ARCHAEOLOGICAL RESOURCES

Seven archaeological resources were previously identified in the South Study Area APE and documented as part of the 2017 EA. Three of these resources are located outside of the EOD (45PI1310, 45PI1316, and the Bottling Plant); and four are within the EOD (45PI769, 45PI1031, 45PI1393, and 45PI1394). Additionally, a Hudson's Bay Company (HBC) Trail Marker (45PI203) is also located within the APE outside of the EOD. These resources are summarized below, along with conclusions related to eligibility for listing in the NRHP (DAHP 2016a).

- ◆ **Site 45PI203** is an HBC monument that is located at the edge of the EOD near Exit 120 (Main Gate) and has been recorded on both archaeological and HPI forms. The monument has been previously determined not eligible for listing in the NRHP (DAHP 2016a) and construction of the Build Alternative will not impact the monument.
- ◆ **Site 45PI769** (Northern Pacific Railway Station) is located within the APE and a small portion is within the EOD at Exit 119 (Barksdale Avenue). The site has been previously surveyed and determined not eligible for listing in the NRHP (Sternner 2015).
- ◆ **Site 45PI1031** is associated with early and mid-twentieth century activities at JBLM. The site is located within the EOD for the Build Alternative and has been determined not eligible for listing in the NRHP (Wardlaw 2017).

- ◆ **Isolate 45PI1310** is located within the APE near Steilacoom-DuPont Road. The isolate was previously recommended as not eligible for listing in the NRHP (Cooper et al. 2014) and is located outside of the EOD. Additionally, DAHP considers isolates to be automatically not eligible, as they do not meet NRHP Criterion D.
- ◆ **Site 45PI1316** (Greene Park) is located within the APE on the west side of I-5. The northern portion of site 45PI1316, north of Main Street has been recommended as not eligible for the NRHP, while the portion of the site south of Main Street has been recommended as NRHP-eligible. DAHP's concurrence with these recommendations is pending. The site is not within the EOD for the South Study Area Build Alternative but is within the EOD for the North Study Area. Ground disturbing activities were addressed as part of the cultural resource study for the North Study Area in the 2017 EA.
- ◆ **Site 45PI1393** is part of the former location of DuPont School, which was demolished in 1989. The previously recorded site boundaries are located entirely within the EOD for the Build Alternative. The site was previously determined not eligible for listing in the NRHP (Wardlaw 2017).

**Figure 3.12-2** Pacific Highway at Liberty Gate, 1939  
(Photo courtesy of JBLM)



- ◆ **Site 45PI1394** is where the main entrance to Camp Lewis was once located and is the former location of Liberty Gate (see photograph in Figure 3.12-2). The northern portion of the site is within the EOD for the Build Alternative. NRHP eligibility of the site within its historic context was reevaluated and it is recommended that the site is not eligible for listing in the NRHP.
- ◆ **The Bottling Plant** is where the Camp Lewis Bottling Company was once located. The site is recommended as not eligible for listing in the NRHP.

## HISTORIC RESOURCES

### Buildings Considered for NRHP Eligibility

An inventory was conducted at all locations within the APE where structures have not been previously documented or have no up-to-date determinations of eligibility on file with the DAHP and the buildings will be fifty years old before the Build Alternative is constructed. A re-evaluation was also conducted of the Fort Lewis Memorial Arboretum, because it is nearing fifty years old (2021). In total, reconnaissance level surveys were conducted of 18 historic-period resources (17 buildings and 1 site), all of which are recommended not eligible for listing in the NRHP, the WHR, or the PCRHP. The results of this evaluation are presented in Table 3.12-1 and summarized below. The location of each resource is illustrated in Figure 3.12-3.

- ◆ **Building 1401** was constructed as a laundry plant for the base in 1974. The building is located on the edge of the APE south of the existing Steilacoom-DuPont Road interchange. It retains integrity of location and setting, but alterations including incompatible materials have diminished the building's integrity of design, materials and workmanship. The site was reevaluated for NRHP eligibility within its historic context and recommended as not eligible for listing in the NRHP.
- ◆ **Building 5501** was constructed as a duplex for non-commissioned officers in 1958. It is an example of Capehart-era housing on Fort Lewis and is located within the APE in the Greenwood neighborhood, near some of Fort Lewis's historic brick homes. A nationwide evaluation of this military housing states: "For the most part, this housing has been determined ineligible (for listing in the NRHP) in a national context, although local associations and connections with influential builders or

architects are still possible. However, until such information is revealed, the Fort Lewis examples are deemed not eligible” (Chattey and Taylor 2003).

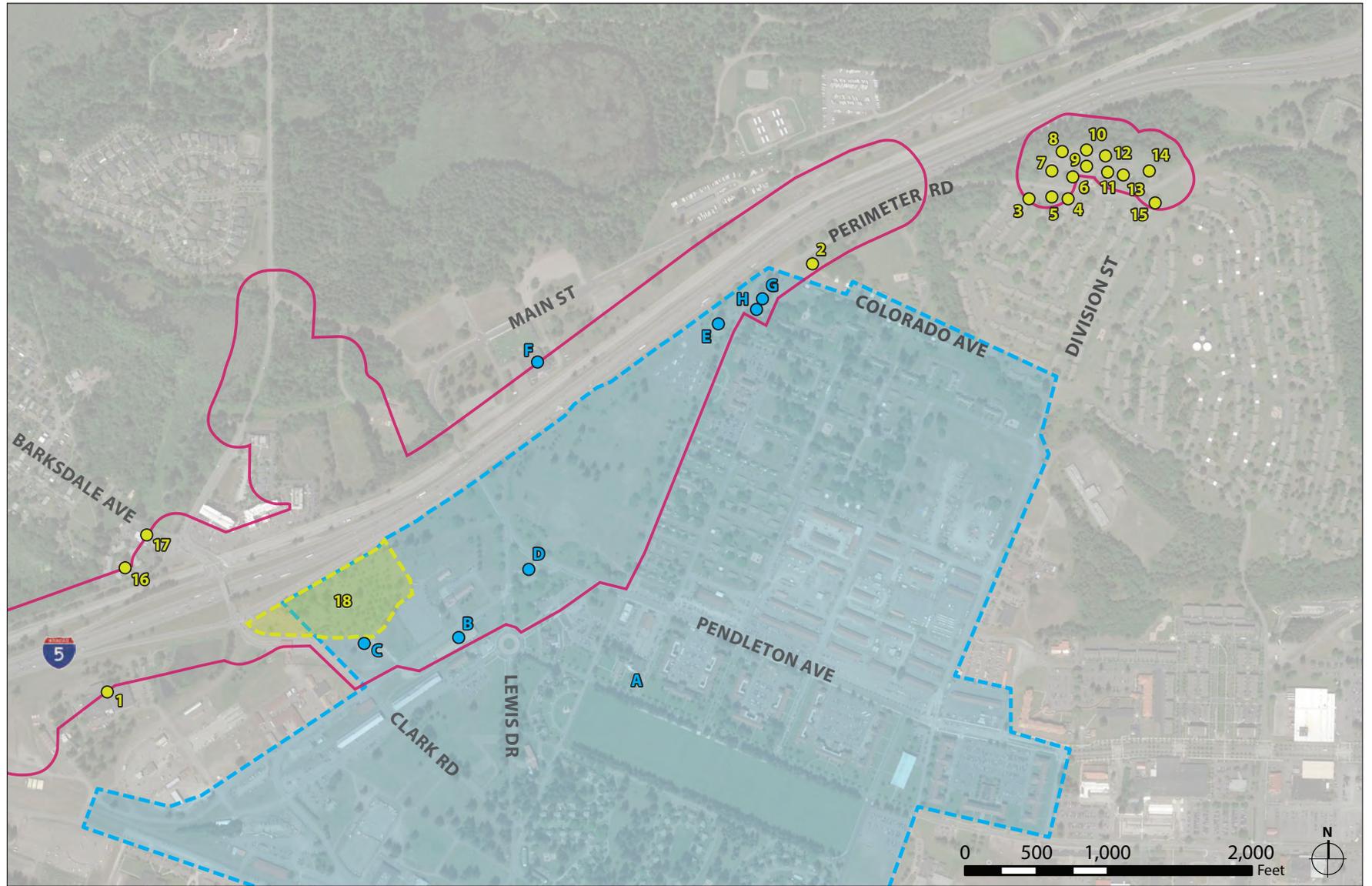
- ◆ **NCO Housing** (Buildings 5548–5549, 5550–5551, 5623–5624, 5625–5626, 5627–5628, 5629–5630, 5631–5632, 5633–5634, 5635–5636, 5637–5638, and 5639–5640) were constructed for non-commissioned officers in 1960 and are located within the APE south of the Main Gate interchange. These buildings were constructed during the Capehart era and possess the architectural character of a typical Ranch-style duplex. The buildings

**Table 3.12-1 Eligibility Recommendations for Surveyed Historic Resources**

Figure 3.12-3 Reference	Common Name	Date of Construction	NRHP Eligibility Status Recommendations
1	Building 1401	1974	Recommend not eligible
2	Building 5501	1958	Recommend not eligible
3	Building 5548–5549	1960	Recommend not eligible
4	Building 5550–5551	1960	Recommend not eligible
5	Building 5552	1960	Recommend not eligible
6	Building 5622	1960	Recommend not eligible
7	Building 5623–5624	1960	Recommend not eligible
8	Building 5625–5626	1960	Recommend not eligible
9	Building 5627–5628	1960	Recommend not eligible
10	Building 5629–5630	1960	Recommend not eligible
11	Building 5631–5632	1960	Recommend not eligible
12	Building 5633–5634	1960	Recommend not eligible
13	Building 5635–5636	1960	Recommend not eligible
14	Building 5637–5638	1960	Recommend not eligible
15	Building 5639–5640	1960	Recommend not eligible
16	Wilmington Village Apts	1974	Recommend not eligible
17	116 Barksdale Avenue	1970	Recommend not eligible
18	Memorial Arboretum	1971	DAHP determined not eligible; assumed WHR eligibility

retain integrity of location and setting because they continue to be part of a residential neighborhood (Davis Hill) on Fort Lewis. They appear to retain integrity of design, but no longer retain integrity of materials and workmanship. It is recommended that these buildings are not eligible for individual listing on the NRHP, nor would they qualify as contributing resources to a historic district of similar homes from the same period, as assessed solely on architectural character.

- ◆ **Buildings 5552 & 5622** were constructed as single residential units for non-commissioned officers in 1960 during the Capehart era and are located within the APE south of the Main Gate interchange. As they no longer retain integrity of materials and workmanship, it is recommended that these buildings are not eligible for individual listing on the NRHP or as contributing resources to a historic district of similar homes from the same period.
- ◆ **Wilmington Village Apartments** were constructed in 1974. The apartments are located on the edge of the APE but outside of the EOD on the south of the Steilacoom–DuPont Road interchange. The apartments are typical of other apartment complexes of the era and are not distinctive examples of this common type. It is recommended that these apartments are not eligible for individual listing on the NRHP.
- ◆ **116 Barksdale Avenue** is a small, one-part commercial block built in 1970 in the Modern style. The building is located on the edge of the APE but outside of the EOD on the south of the Steilacoom–DuPont Road interchange and is similar to others of its type. As such it does not qualify as architecturally significant under Criterion C. It is recommended that this building is not eligible for individual listing on the NRHP.
- ◆ **Memorial Arboretum** is located within the APE and portions of the arboretum are located within the EOD. The Arboretum has been evaluated numerous times (2003, 2010 and 2016), and found to be a noncontributing resource to the Fort Lewis Garrison Historic District. It is recommended that the Fort Lewis Memorial Arboretum does not qualify for listing in the NRHP, the WHR, or the PCRHP due to a lack of significance under any of the four criteria for listing. However, with the support of DAHP, the Arboretum will likely be listed on the WHR before the Build Alternative is



- NRHP-Eligible or Listed Resources
- Evaluated Architectural Resources
- Garrison Historic District Boundary
- Memorial Arboretum Boundary
- Area of Potential Effects (APE)

**Figure 3.12-3**  
South Study Area Surveyed  
Historic Resources

constructed, and is therefore treated in the analysis of Build Alternative effects as a WHR-eligible resource.

#### NRHP-Eligible and Contributing Historic Resources

There are ten NRHP-listed or eligible historic resources within the APE, including a portion of the NRHP-eligible and WHR-listed Fort Lewis Garrison Historic District as well as seven architectural resources that contribute to the District and are individually eligible for NRHP listing. Additionally, the original road system and the rail system for Fort Lewis are identified as contributing elements. The APE also includes the independently listed Red Shield Inn (Building 432).

- ♦ **Garrison Historic District** is 494 acres on the east side of I-5. Its period of significance spans two eras of development. The first period was the construction of the garrison from 1917 to 1939, *“an active period between the world wars that left an extensive architectural imprint. It was during this period that the [D]istrict achieved its signature brick and tile rendered in architectural revivals such as colonial, Georgian, and Tudor”* (Chattey and Taylor 2003). The second period is associated with the military build-up for World War II between 1940 to 1948, which took place primarily outside the District’s boundaries but left some imprint on the District. The District is significant under NRHP Criterion A both for its military associations and for its association with community planning and development. It was also found significant under Criterion C for its architectural features and physical layout that *“exhibit important tenets and milestones in the history of landscape architecture”* (Chattey and Taylor 2003).
- ♦ **Building 4170/71** is a warehouse constructed on Camp Lewis in 1917. It was built to serve as a temporary building that could be used as either barracks or storage. It was constructed on a raised foundation and designed to allow loading and unloading from the adjacent railroad tracks. It is significant as a contributing resource to the Garrison Historic District and for its association with World War I and Camp Lewis. It was determined eligible for independent listing on the NRHP in 2016.
- ♦ **Building 4176/Quartermaster’s Filling Station** was constructed in 1937 using prison labor. The cobblestone building is associated with an

early era of permanent development on the base. The building is south of the Memorial Arboretum. The building is no longer used, the gas pumps have been removed for restoration and have not yet been reinstalled. It is located adjacent to a degraded roadway that is no longer in regular use. The station was found eligible for independent listing in the NRHP in 2016.

- ♦ **Building 4201/Red Cross Field House** was constructed in 1941. It is a Colonial Revival-style building with a two-story central mass and grand portico supported by square columns. The building faces north toward I-5 at the corner of Lewis Drive and Pendleton Avenue and is significant for its architectural character and possibly also for its association with the work of the Red Cross during World War II. It was found eligible for listing in the NRHP in 2016.
- ♦ **Building 4274/Red Cross Hostess House** is a Greek Revival-style building constructed in 1918. It was originally used as a recreational facility for convalescing soldiers. It was built during the first wave of construction on Camp Lewis and is significant for its associations with World War I. It was found eligible for listing in the NRHP in 2016.

**Figure 3.12-4** JBLM Memorial Arboretum



**Table 3.12-2** NRHP-Eligible and Contributing Resources within the APE and the Fort Lewis Garrison Historic District

Figure 3.12-3 Reference	Common Name	Date of Construction	NRHP Eligibility Status Recommendations
A	Fort Lewis Garrison Historic District	1917–1948	NRHP-eligible; WHR-listed
B	Building 4170/71 – Warehouse	1918	NRHP-eligible; contributing to District
C	Building 4176 – Quartermaster’s Gasoline Filling Station	1937	NRHP-eligible; contributing to District
D	Building 4201 – Red Cross Field Office	1942	NRHP-eligible; contributing to District
E	Building 4274 – Red Cross Hostess House	1918	NRHP-eligible; contributing to District
F	Building 4320 – Red Shield Inn	1919	NRHP-listed
G	Building 5301 – NCO Quarters Garage	1948	NRHP-eligible; contributing to District
H	Building 5302 – NCO Quarters	1939	NRHP-eligible; contributing to District
--	Camp Lewis Railroad – JBLM	1917	NRHP-eligible; contributing to District
--	Road 1 – Camp Lewis Road System (Fort Lewis Road System)	WWI Era	NRHP-eligible; contributing to District

- ◆ **Building 4320/Red Shield Inn** was constructed in 1919 by the Salvation Army. It was a meeting place and inn for the families and friends of soldiers at Camp Lewis. It is a Swiss Chalet-style building and one of the most architecturally significant resources associated with the first wave of development on Camp Lewis. It now serves as the Fort Lewis Military Museum and was listed in the NRHP in 1979.
- ◆ **Building 5301/NCO Quarters Garage** is associated with officers’ quarters and is a simple rectangular wood clad building. It was constructed in 1948 and faces south toward the NCO quarters. The building derives its significance from its association with housing on the base and was found eligible for independent listing in the NRHP in 2016.
- ◆ **Building 5302/NCO Quarters** was constructed as housing for noncommissioned officers in 1939. This Tudor-style multifamily building is clad in brick with clipped gables and shed dormers on its south elevation. It is significant for its architectural character and association with housing activities on base in the 1930s. It was found eligible for independent listing in the NRHP in 2016.
- ◆ **Camp Lewis Railroad** is a spur line from the Northern Pacific Railroad that served Camp Lewis and contributes to the Garrison Historic District today. It was used primarily to transport building materials to aid development of Camp Lewis in 1917. In 2018 DAHP determined the rail line eligible for listing. The east leg of a railroad wye runs along the EOD before turning south to join the main rail line. The wye is no longer in use and the ties have been removed.
- ◆ **Camp Lewis Road System** is identified in the Garrison Historic District nomination as a contributing resource to the District, with many arterials dating to 1917. Features such as the former Clark Road entrance at Liberty Gate (which was relocated with the construction of I-5 in 1957), Pershing Circle, and four east-west thoroughfares are specifically identified in the nomination.

The NRHP eligible and contributing resources within the APE are described in Table 3.12-2 and shown in Figure 3.12-3.

### 3.12.3 What Impacts Are Associated with the No Build Alternative?

Under the No Build Alternative, no improvements to I-5 would be made; therefore, no impacts to archaeological and historic resources would occur.

### 3.12.4 Would the Build Alternative Have Long-Term Impacts?

As proposed, the Build Alternative would permanently affect 3.8 acres of the 494-acre Garrison Historic District and temporarily affect an additional 2.0 acres to allow for construction adjacent to the District. The Build Alternative was evaluated to identify its potential for direct, indirect, and adverse effects on

known historic resources within the APE. Although the Build Alternative would permanently alter 0.8 percent of the land along the northwestern border of the Garrison Historic District, this area has evolved over recent decades and no longer retains its character from the District's period of significance. The Build Alternative would result in indirect audio and visual effects and diminish visibility between I-5 and significant resources including the NCO Quarters and Garage, the Hostess House and the Red Shield Inn. The Build Alternative would not diminish the significance or integrity of the historic properties or District on JBLM. Historic resources would retain their physical proximity and access to I-5, and the Build Alternative would not alter any characteristics that qualify them for listing in the NRHP.

**Table 3.12-3** Effects Assessment for NRHP Eligible or Listed Resources in the APE

Site Name	Eligibility Status	Build Alternative Effect
<b>Historic Resources</b>		
Fort Lewis Garrison Historic District	NRHP-eligible, WHR-listed	<b>Direct Effect</b> due to permanent use of 3.8 acres <b>Indirect Effect</b> due to temporary use of 2.0 acres
Building 4170/71 – Warehouse	NRHP-eligible; contributing to District	<b>No Effect</b>
Building 4176 – Quartermaster's Gasoline Filling Station	NRHP-eligible; contributing to District	<b>No Effect</b>
Building 4201 – Red Cross Field Office	NRHP-eligible; contributing to District	<b>Indirect Effect</b> due to visual barrier from retaining wall and security wall on bridge over Pendleton Avenue; beneficial indirect effect of noise reduction by 1 dBA.
Building 4274 – Red Cross Hostess House	NRHP-eligible; contributing to District	<b>Indirect Effect</b> due to visual intrusions into the building's viewshed associated with construction of a noise wall and increase in noise levels of 2 dBA.
Building 4320 – Red Shield Inn	NRHP-listed	<b>Indirect Effect</b> due to possible loss of some visual access from the building JBLM Main across I-5.
Building 5301 – NCO Quarters Garage	NRHP-eligible; contributing to District	<b>Indirect Effect</b> due to viewshed changes associated with construction of a noise wall.
Building 5302 – NCO Quarters	NRHP-eligible; contributing to District	<b>Indirect Effect</b> due to changes in viewshed from the side and rear of the building associated with the noise wall. Beneficial indirect effect to noise levels which are modeled to decrease by 7 dBA at this location.
Camp Lewis Railroad – Joint Base Lewis-McChord	NRHP-eligible; contributing to District	<b>Indirect Effect</b> due to change in viewshed. Noise levels may change as result of the Build Alternative ranging from increases of 2 dBA to decreases of 4 dBA depending on location.
Road 1 – Camp Lewis Road System (Fort Lewis Road System)	NRHP-eligible; contributing to District	<b>Indirect Effect</b> resulting from changes in viewshed from some road locations and changes in noise levels ranging from an increase of 2 dBA to a decrease of 10 dBA depending on location.

Note: NRHP refers to National Register of Historic Places; WHR refers to Washington Heritage Register.

While the Build Alternative would alter the Garrison Historic District, effects do not qualify as adverse, as defined in Section 106 of the National Historic Preservation Act and its implementing regulations. Because the views of I-5 are not character-defining, the Build Alternative would not alter, directly or indirectly, the characteristics of the District that qualify the property for inclusion in the NRHP. The District would retain integrity of location, setting, design, materials, workmanship, feel and association. No additional research for architectural resources is recommended at this time. However, if project parameters change, additional survey and inventory may be necessary. Table 3.12-3 presents a summary evaluation of the effect of the Build Alternative on NRHP-eligible or listed resources within the APE.

### 3.12.5 Would the Build Alternative Have Construction Related Impacts?

Construction of the Build Alternative would temporarily affect an additional 2.0 acres in the Garrison Historic District (beyond the permanent impact) to facilitate construction of new overpasses at Exit 119 and a noise wall on the District's northern boundary. As designed, the Build Alternative would avoid construction impacts to historic properties.

### 3.12.6 How Would Build Alternative Impacts Be Minimized or Mitigated?

Under the Build Alternative, no adverse effects to historic properties or the Garrison Historic District are anticipated. In the event archaeological deposits are inadvertently discovered during construction in any portion of the APE, ground-disturbing activities would be halted immediately, and WSDOT (and JBLM if on federal lands) would be notified. The WSDOT Archaeologist would then contact DAHP and the interested Tribes, as appropriate. WSDOT would coordinate with JBLM to develop appropriate architectural treatments and vegetation enhancements, to be described in an enhancement plan that would be included as part of a future design-build contract.

### 3.12.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

The Build Alternative has been determined to have No Adverse Effect on Section 106 resources.

### 3.12.8 How Does the Project Comply with Section 106 of the National Historic Preservation Act?

FHWA is the lead federal agency for Section 106 consultation. This consultation has included FHWA, the State Historic Preservation Office (SHPO), JBLM, WSDOT, as well as the Nisqually, Puyallup, Yakama and Squaxin Tribes. A project specific Programmatic Agreement for the South Study Area was executed on May 17, 2017 between FHWA, SHPO, WSDOT, JBLM as well as the Nisqually and Squaxin Tribes. All cultural resources work has been conducted in accordance with the stipulations outlined in the Programmatic Agreement.

### 3.13 SECTION 4(f) AND 6(f) RESOURCES

Section 4(f) refers to a section of the Department of Transportation Act of 1966 that restricts transportation projects from using land in significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, or public or privately-owned historical sites unless the following conditions apply:

- ◆ There is no feasible and prudent alternative to the use of the property.
- ◆ The action includes all possible planning to minimize harm to the property resulting from such use.
- ◆ The use of the property, including measures to minimize or mitigate impacts, will have a *de minimis* impact.

The proposed Build Alternative would use land within the Fort Lewis Garrison Historic District which is eligible for listing on the National Register of Historic Places and therefore a 4(f) resource. This chapter addresses the use of the Historic District land for a transportation project.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act protects recreational lands purchased or improved with land and water conservation funds. There are no Section 6(f) properties in the ½ mile study area.

#### 3.13.1 How Were Section 4(f) and 6(f) Resources Evaluated?

Historic and archaeological resources were identified and evaluated in the *Cultural Resources Inventory for I-5 JBLM Vicinity Congestion Relief Project – South Study Area* (HRA 2019). As described in Section 3.12, the Area of Potential Effects (APE) encompasses the horizontal and vertical direct impact area of the proposed Build Alternative, a one parcel buffer around the Build Alternative footprint on private lands, and a 200-foot buffer around the Build Alternative footprint on federal lands. The study area for parks, recreation areas and refuges includes all the land within ½ mile of the Build Alternative footprint. The study area is mapped in Figure 3.13-1. Within this area all parks, schools, historic resources and wildlife refuges were identified and mapped.

Documents and data sources reviewed as part of the 4(f) analysis include:

- ◆ Pierce County GIS data (2009)
- ◆ City of DuPont digital map resources (2009)
- ◆ WSDOT GIS data from the Department of Archaeology & Historic Preservation (2015)
- ◆ *Cultural Resources Inventory for I-5 JBLM Vicinity Congestion Relief Project – South Study Area* (2019)

#### 3.13.2 What Section 4(f) Resources Are in the Study Area?

There are 21 qualifying resources within the 4(f) study area. There are no wildlife or waterfowl refuges in the study area.

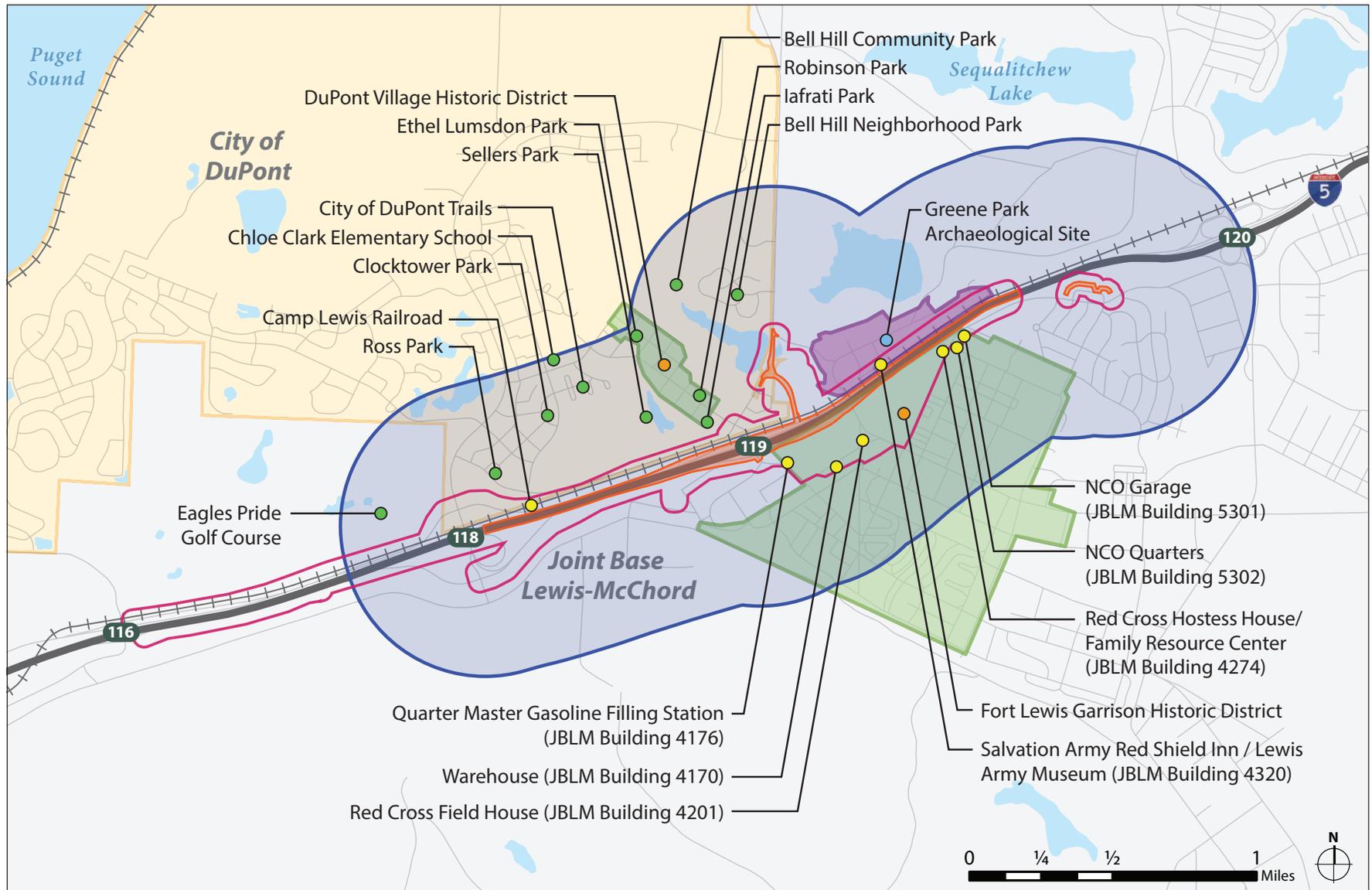
The 2019 *Cultural Resources Inventory*, and Section 3.12 of this SEA, describe the historic and archaeological resources in detail. The 4(f) eligible resources, within the study area include eight historic properties, one archaeological site, 11 parks/recreational resources, and two historic districts. Each of these resources is noted in Table 3.13.-1 and mapped on Figure 3.13-1.

#### 3.13.3 What Would Be the Impact of the No Build Alternative?

The proposed project would not be constructed under the No Build Alternative; therefore, no Section 4(f) resources would be impacted.

#### 3.13.4 Would the Build Alternative Have Impacts to Section 4(f) and 6(f) Resources?

Section 23 CFR 774.17 defines what constitutes use of an eligible Section 4(f) property as a result of transportation project actions. A project has a 4(f) property use if it permanently incorporates Section 4(f) eligible land into a transportation facility, temporarily uses Section 4(f) eligible land for project construction-related activities, or creates proximity impacts that are so severe the protected activities, features or attributes that qualify the property for protection under Section 4(f) are substantially impaired.



- Historic Properties
- Park and Recreation Resources
- Historic Districts
- Archaeological Sites
- Section 4(f) Study Area
- Area of Potential Effect (APE)
- Build Alternative Footprint

**INTERCHANGES**

- 116 Mounts Road interchange
- 118 Center Drive interchange
- 119 Steilacoom-DuPont Road interchange
- 120 Main Gate interchange

**Figure 3.13-1**  
*4(f) Resources in the Study Area*

**Table 3.13-1 4(f) Resources in the Study Area**

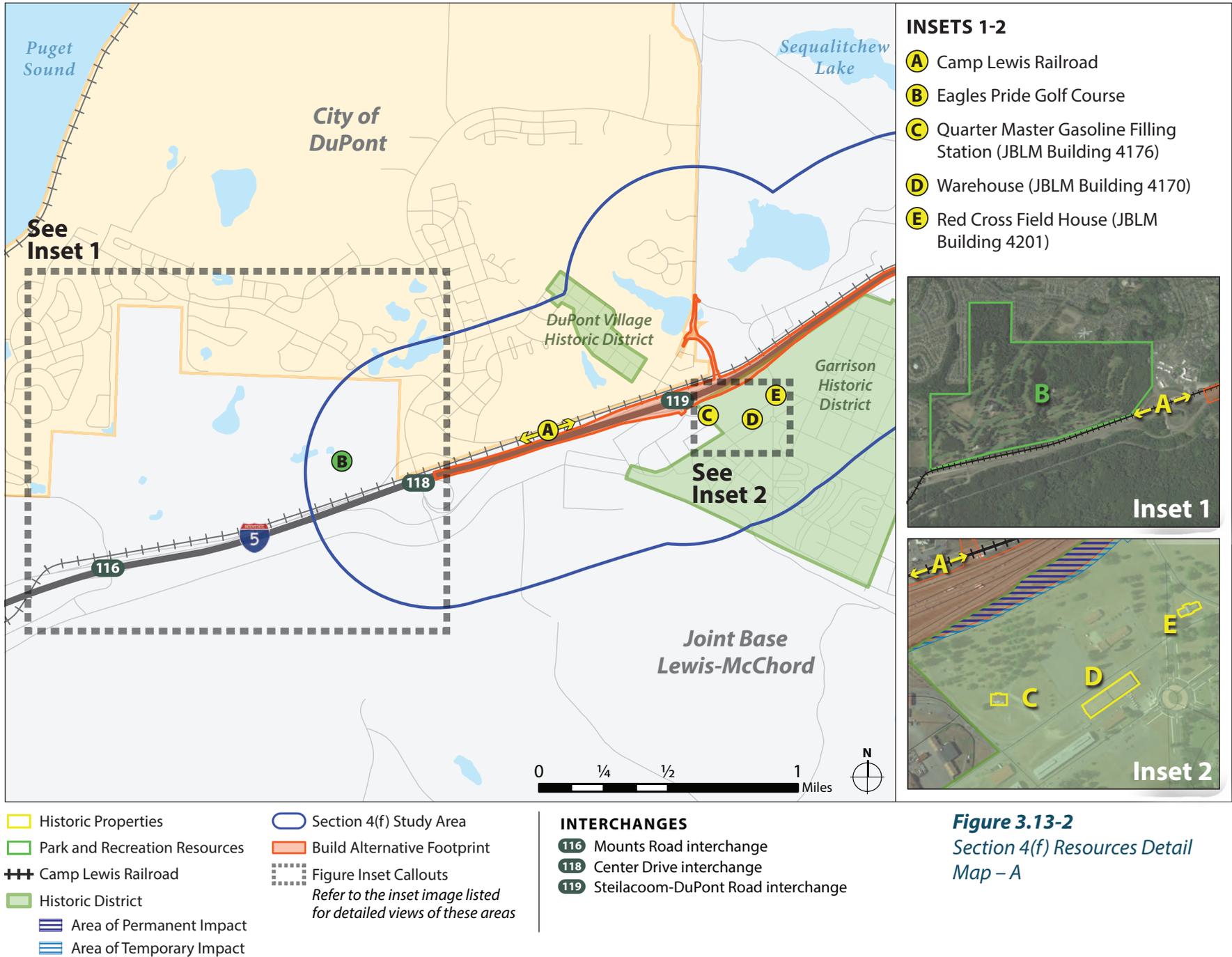
Section 4(f) Resources	Build Alternative 4(f) Use?
<b>Historic Properties</b>	
1. Camp Lewis Railroad	No
2. JBLM Building 4320 - Salvation Army Red Shield Inn/ Lewis Army Museum	No
3. JBLM Building 4274 - Red Cross Hostess House/ Family Resource Center	No
4. NCO Quarters	No
5. NCO Garage	No
6. JBLM Warehouse 4170/71	No
7. JBLM Building 4176 – Quartermaster’s Gasoline Filling Station	No
8. JBLM Building 4201 – Red Cross Field Office	No
<b>Archaeological Resource</b>	
9. Greene Park	No
<b>Historic District</b>	
10. Fort Lewis Garrison Historic District	<i>de minimis</i>
11. DuPont Historic Village	No
<b>Park and Historic Resources</b>	
12. Bell Hill Community Park	No
13. Eagles Pride Golf Course	No
14. Chloe Clark Elementary School	No
15. Ross Park	No
16. Clocktower Park	No
17. Sellers Park	No
18. Iafrati Park	No
19. City of DuPont Trails	No
20. Robinson Park	No
21. Ethel Lumsdon Park	No
22. Bell Hill Neighborhood Park	No

As shown in Table 3.13-1, the Build Alternative would use one 4(f) resource in the study area. A portion of the 494-acre Fort Lewis Garrison Historic District (District) would be used for the proposed widening of I-5 and a reconfigured interchange at Exit 119 (Steilacoom-DuPont Road). The Build Alternative would result in a permanent use of 3.8 acres of the District, and temporary use of 2.0 acres of the District as shown on Figure 3.13-4.

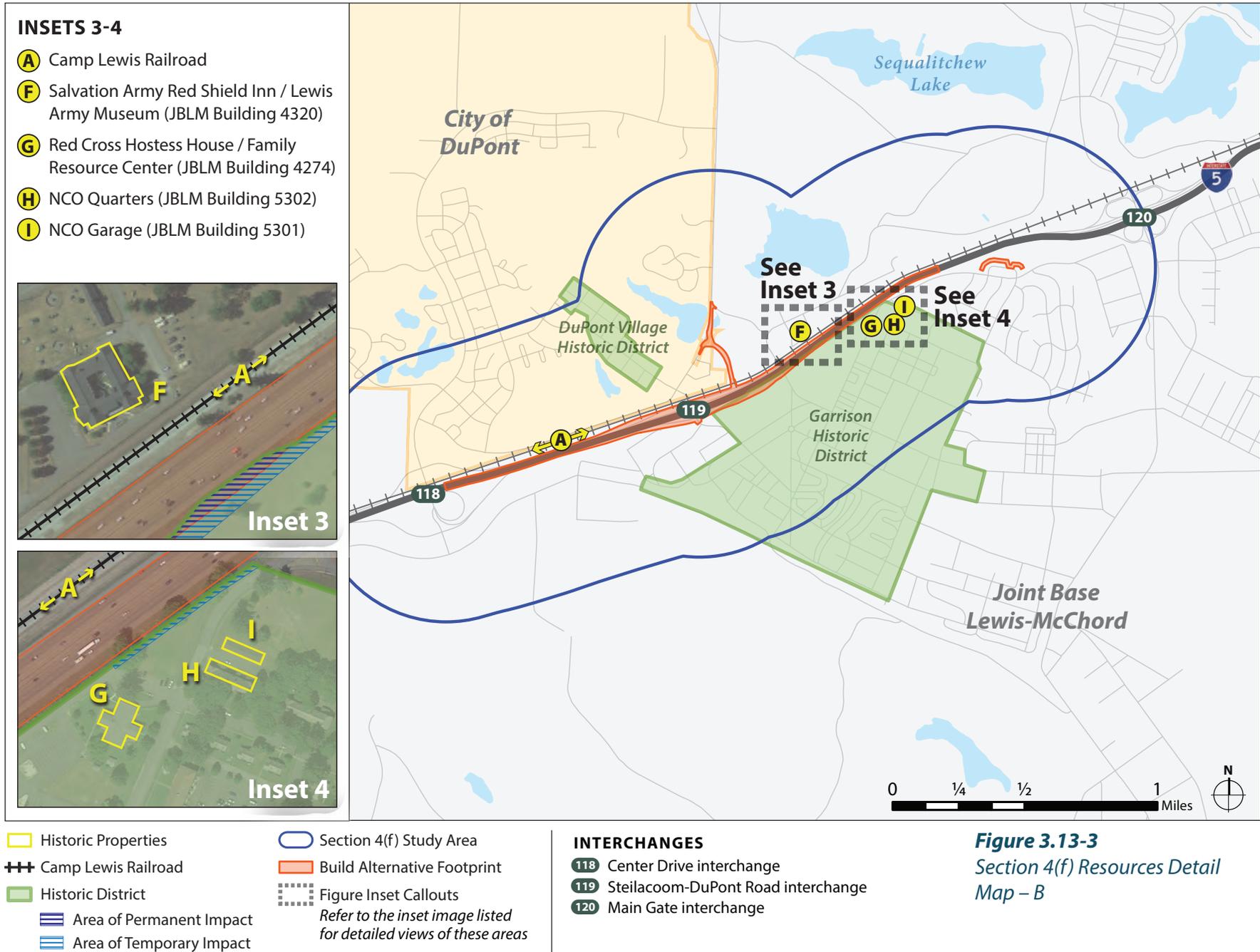
The western boundary of the District is located on the east side of I-5 in the vicinity of Exit 119 (Steilacoom-DuPont Road). The majority of the District is outside the Build Alternative footprint and the APE. The District includes several historic buildings and features constructed for the U.S. Military including rail lines, barracks, officers’ quarters, warehouses, garages, a Red Cross Field Office, a historic gas station, gun sheds, a hospital and nurses’ quarters, roads, monuments, and landscape features and views. It has been determined eligible for listing in the National Register of Historic Places (NRHP) and is currently listed in the Washington Historic Register (WHR).

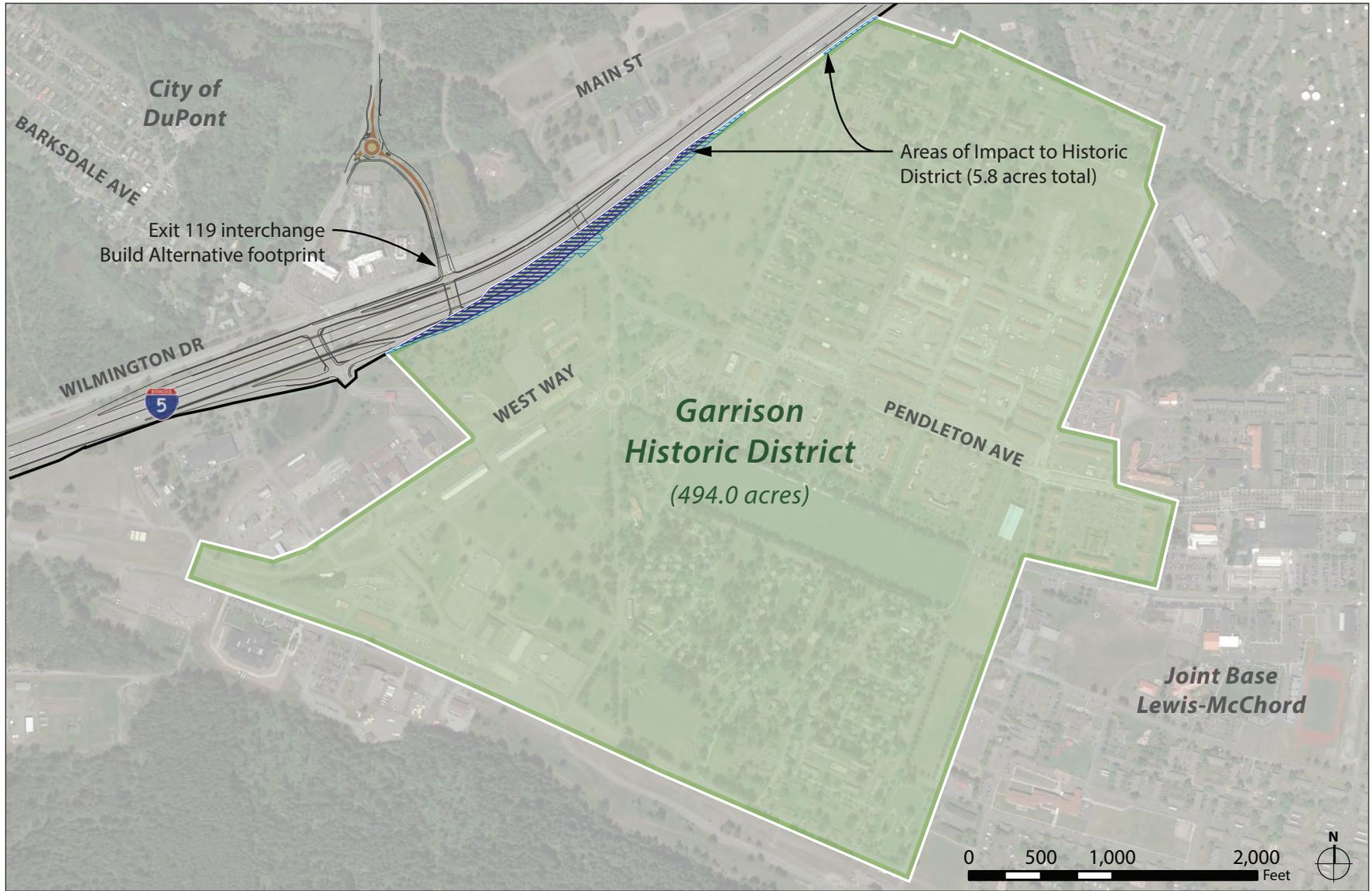
The District has a period of significance dating from 1917 to 1948, ending before the construction of I-5 (1957). Today, I-5 follows portions of the former Pacific Highway which historically provided access to Camp Lewis. Pacific Highway no longer exists in this area. I-5 still provides access to the District and key buildings including the Red Cross Field House and Red Cross Hostess House. The Build Alternative would not change the relationship of these buildings to I-5 but may obscure the view of I-5 from them and the view of the buildings from I-5. While the local transportation network is critical to the functioning of JBLM, views of the freeway are not a recognized character-defining feature of the District that qualifies it for inclusion in the NRHP. Alterations to the views of I-5 would not diminish the integrity of the District or the buildings within it.

The Fort Lewis Memorial Arboretum is located on the western edge of the District within the area of 4(f) use. The Arboretum is listed on the WHR, but it does not qualify for listing in the NRHP, and therefore it is not a separate 4(f) resource. However, it is an element of the larger District so included here to provide information and context regarding the portion of the Arboretum within the proposed 4(f) use area. The Arboretum is approximately seven acres in size and was established in 1970 by a committee interested in promoting plantings on military installations to enhance their beauty and honor men and



**Figure 3.13-2**  
Section 4(f) Resources Detail  
Map – A





- Garrison Historic District Boundary
- ▨ Area of Permanent Impact to Historic District (3.8 acres)
- ▨ Area of Temporary Impact to Historic District (2.0 acres)

**Figure 3.13-4**  
*Impacts on Garrison Historic District*

women who served in uniform, both living and dead. Trees planted within the Arboretum were paired with a plaque denoting the service member to whom the tree was dedicated. Some plaques have been lost or moved over the years. A total of 216 trees are located within the Arboretum, of which 131 were dedicated to specific individuals. The Arboretum was not designed or landscaped by a famous person and does not exhibit or contain exceptional or unique architectural or landscape features that would qualify it for NRHP listing. It is an element of the landscape within the 4(f)-use area. Within the Arboretum there are 26 trees in the Build Alternative impact area, of which six have a commemorative plaque associated with them as shown on Figure 3.13-5. Due to their location within the impact area, these 26 trees would be removed, reducing the total number of trees within the Arboretum from 216 to 190 and the number of dedicated trees from 131 to 125. Within the 5.8-acre impact area there are a total of 64 trees, including those within and outside the Arboretum.

The 2019 *Cultural Resources Inventory* concluded the Build Alternative would have no adverse effect on the cultural and historic resources within the study area, including the Fort Lewis Garrison Historic District. The inventory also concluded the Build Alternative would not alter, directly or indirectly, any of the characteristics of the Garrison Historic District that qualify the property for inclusion in the NRHP.

The Build Alternative would result in the permanent use of 0.8 percent of the total 494-acre Fort Lewis Garrison Historic District. The proposed improvements would partially shield I-5 and freeway traffic from view within JBLM, and block or partially shield views of the Fort Lewis Garrison Historic District from drivers on I-5. The District would retain integrity of location, setting, design, materials, workmanship, feeling and association.

It is WSDOT's conclusion that use of the Garrison Historic District would not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). The permanent or temporary use of a property can be determined as either *de minimis* or not *de minimis*. A *de minimis* determination can only be made if the project impacts would not adversely affect the features, attributes or activities that qualify the park, recreation area, historic area or refuge for protection. FHWA has concluded the Build Alternative's impacts on the District would be *de minimis*. FHWA and WSDOT

have coordinated this determination with DAHP and JBLM; concurrence regarding the determination of no adverse effect was received from the State Historic Preservation Officer on August 20, 2019.

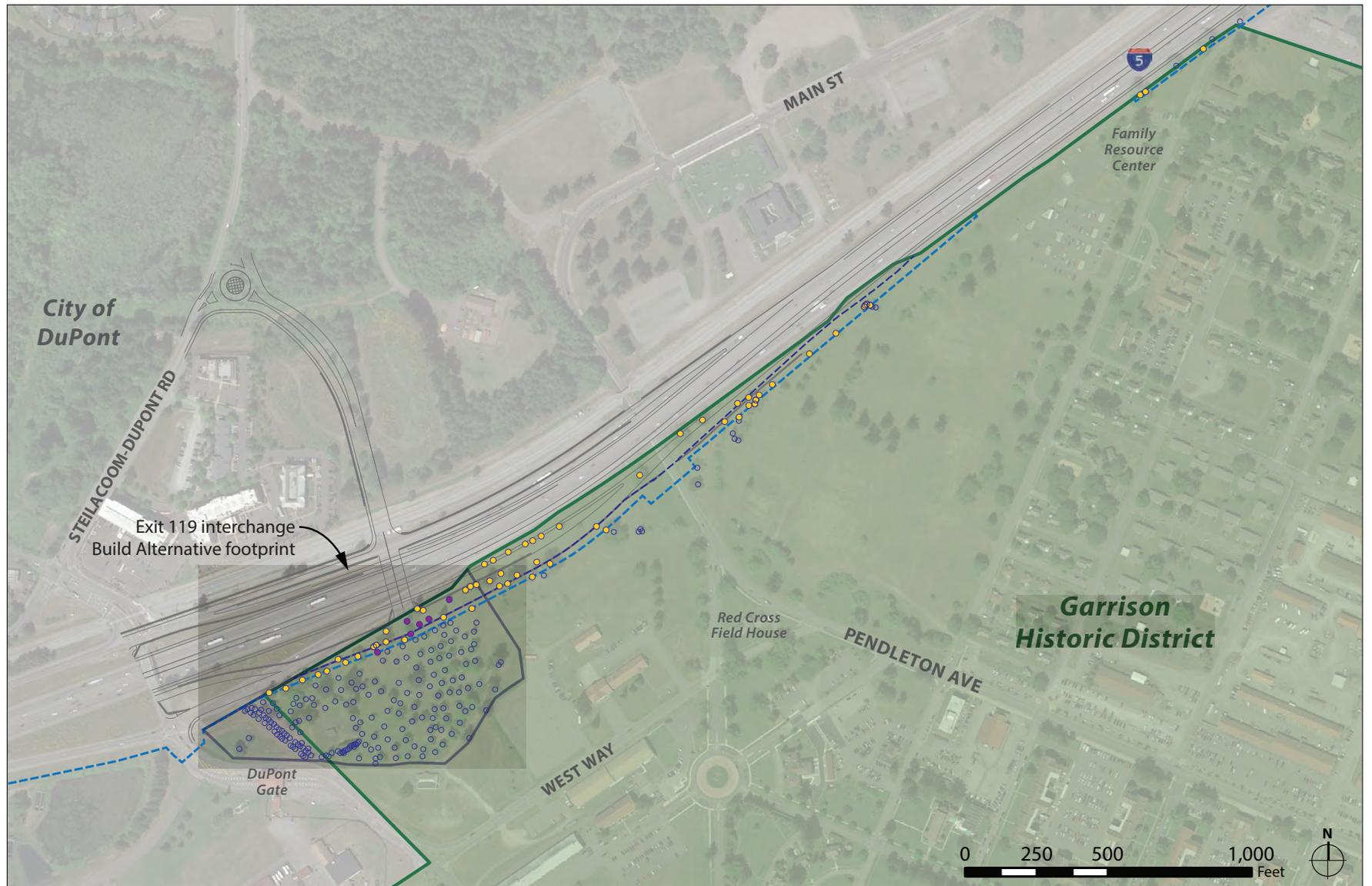
### 3.13.5 Would the Build Alternative Have Construction Related Impacts?

There would be short-term, temporary construction impacts within the Fort Lewis Garrison Historic District associated with site access needed for construction of the new Exit 119A-B interchange retaining walls and the noise wall north of the Family Resource Center building. The area of temporary impact would be 2.0 acres. The temporary use for construction access would be designed to minimize impact to vegetation, especially trees. The Build Alternative would not result in a temporary use of any of the other Section 4(f) resources identified in this evaluation.

### 3.13.6 What Efforts Were Made to Minimize Impacts of the Build Alternative?

Many measures were evaluated to minimize harm to the Section 4(f) resources within the study area. Plans for the Build Alternative were developed while being mindful of the existence and location of 4(f) resources. The Build Alternative design includes several features that would minimize use of land within the Fort Lewis Garrison Historic District, including:

- ♦ **Lane configuration.** The middle lanes both northbound and southbound on I-5 in the vicinity of the Build Alternative would be 11 feet wide, instead of the standard 12 feet wide, to minimize the Build Alternative footprint.
- ♦ **Interchange configuration.** The Build Alternative interchange configuration is a tight diamond typically used in urban locations. This configuration places ramp intersections close to the freeway to minimize the Build Alternative footprint at the expense of wider bridges to allow for adequate traffic queueing space on the bridges.
- ♦ **Substantial use of retaining walls to minimize the footprint of I-5 and associated use of land within the District.** The Build Alternative includes grade separation of the reconfigured interchange overcrossing of the adjacent railroad track. The new ramps and bridges would be



- Extent of Permanent Impact
  - - - Extent of Permanent and Temporary Impact
  - █ Garrison Historic District Boundary
  - ▭ Fort Lewis Memorial Arboretum Boundary
- TREES IN THE HISTORIC DISTRICT**
- Tree Locations
  - Trees Impacted by Build Alternative
  - Trees with Commemorative Plaque Impacted by Build Alternative

**Figure 3.13-5**  
*Impacted Trees in Garrison  
Historic District*

substantially higher than existing grade. Elevation gains would be supported entirely by retaining walls adjacent to I-5 and the interchange ramps. No fill slopes would be used within the Fort Lewis Garrison Historic District to minimize Build Alternative impacts. The planned elevated ramp retaining walls have an added benefit of helping reduce the effects of freeway traffic noise on the District.

- ♦ **Intersection control type.** Both roundabouts and signals were evaluated for ramp termini intersection control. Signalization of the ramp terminal intersections was selected over roundabouts because signals have a considerably smaller footprint requirement compared to roundabouts, and traffic operational benefits would be similar.
- ♦ **Stormwater management.** No stormwater facilities are proposed on the east side of I-5. The Build Alternative design includes routing of all stormwater to facilities located within the existing I-5 right of way, or on the west side of the freeway. This further minimizes the Build Alternative's use of land within the Garrison Historic District.

### 3.13.7 How Would Impacts of the Build Alternative Be Mitigated?

All prudent measures were considered to minimize harm to Section 4(f) resources within the study area. Impacts to the landscape features of the Fort Lewis Garrison Historic District, including the removal of trees within the Memorial Arboretum and other parts of the District, would be mitigated through replanting of trees either within the Arboretum or other locations within the District. The Build Alternative would remove a total of 64 trees within the District, 26 of which are within the Arboretum. The six Arboretum trees dedicated to a service member would be replaced with the same species tree and the plaque retained and replaced following construction of the Build Alternative. Depending on the size, health, and species of dedicated trees, there may be the potential to remove and replant the existing trees. All tree replanting and replacement activities would be coordinated with the JBLM I-5 Congestion Relief Program Coordinator and JBLM arborist.

No record of the number, type, location and person for whom trees in the Arboretum were planted has been maintained by JBLM. As part of this Project, this information has been documented and provided to the JBLM Department of Public Works, Environmental Division. This information will be a resource for future planning and documentation of the Arboretum.

Impacts to the Garrison Historic District would be offset by the installation of interpretive signs reflecting the history of the base. JBLM has requested two signs addressing the Historic District and two additional signs for the Greene Park Archaeological site. These signs would be installed in conjunction with the construction at these two locations.

Temporary construction impacts would be minimized by limiting the construction access to the minimum area needed to construct the retaining walls and noise wall, implementation of best management practices, providing cultural resource training to contractor staff, including cultural resource monitoring requirements during construction in the contract, and restoration of impacted areas to pre-use condition.

### 3.14 SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE EFFECTS

The assessment of socioeconomic and environmental justice (EJ) considers potential impacts and benefits of proposed transportation projects to communities or neighborhoods, especially those with concentrations of minorities, low-income populations or people with limited ability to speak and read English.

#### 3.14.1 How Were Socioeconomics and Environmental Justice Impacts Evaluated?

The evaluation of existing social and economic characteristics in the study area focused on understanding the general community context, employment opportunities, and the demographics of the area. The study area extends ½ mile beyond the Build Alternative footprint in all directions. It includes school districts, neighborhoods and commercial areas along I-5, and areas with potential noise, visual and traffic effects resulting from the proposed Build Alternative. Demographic data for the evaluation was collected from the U.S. Census and school districts.

The analysis was conducted in accordance with the federal and state policies and plans that guide the evaluation of effects on social resources and environmental justice. Data from the American Community Survey (ACS) five-year estimates were used to update the demographic information from the 2016 *Socioeconomic and Environmental Justice Discipline Report*. Demographic information was used to determine if minority, low-income or people with limited English proficiency live in or disproportionately rely on I-5 in the study area. The transportation analysis provided information regarding potential traffic, access and mobility changes within the study area that would result from construction of the Build Alternative. Demographic information was used to determine if any benefits or adverse effects would disproportionately affect environmental justice populations, and if so, whether those effects would be high or severe.

#### *What Are Environmental Justice Populations?*

Federal orders, regulations and guidance address the fair treatment of low-income and minority populations. New projects must assure that public

involvement is inclusive, and that potential project impacts are not disproportionately burdensome to those populations. If the impact to minority or low-income populations is disproportionately high and adverse, possible mitigation measures for the impacts are considered. The population groups affected by EJ analysis include:

- ◆ **Low-income:** Individuals whose household income falls below the federal poverty guidelines as defined by the US Department of Health and Human Services
- ◆ **Minority:** Individuals who identify themselves as Black, Hispanic, Asian/Pacific Islander, or American Indian/Alaska Native
- ◆ **Limited English proficiency (LEP):** People who do not speak English as their primary language and who have a limited ability to read, speak, write or understand English

Demographic statistics on race and poverty status are used to evaluate environmental justice affects, as well as overall characteristics of the study area. If there are high percentages of LEP populations, public outreach efforts are tailored to provide assistance, including translation of written materials and provision of interpreters at public meetings regarding the Project. Areas with high percentages of population over 65, self-reporting as having a disability or having no access to a vehicle indicate a general need for transportation and other support services. Information on population in rented housing, compared to owned housing, is used to further describe community characteristics. Demographic data for the study area is mapped in Figures 3.14-2, 3.14-3 and 3.14-4.

#### 3.14.2 What Are the Existing Socioeconomic and Environmental Justice Conditions Today?

Review of existing social and economic characteristics of the study area focused on understanding the general community context, community resources, employment opportunities, and demographic characteristics. These are described below.

*Census tracts providing demographic data on JBLM cover large areas including both developed and undeveloped land. In the South Study Area only small portions of these large census tracts include developed areas.*

## Community Context

The City of DuPont and JBLM are the primary communities within the study area and both are heavily influenced by I-5 and its associated traffic noise, air pollution and congestion. Changes in the level of activity on JBLM affect the City of DuPont's demand for housing and services, and traffic volumes on I-5 and local roads.

The Land Use section (Section 3.15) provides additional detail on existing land uses, zoning and comprehensive plan designations in the study area and the Transportation section (Section 3.3) describes circulation patterns, transit, rail, and non-motorized facilities.

## Employment

JBLM has over 50,000 military and civilian employees. It is the second largest employer in the state after Boeing, but the largest single-site employer. Other large employers in the vicinity of the study area are Amazon, Intel, FedEx, and State Farm Insurance, which are all accessed via the DuPont area interchanges. The commercial areas in the City of DuPont are served by two interchanges: Exit 119 (Steilacoom-DuPont Road) serves several large distribution warehouses and accommodates the majority of freight activity in the area and Exit 118 (Center Drive) primarily serves the commercial core of DuPont and the City's residential areas. At the Steilacoom-DuPont Road interchange, existing land uses include general highway services, such as gas stations, restaurants and hotels. Near the Center Drive interchange, highway service uses are included in a city center area, along with a public library, and a collection of general commercial mixed-use buildings. No businesses in the study area were listed on the Washington State Office of Minority and Women's Business Enterprises database.

## Population Characteristics

The following descriptions are drawn from demographic data. It is important to note demographic data does not define an area. The Census data are estimates, not actual counts. Census data boundaries do not often align with neighborhood boundaries. The characteristics of residents occupying individual properties are not known nor used for this evaluation. The statistics used in this analysis provide a general comparison intended to assist in providing fair access and public participation opportunities, and in evaluating the Build Alternative and its potential impacts.

Housing data reflects the proximity of JBLM and its itinerant population. Most of the Block Groups on JBLM show that 100 percent of the population lives in rented housing. In the City of DuPont, the Census Block Groups near I-5 show approximately 60 percent of the population lives in rented housing.

The highest percentage of people over the age of 64 in the study area is found in the DuPont area at eight percent. There are no senior populations in the rest of the study area due to its location on an active military installation. The highest percentage of people (age 18-64) reporting a disability is found in the north end of the study area at ten percent. In the remainder of the study area the disabled population ranges from one to six percent. Few people in the study area do not have access to a vehicle. The highest percentage of people with no vehicle available is five percent within the City of DuPont. The remainder of the study area has one percent or less of its population without access to a vehicle.

### MINORITY POPULATIONS

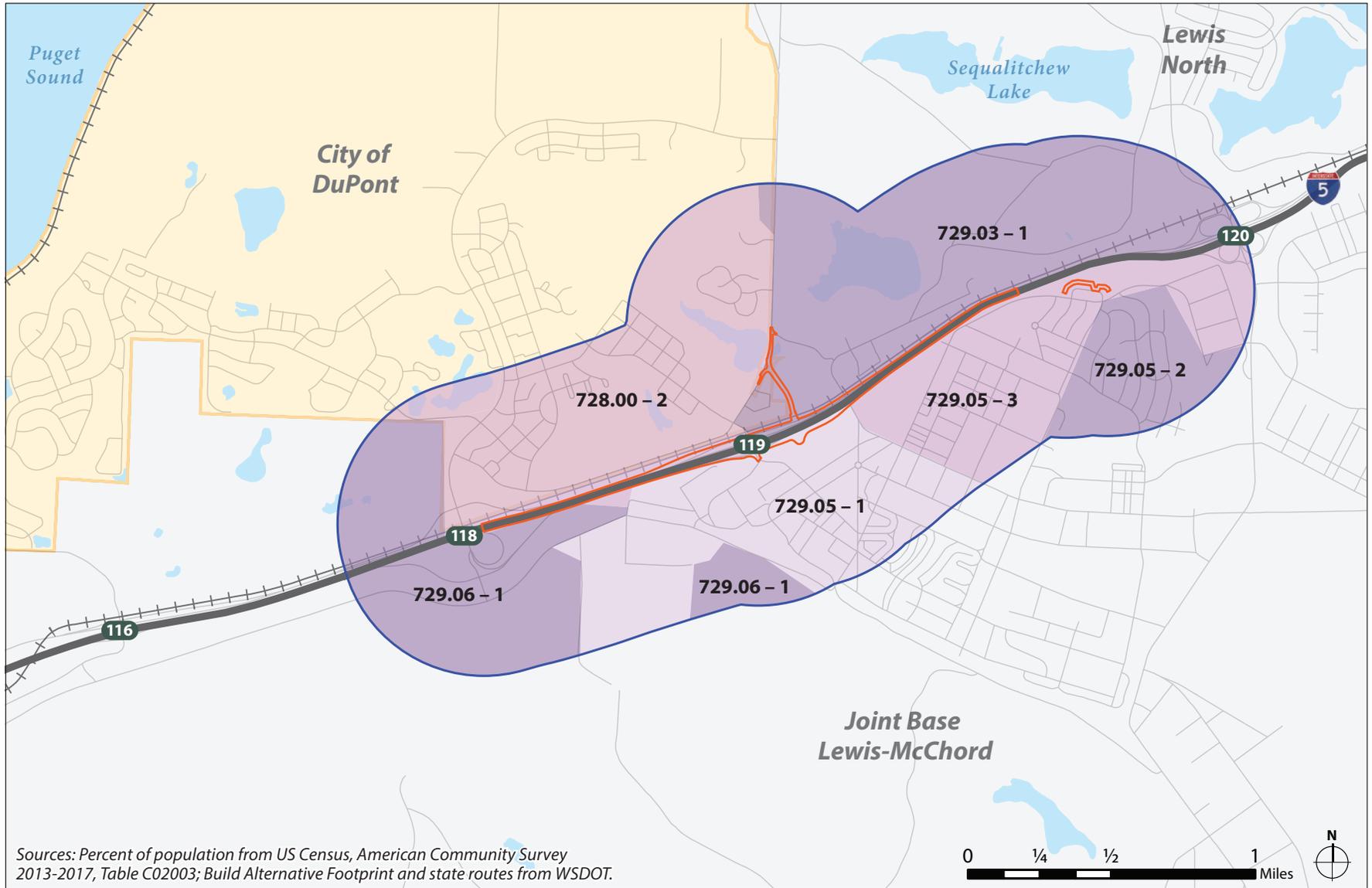
Demographic data for race identity includes the following classifications: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Some other Race, and Two or More Races. Hispanic populations are in the minority, but Hispanic origin is an ethnicity, not a race. Hispanic persons may identify themselves as any race, or more than one race. Percentages of minority race populations (all classifications other than White Non-Hispanic) in the study area range from 14 percent to 39 percent around JBLM and 25 percent around the City of DuPont. Hispanic and Black or African American are the most represented minority populations in the study area. The highest percentages for these minority populations are in the northern end of the study area with 30 percent for the Hispanic population and 18 percent for the Black or African American population.

### LIMITED ENGLISH PROFICIENCY (LEP)

The percentage of individuals with Limited English Proficiency (those self-reporting on the Census that they "speak English less than well") is very low, at less than two percent throughout the study area.

### LOW-INCOME POPULATIONS

Areas with the highest percentage of population categorized as low-income are found on JBLM. Within the Lewis-McChord area adjacent to I-5, 20 percent

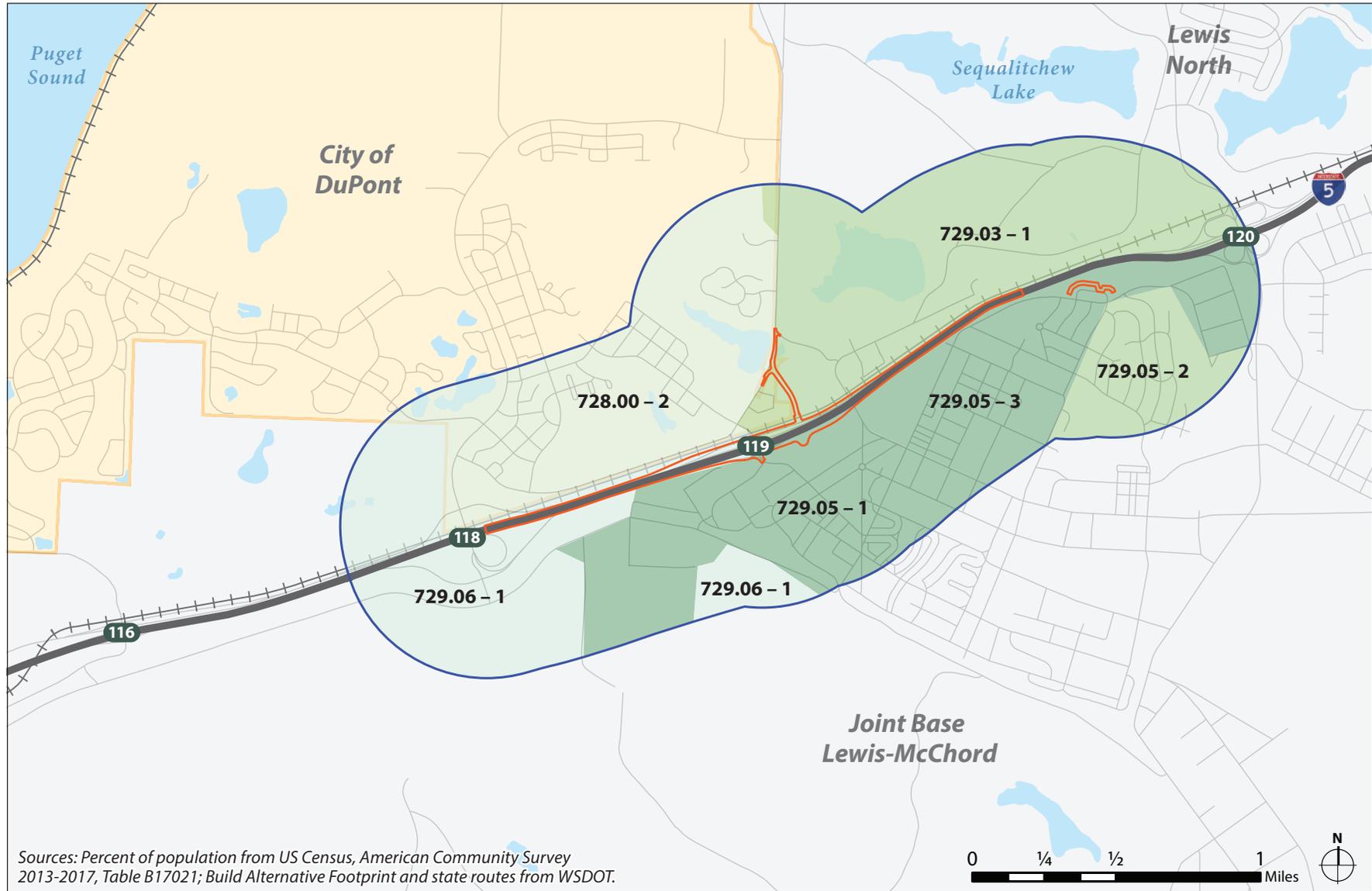


- Socioeconomic and Environmental Justice Study Area
- Build Alternative Footprint
- xxx.xx - x Census Block Group ID

- MINORITY POPULATIONS**  
Percent Minority (Non-white)
- 0-15%
  - 16-30%
  - 31-45%

- INTERCHANGES**
- 116 Mounts Road interchange
  - 118 Center Drive interchange
  - 119 Steilacoom-DuPont Road interchange
  - 120 Main Gate interchange

**Figure 3.14-1**  
*Percentage of Minority Population by Census Block Group*



Sources: Percent of population from US Census, American Community Survey 2013-2017, Table B17021; Build Alternative Footprint and state routes from WSDOT.

- Socioeconomic and Environmental Justice Study Area
- Build Alternative Footprint

xxx.xx - x Census Block Group ID

**LOW-INCOME POPULATION**

- 0-7%
- 8-14%
- 15-20%

**INTERCHANGES**

- 116 Mounts Road interchange
- 118 Center Drive interchange
- 119 Steilacoom-DuPont Road interchange
- 120 Main Gate interchange

**Figure 3.14-2**  
*Percentage of Low-Income Population by Census Block Group*

of the population is low-income, and on Lewis North low-income populations are 10 percent. The lowest percentage is found in the DuPont area at 6 percent.

### 3.14.3 What Are the Expected Long-Term Effects of the No Build Alternative?

Without capacity improvements, residents and employees in the study area would experience increasing delay and time spent in traffic. These conditions make travel times unpredictable, affecting the quality of life for everyone in the area. The high level of frustration and stress resulting from traffic delay was expressed at community public meetings. The No Build Alternative would result in an increase in congestion which could also result in increased air pollution from idling traffic on I-5 and connecting local roads. Increasing congestion could negatively affect neighborhoods in the study area and could make the area less attractive for residents and businesses.

### 3.14.4 What Are the Expected Long-Term Effects of the Build Alternative?

The social and economic aspects of reducing congestion on I-5 and connecting roads would generally benefit the entire study area. Residents and employees who travel on I-5 would benefit from reduced delay, as would those traveling through the area to other destinations. This is especially true for people using northbound I-5 where travel times and speeds benefit the most from the Build Alternative. Southbound traffic would continue to experience congestion due to the reduction of I-5 from four lanes to three in the vicinity of Mounts Road. The grade separation from the Sound Transit rail line immediately west of and adjacent to I-5 would eliminate the potential for delay caused by the existing at-grade crossing.

Right of way, in the form of easements from JBLM, would be needed to construct the Build Alternative. None of the proposed easement area contains residences, so no displacements would occur with construction of the Build Alternative. Similarly, none of the easement area needed for the Build Alternative would impact community resources. No schools, parks, community centers or access to those resources would be impacted by the proposed Build Alternative.

### 3.14.5 Would There Be Construction Related Impacts on EJ Populations?

Construction of the reconfigured interchange and additional I-5 travel lanes would have unavoidable temporary impacts to the surrounding area, including dust, equipment emissions, noise, and possible traffic interruptions. Other impacts associated with construction are the establishment of temporary staging areas, possible movement of heavy equipment on local streets and potential nighttime construction noise. Temporary road closures may occur during construction; however, access to the City of DuPont and JBLM would be maintained. Construction of the proposed Build Alternative would also have beneficial effects in the form of construction jobs that could benefit all populations, including environmental justice populations.

### 3.14.6 How Could Impacts of the Build Alternative Be Minimized or Mitigated?

The scheduling of road closures and detour routes would be closely coordinated with police, fire and emergency services, transit agencies and school districts. WSDOT would implement a Traffic Management Plan (TMP) to manage work zone impacts for the duration of the construction phase. The TMP would address planned temporary traffic control measures including traffic operations and public information elements. Input from transit providers, emergency response providers, adjacent cities and school districts would be incorporated into the TMP.

Traffic noise impacts to those residential areas that are adjacent to the Build Alternative would be mitigated to the extent allowed by FHWA, as detailed in the Noise section (Section 3.5). The visual impacts of the changed roadways, larger interchanges, and noise barriers would be mitigated with landscaping and architectural treatments, as described in the Visual Quality section (Section 3.11).

### 3.14.7 Would the Build Alternative Have a Disproportionate Impact on Environmental Justice Populations?

The proposed Build Alternative would not have disproportionate impacts on areas with low-income populations and minority populations.

## 3.15 LAND USE

Land use designations, plans and policies guide where people live, work, shop, and participate in community activities. Local governments plan for land use based on the community's long-range vision and goals to accommodate growth in conformity with state law. Potential conflicts between the Build Alternative and adopted land use or transportation plans and development regulations, and potential mitigation measures for addressing those effects, are evaluated in this analysis.

By sizing the land use study area to encompass a greater area than just the highway corridor and immediately adjacent land uses, the analysis can address the potential effects of the Build Alternative on a larger geographical area that reflects the close relationship between land use and the transportation system. The study area captures the potential land use impacts associated with shifts in vehicular traffic and compatibility of the Build Alternative with adopted plans.

### 3.15.1 How Were Land Use Impacts Evaluated?

The land use study area extends between Center Drive (Exit 118) and Main Gate (Exit 120) and encompasses the Build Alternative footprint and a half mile beyond in all directions.

The *Land Use Technical Memorandum* (SCJ Alliance, 2016) prepared for the 2017 EA identified land uses in the South Study Area by reviewing published information from the City of DuPont, as well as Pierce County GIS data, and verified this information through field survey of the study area. Information regarding future land uses was gathered from comprehensive plans and zoning codes for the jurisdictions neighboring I-5 within the study area. These documents were reassessed in preparation of this SEA to confirm and update land use data for the South Study Area. Additionally, the City of DuPont and JBLM were contacted to inquire about code changes and planned development that has occurred following the completion of the 2016 Land Use Technical Memorandum.

### 3.15.2 What Types of Land Uses Currently Exist in the Study Area?

The study area is characterized by a mix of residential and commercial areas, as well as extensive military lands associated with Joint Base Lewis-McChord (JBLM). This subsection describes the character of each jurisdiction affected by the Build Alternative including the City of DuPont, JBLM and general land uses within the study area. Details on future land use and zoning are included later in this subsection.

#### *JBLM*

The South Study Area includes JBLM on both sides of I-5. At over 90,000 acres in size, JBLM is the largest military installation and the only Power Projection Platform on the West Coast. It currently hosts over 50,000 active duty and civilian employees and 60,000 military family members. Nearly 30,000 military retirees live within 50 miles of JBLM. Roughly 27 percent of active duty military service members live on base; the remainder live in surrounding communities and commute to work. JBLM is the largest employer in Pierce County and the largest single-site employer in the state of Washington.

The size, population, and services offered on JBLM make it comparable to a fully-functioning city. While most of JBLM is composed of open range lands for military maneuvers and training, an extensive network of urban services such as military offices, residential areas, commercial uses, schools, fire stations, Madigan Hospital and other operational support features are also located on JBLM and in close proximity to I-5.

The Steilacoom-DuPont Road interchange (Exit 119) provides access to and from the DuPont Gate of JBLM on the east side of I-5. This gate is used heavily by service members and civilian employees destined for the employment and operations areas of JBLM clustered in close proximity to I-5 near this location.

#### *DuPont*

Much of the South Study Area on the west side of I-5 is located in the City of DuPont. This historic community was originally established as a company town in 1906 and incorporated in 1951. A six square mile planned community, Northwest Landing, was approved in 1989 and added significant residential,

commercial, and industrial development to the original city. The City currently has a population of about 9,250 and roughly 3,100 jobs.

The land area in DuPont is evenly distributed between residential areas, business/industrial areas and open space. While residential areas currently make up the majority of the developed areas, the City has large areas designated for future commercial and business/industrial development.

The Steilacoom-DuPont Road interchange (Exit 119) provides access to the City of DuPont and to the Town of Steilacoom west of I-5. This interchange also serves a high level of freight traffic accessing the industrial and manufacturing areas located west of I-5 along Center Drive and Wharf Road.

### 3.15.3 Would the No Build Alternative Be Consistent with Adopted Plans?

The No Build Alternative would not be consistent with adopted plans. The No Build Alternative conflicts with policies regarding urban growth and transportation system development contained within the *Washington State Transportation Plan* (WTP), the *WSDOT Highway System Plan* (HSP), the *Puget Sound Regional Council (PSRC) Transportation 2040 Plan*, the *City of DuPont Transportation Improvement Program (TIP)*, *PSRC Multicounty Planning Policies*, the *JBLM Growth Coordination Plan*, *Pierce County Countywide Planning Policies*, and the *DuPont Comprehensive Plan*.

The Steilacoom-DuPont Road interchange (Exit 119) would remain as is with the No Build Alternative. There would be no temporary impacts due to construction. Existing land uses would continue. The No Build Alternative would result in continued worsening of congestion and degraded mobility on I-5 and at Exit 119. The interchange would remain at-grade with the Sound Transit railroad, which would make access to and from commercial, residential and military areas within the study area increasingly difficult.

### 3.15.4 Would the Build Alternative Be Consistent with Adopted Plans?

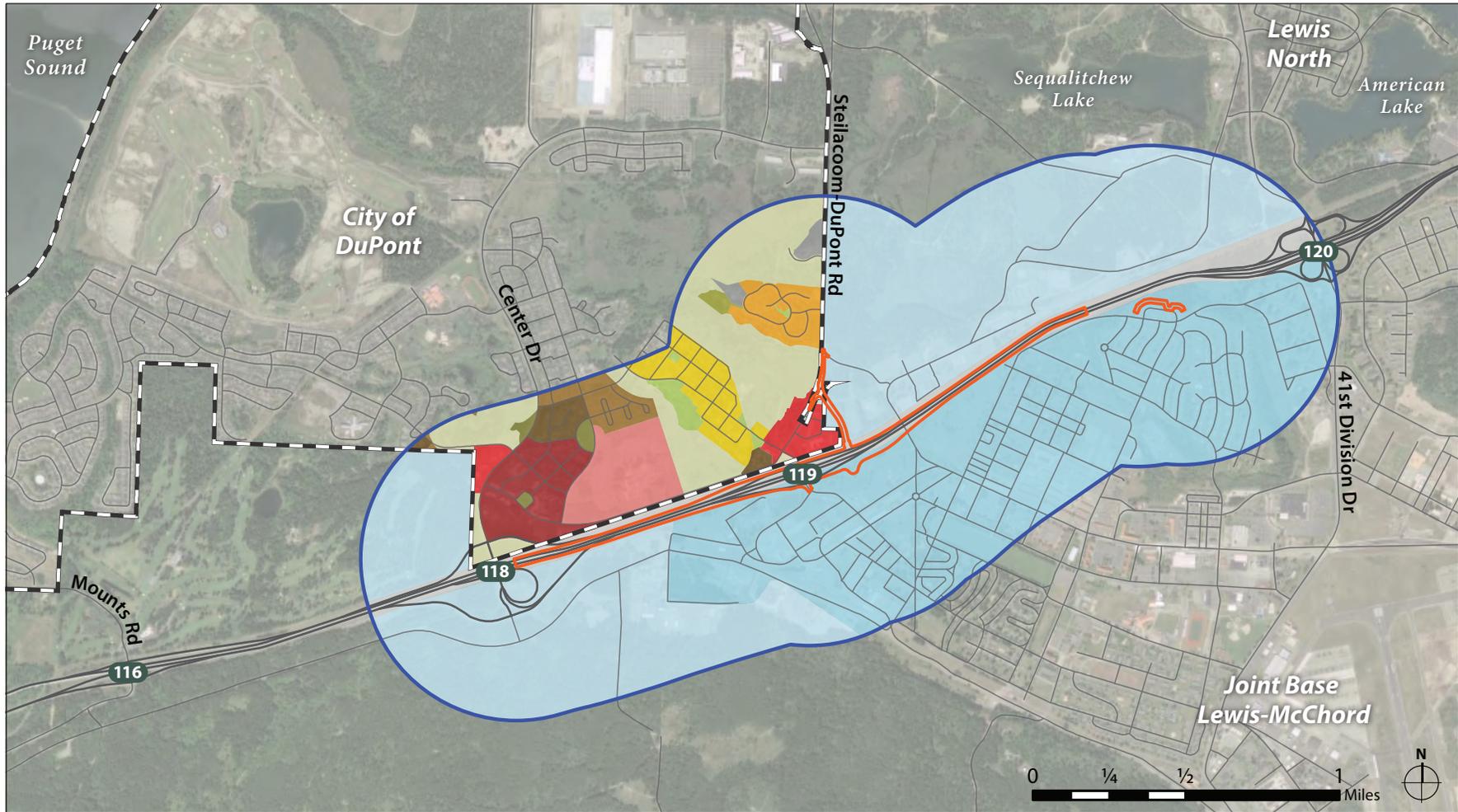
The Build Alternative would be consistent with adopted land use and transportation plans and policies at local, regional, and state levels. As detailed earlier, adopted plans underscore the importance of improving mobility for freight, transit, cars, and non-motorized transportation modes in the study area. These plans recognize I-5 as a corridor of statewide importance in terms of mobility, support for the state's economy, and access to JBLM as well as adjacent communities.

The City of DuPont's Comprehensive plan sets forth the goals and policies for the City's future development. Future land use in the South Study Area is envisioned to be primarily a combination of commercial, office, and mixed-use, with some residential and open space areas. The Comprehensive Plan's transportation project list includes the Steilacoom-DuPont Road interchange (Exit 119) with the project description, "Construct new interchange to add capacity."

As proposed, the Build Alternative would provide relief to worsening congestion and provide grade separation between cars and trains at the Steilacoom-DuPont Road interchange. Individual elements of the Build Alternative have been evaluated to ensure their consistency with regionally-adopted policies and priorities and are included on the financially-constrained project list in PSRC's Transportation 2040 Plan. They are also included in the *Highway System Plan* and in the City of DuPont's six-year TIP.

#### *How Would Land Use Be Affected by the Build Alternative?*

The Build Alternative was evaluated for its effect on existing and future land uses to determine if it would have more than a moderate land use impact. Potential impacts were judged based on incompatibility with adjacent land uses or the need for relocation and displacement of housing units or commercial uses. The Build Alternative would be compatible with existing and proposed land use plans and would support the transformation envisioned in those plans to be realized by improving system reliability, access, and circulation. The Build Alternative has been designed to avoid direct impacts to



- Land Use Study Area
- Build Alternative Footprint
- City Limits

- DUPONT LAND USE**
- Commercial
  - Office
  - Mixed Use
  - Open Space / Sensitive Areas
  - Neighborhood Park
  - Community Park
  - Manufacturing & Research
  - Residential 12
  - Residential 5
  - Residential 4
  - Residential 3

- PIERCE COUNTY LAND USE**
- Rural Military Land
  - Urban Military Lands

- INTERCHANGES**
- Mounts Road interchange
  - Center Drive interchange
  - Steilacoom-DuPont Road interchange
  - Main Gate interchange

**Figure 3.15-1**  
*Land Use: City of DuPont and Pierce County*

private property and minimize impacts to military lands adjacent to I-5 and the proposed reconfigured interchange.

### 3.15.5 Would the Build Alternative Have Construction Related Impacts?

The Build Alternative would have temporary effects on adjacent land uses during construction. The layout of the Build Alternative is designed to avoid and minimize disruption to surrounding land uses during construction. The design of the new interchange bridges at Exit 119 are offset from the existing overpass. The new Exit 119B bridge and ramps would be constructed prior to removing the existing overpass. Following the opening of the new Exit 119B interchange the existing bridge would be removed to facilitate the construction of the new Exit 119A overpass. This construction process enables the existing interchange to remain open while a new one is built, minimizing traffic disruption during construction.

Reasonable efforts would be made to ensure traffic flow is maintained, and access revisions are minimized during construction of the Build Alternative. Affected businesses and residences would be notified of construction activities in advance, and traveler messages would be deployed well south and north of the study area to give advance notice to travelers on I-5.

### 3.15.6 How Could Impacts of the Build Alternative Be Minimized or Mitigated?

The Build Alternative would not result in impacts to land use and therefore minimization or mitigation measures are not necessary. Revisions to the configuration of the interchange would cause modifications to travel patterns into the City of DuPont from Exit 119. These changes could be addressed through enhanced signing to assist drivers in way-finding following the opening of the new interchange.

### 3.15.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

The Build Alternative would not have any unavoidable adverse effects on land use that cannot be mitigated. Because the land uses in the study area are already oriented to the existing interstate, no other immediate or long-term adverse effects to land use are anticipated.

## 3.16 UTILITIES

The Build Alternative was evaluated to identify potential long-term and construction-related impacts on existing utilities in the study area. Existing utilities include public or private providers of electricity, water, sewer, natural gas, telephone, data, fiber optic and other communications that could be affected by construction activities.

### 3.16.1 How Were Utilities Impacts Evaluated?

Utilities generally lack physical boundaries and were therefore identified within an area extending 1/2 mile out from each side of the proposed Build Alternative footprint. Utilities located within this defined study area boundary are assessed in this report.

### 3.16.2 What Are the Existing Utilities in the Study Area?

Existing utilities in the study area include the following:

#### *Electrical Service*

Electrical service providers that could be affected by the Build Alternative include Puget Sound Energy and Joint Base Lewis-McChord (JBLM).

#### *Communication Facilities*

Communication service providers that could be affected by the Build Alternative include JBLM, Comcast, AT&T, CenturyLink, Frontier Communications, MCI/Verizon Business and Level 3 Communications.

#### *Drinking Water*

Utilities providing potable water service include JBLM and City of DuPont.

#### *Natural Gas / Liquid Propane*

Puget Sound Energy is the only provider of natural gas and/or liquid propane in the study area.

#### *Solid Waste Disposal*

Solid waste disposal services in the study area are provided by LeMay Inc.

### *Stormwater Management*

JBLM owns and maintains several stormwater facilities in the study area that could be affected by the Build Alternative. These facilities are described below and documented in greater detail in the Water Resources section of this SEA (Section 3.7).

There is a JBLM stormwater pond near the I-5 northbound off-ramp southwest of the Steilacoom-DuPont Road interchange. The pond outlets to the north, crossing I-5 in the vicinity of Steilacoom-DuPont Road and merges with a JBLM conveyance system. The outfall is located partially down the adjacent slope.

East of the Steilacoom-DuPont Road interchange there is a JBLM stormwater drain system crossing I-5 to the north at Pendleton Avenue. A WSDOT/JBLM outfall is located to the north partially downhill on the adjacent slope. The water is conveyed via surface runoff downslope and infiltrates that the bottom of the slope.

### *Sewer Service*

Pierce County Public Works and Utilities provides sanitary sewer service to the surrounding area including the City of DuPont. The wastewater is managed in accordance with the Pierce County Unified Sewer Plan.

JBLM operates its own onsite sanitary sewer system and waste water treatment facility. JBLM waste water is managed in compliance with the National Pollutant Discharge Elimination System (NPDES) permit administered by the Environmental Protection Agency (EPA), which includes effluent limitations and various monitoring requirements.

### 3.16.3 What Impacts to Utilities Would Occur with the No Build Alternative?

No construction would occur under the No Build Alternative; therefore, no impacts to utilities would occur.

### 3.16.4 Would the Build Alternative Have Impacts to Utilities?

The construction of the Build Alternative would not result in any long-term utility impacts.

### 3.16.5 Would the Build Alternative Have Construction Related Impacts?

Many of the existing utilities are located in the area planned for new road or freeway travel lanes and interchanges. Current WSDOT policy requires all conflicting utilities within the construction boundaries of a project be relocated or mitigated prior to a project being advertised for construction bidding. This allows the project to be built without risk of impacts to those utilities.

Utilities that would likely be impacted and may require relocation to accommodate the needs of the Build Alternative include:

- ◆ Puget Sound Energy power and natural gas lines.
- ◆ JBLM power, water, sewer, storm, and communication lines.
- ◆ CenturyLink and Comcast communication lines.
- ◆ City of DuPont potable water lines.
- ◆ Pierce County sanitary sewer lines.

#### *Anticipated Effects to Utility Customers*

The adjustments and relocations of utilities would result in minimal service interruptions, typically lasting only minutes.

The solid waste service provider may need to establish new service routes to accommodate the location of the new interchange, which could affect pickup schedules. However, for most customers there should be no disruptions to solid waste pickup.

### 3.16.6 How Can the Impacts of the Build Alternative Be Minimized or Mitigated?

Early and frequent communications with utility companies would occur during the design phase. Utilities affected by the Build Alternative would be identified as early as possible and the utility relocation/mitigation needs communicated to the utilities for action. Relocation or mitigation plans would be developed jointly between the design team and the utility to ensure relocation/mitigation actions would meet utility companies' needs, as well as any applicable safety, regulatory, or industry standards.

### 3.16.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

Effects to utilities may include service interruptions to power, water, communications, gas, and any other utilities as may be identified or encountered during the construction of the Build Alternative. However, these interruptions would be planned, intermittent, and temporary. No significant adverse impacts to utilities are anticipated.

### 3.17 ECONOMICS

Transportation improvement projects provide long-term economic benefit in the form of congestion relief for improved freight mobility and reduced commute times, and enhanced connectivity for adjacent communities. However, they can also create impacts to businesses that depend on local and highway traffic by causing disruption during construction and/or changing the flow of patrons.

#### 3.17.1 How Were Economic Impacts Evaluated?

The economic analysis focused on areas in the City of DuPont adjacent to the Steilacoom-DuPont Road interchange (Exit 119). The Build Alternative would change travel patterns in this area which could impact nearby businesses. The Exit 119 interchange and Steilacoom-DuPont Road is the only viable route for freight to serve businesses in DuPont because city ordinances restrict truck traffic on portions of Center Drive.

Estimates of current economic activity in DuPont were prepared by analyzing gross business income data from the Washington State Department of Revenue. Traffic volume data was used to assess changes in vehicle volumes by route and destination in the study area. In addition to data analysis, ten business owners or managers in the study area were interviewed to gain their perspective on the potential impacts of the Build Alternative during and after construction. These interviews provided additional information on visitor and customer behavior and volumes, validated and augmented adjustments to modeled economic impact estimates, and captured other business concerns and impacts.

#### 3.17.2 What Are the Existing Economic Conditions?

The City of DuPont is located about 20 miles south of Tacoma on the I-5 corridor, adjacent to Joint Base Lewis-McChord. The City is made up of both a Historic Village and the modern Northwest Landing, a 3,000-acre mixed-use planned community. Commercial properties are located at Exit 119 between I-5 and historic DuPont Village including a service station/grocery store, and the Barksdale Station commercial, office and lodging area. At the intersection of Center Drive and Steilacoom-DuPont Road there is a large commercial

area dominated by light industrial and warehouse businesses and a few retail businesses.

There are just over sixty businesses in the study area representing four broad categories: Wholesale/Warehousing, Services, Accommodations & Food Service, and Other. Businesses identified as wholesale and warehousing include facilities such as the Amazon Fulfillment Center, Dania, Pier 1 Imports, and IKEA storage warehouses, and others. Approximately half of the businesses in the study area were classified as Services and include barber shops and beauty salons, dentist offices, finance businesses, insurance and law offices, and delivery/couriers. The area's Accommodation & Food businesses include chain and franchise restaurants like Subway and Starbucks, locally owned businesses such as Happy Teriyaki, a gas station, and two hotels. The Other category includes retail, construction and manufacturing businesses.

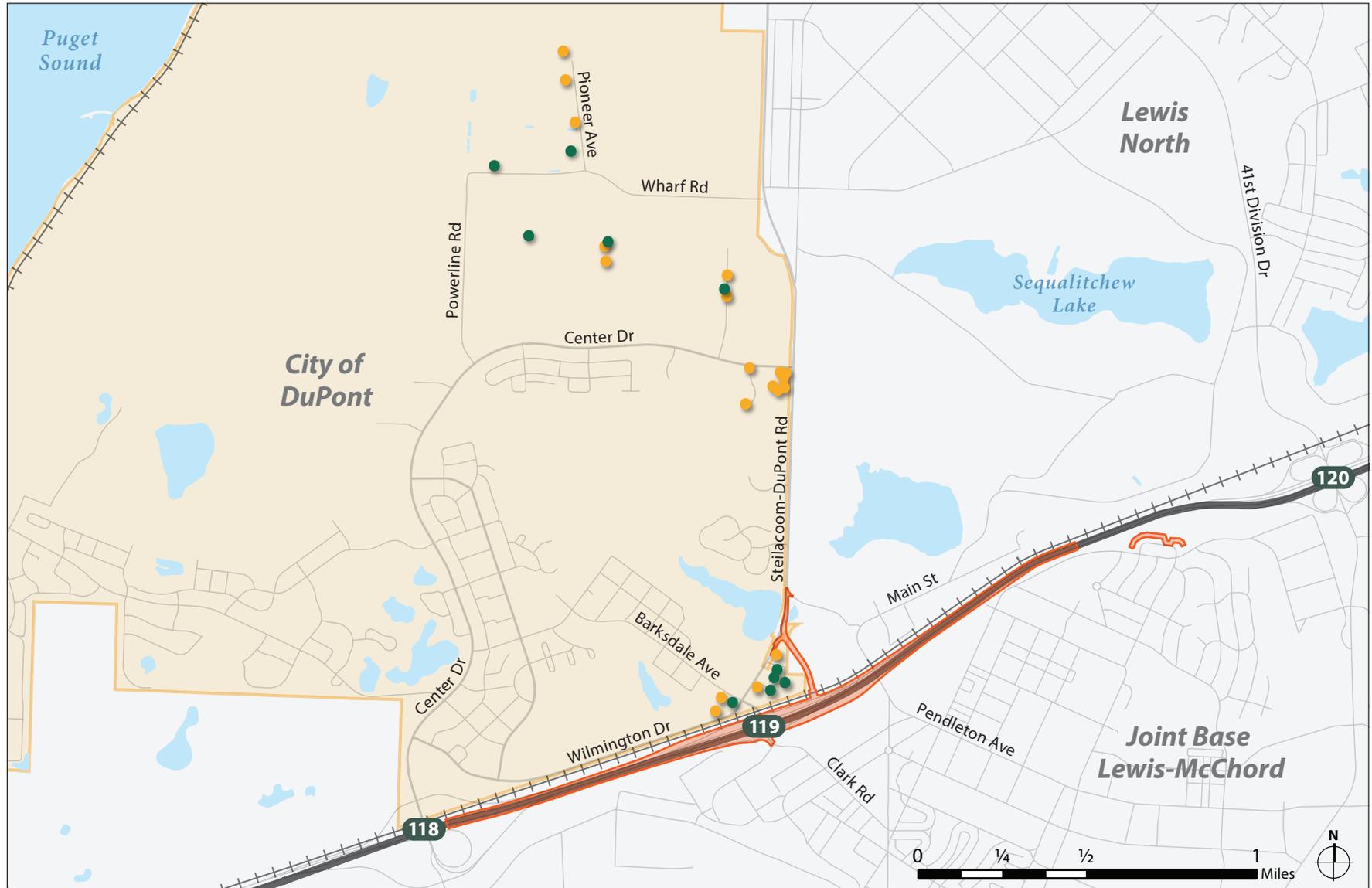
Together, all businesses in the study area employed 1,950 people in 2017 and paid total estimated wages of \$106.2 million (including benefits). Table 3.17-1 shows the number of jobs, wages and revenue in the study area. These businesses generated an estimated \$474.1 million in revenue in 2017. Wholesale and Warehousing businesses made up the largest share of revenue at 88%, while Services businesses constituted 10% of total business revenues in DuPont.

#### Study Area Business Interviews

Ten retail and industrial businesses near Exit 119 were interviewed regarding planned changes to the interchange configuration and associated change

**Table 3.17-1 Study Area Jobs, Wages, and Revenue by Business Type, 2017**

Business	Jobs	Wages (Millions)	Revenue (Millions)
Wholesale/Warehousing	1,610	\$89.2	\$415.8
Services	260	\$14.7	\$47.6
Accommodation & Food Service	50	\$1.0	\$4.2
Other	30	\$1.2	\$6.5
Total	1,950	\$106.2	\$474.1



- ▬ Build Alternative Footprint
- Businesses in Study Area
- Interviewed Businesses

- INTERCHANGES**
- 118 Center Drive interchange
  - 119 Steilacoom-DuPont Road interchange
  - 120 Main Gate interchange

**Figure 3.17-1**  
Businesses in Study Area

in the travel route to their establishments. The locations of the businesses interviewed are shown on Figure 3.17-1. The businesses were asked a series of questions regarding the type of business they run, their customer base, employee access routes, and perceived benefits or impacts of the planned changes. Refer to the *I-5 Mounts Road to Thorne Lane Corridor Improvements South Project Area Economic Analysis* (Community Attributes, 2019) prepared for the SEA for a list of the survey questions and names of businesses interviewed. As shown on Figure 3.17-1, the businesses interviewed represent a mix of those located near the Steilacoom–DuPont Road/Barksdale Avenue intersection retail area and the Center Drive/Steilacoom-DuPont warehouse area.

### 3.17.3 What Economic Impacts Would Occur with the No Build Alternative?

In the No Build scenario, I-5 capacity would not be improved, and the current interchange configuration would not change. Sound Transit has plans to offer high-speed rail service on the existing rail line that runs parallel to I-5 in this corridor. Combined with anticipated increased future congestion on I-5, drivers could encounter additional travel time associated with waiting for trains to pass on the at-grade crossing adjacent to Exit 119 at scheduled intervals. These conditions could result in fewer I-5 drivers traveling to or stopping in DuPont to patronize local businesses, which could result in decreased revenues and employment in the area.

### 3.17.4 Would the Build Alternative Have Economic Impacts?

Following construction of the Build Alternative, economic activities dependent on I-5 such as movement of freight would experience improved conditions compared to the No Build Alternative. Overall, most local business owners interviewed indicated they expected the Build Alternative would have positive impacts on their businesses when completed, especially with the removal of the at-grade rail crossing. Businesses who reported reliance on daily commuters most notably the DuPont Grocery and Union 76 gas station, expect a negative impact on business revenues.

The traffic analysis for the Build Alternative indicates traffic volumes at the intersection of Barksdale Avenue and Wilmington Drive would decrease

following construction of the reconfigured interchange. The decrease is due to the construction of a new overpass north of the existing Exit 119 bridge that would provide local access to the west side of I-5. The primary movement at the reconfigured interchange is towards Center Drive and Wharf Road. Due to the decrease in traffic at this intersection, a customer base analysis was conducted for the DuPont Grocery and Union 76 to identify potential impacts.

The customer base analysis determined the DuPont Grocery and Union 76 may experience a slight decrease in customers as a result of the Build Alternative. The slight decrease is a result of the rerouting of traffic on Steilacoom-DuPont Road. The customer base analysis is included in the 2019 *Economic Analysis* prepared for this SEA; refer to this document for more detail.

### 3.17.5 Would the Build Alternative Have Construction Related Impacts?

Widening I-5 would require the Steilacoom-DuPont Road interchange (Exit 119) to be reconstructed to accommodate the additional travel lanes. The reconfigured interchange would be comprised of two new overpass structures. During construction, the existing ramps at the Steilacoom-DuPont Road interchange would be maintained in similar configurations until the north part of the new interchange (Exit 119B) and the new extension of Steilacoom-DuPont Road are constructed. At that point, some of the ramp functions at the existing interchange would be shifted to Exit 119B. Construction of Exit 119A would be completed in phases because part of the new overpass overlaps with the existing overpass. One half of the new bridge would be built next to the existing bridge to maintain interchange ramp functions and access to JBLM. After the first half of the new bridge is opened to traffic, the existing structure would be removed, and the second half of the new bridge would be completed.

Short-term highway closures would be necessary when interchange ramp movements are shifted from one location to another. At times when the JBLM DuPont Gate would be impacted by these closures, traffic would be detoured to nearby gates in consultation with JBLM. Local traffic on the DuPont side of I-5 would be detoured to the Center Drive interchange (Exit 118) when the existing Steilacoom-DuPont Road interchange would be impacted by closures.

Construction of the new Steilacoom-DuPont Road has minimal construction closure impacts to local streets. Short-term closures may be needed to link the existing Steilacoom-DuPont Road alignment to the new roundabout intersection and connect the existing street system to the new I-5 interchange. The existing Steilacoom-DuPont Road connection to I-5 would not be closed until the new Steilacoom-DuPont Road connection to the Exit 119B interchange is open to traffic.

As a result of the staged construction schedule and availability of alternate routes, the forecasted impacts on local businesses is low. Vehicles that normally drive to the City of DuPont or access JBLM through the DuPont Gate would still be able to do so during construction.

### 3.17.6 How Can the Economic Impacts of the Build Alternative Be Minimized or Mitigated?

The staged construction of the new overpasses and ramps is intended to minimize impacts to DuPont and JBLM. Closing only one ramp location at a time would ensure vehicles traveling on I-5 have continual access to the neighborhoods and businesses. A Traffic Management Plan (TMP) that documents these mitigation measures, as well as others that may be identified during the design of the proposed improvements, would be prepared. This plan would set forth the requirements regarding traffic that the contractor must implement during construction.

New roadway signage on I-5 and the ramps could be installed to help vehicles identify services and businesses in the area, especially for those located near the reconfigured interchange at Steilacoom-DuPont Road.

### 3.17.7 Would the Build Alternative Have Unavoidable Adverse Impacts?

There will be no unavoidable adverse economic impacts as a result of the Build Alternative. No businesses in the City of DuPont, or elsewhere within the South Study Area, would be displaced as a result of the Build Alternative. While some drivers would experience slightly longer travel times to access DuPont, the reduced congestion and removal of the at-grade rail crossing would have a positive impact to most DuPont businesses.

## 3.18 INDIRECT AND CUMULATIVE EFFECTS

### 3.18.1 How Were Indirect Effects Analyzed?

Indirect effects are effects that are caused by the proposed project but are separated from direct effects because they occur later in time or at some distance from the project. The analysis of indirect effects ensures all project-related impacts are properly discussed during environmental review.

Indirect effects often relate to changes in land use. The analysis of indirect effects looks for growth-inducing effects and other effects related to changes in the pattern of land use, population density or growth rate, and related effects on air and water, as well as other natural systems including ecosystems (40 Code of Federal Regulations 1508.8).

Indirect effects result from one project but, unlike direct effects, typically involve a chain of cause and effect relationships that can take time to develop and can occur at a distance from the project site.

Under the Washington State Growth Management Act, land use changes are the direct result of local planning decisions. FHWA and WSDOT do not control this process. However, indirect impacts may be associated with a transportation project if the project affects the rate and pattern of land use development by adding a new access or a bypass route.

To determine whether something might be an indirect effect, WSDOT asks: would the effect occur but for the transportation project? If the transportation project is necessary for the impact to occur, then it is either a direct impact or an indirect effect.

WSDOT included the consideration of potential indirect effects along with direct effects in all discipline studies. The study area for each resource was used to assess the potential for indirect effects on each resource. Analysts also sought regional data and studies prepared by Pierce County, JBLM and PSRC. The method for assessing the potential for indirect effect on each resource was similar in method to the assessment of direct effects described in the corresponding discipline reports and technical memoranda.

### 3.18.2 What Indirect Effects Are Expected from the Build Alternative?

Indirect effects are tied to the direct effects described in early sections of this SEA. WSDOT looked at interactions between the Build Alternative's effects to identify ways in which it would contribute to effects further removed in time or place.

**Indirect Effects:** As described in the NEPA implementing regulations, indirect effects occur as a result of a proposed project, but take place later in time or are further removed in distance from the proposed project. (40 CFR 1508.8)

WSDOT examined the possibility of indirect effects related to all the Build Alternative's direct impacts. The Build Alternative would improve an existing section of highway. It would replace the Steilacoom-DuPont Road interchange (Exit 119) but would not add new access to I-5. The Build Alternative is expected to reduce congestion while accommodating more demand along portions of the I-5 mainline and an area interchange in 2025. As described in Section 3.3, mobility would be improved for area residents, persons needing access to the adjacent military installations, and the general traveling public with the Build Alternative improvements. With I-5 widened through the Build Alternative area, transit service and freight service would be more reliable and have shorter travel times.

No indirect effects were identified for natural resource areas: air quality, noise, geology and soils, water resources, fish/wildlife/vegetation, hazardous materials, visual quality, section 4(f), or land use. In these resource areas, WSDOT found very little difference in development or land use patterns between the no build and the build alternatives. The Build Alternative does not encourage changes in land use beyond those disclosed as direct property impacts (areas where WSDOT is converting land to transportation use). Indirect effects to wetlands were reported in the wetlands study as direct impacts to wetland buffers. The use of the phrase "indirect effects to wetlands" should not be confused with the NEPA indirect effects. These effects are fully accounted for in the analysis of direct effects. The Build Alternative would result in some direct visual effects and a boundary modification in the Fort Lewis Garrison Historic District as described in Section 3.12. The Build Alternative would also alter the surrounding visual setting of the District, although offsetting

mitigation treatments are included in the Build Alternative and described in Section 3.11.

The Build Alternative will not directly or indirectly change the commercial or residential character of the area. The Build Alternative has minor positive indirect effects derived from three project elements: improved highway interchange design, local street connections, non-motorized path, and grade separation. These changes may facilitate planned community improvements, such as commercial and residential redevelopment.

Temporary, beneficial indirect economic effects may accrue from the hiring of vendors and purchasing of materials and supplies required for project construction, leading to increased employment throughout the relevant parts of the supply chain in the short-term. The Build Alternative would not result in any adverse indirect effects.

### 3.18.3 How Were Cumulative Effects Analyzed?

Under NEPA, cumulative effects result from the incremental effects of the Build Alternative when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative effects include past, present, and reasonably foreseeable future actions within the study area that, together with the Build Alternative, may have a cumulative effect on the environment. Past and present actions affecting environmental resources are reflected in the existing conditions discussion for the Build Alternative.

**Cumulative Impacts:** *The impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. (40 CFR 1508.7)*

Reasonably foreseeable future actions include those that are being implemented or have been implemented recently, including planned and funded transportation improvements, and other local and regional infrastructure proposals.

The analysis of cumulative effects helps decision makers and the public know

whether incremental changes to a given resource could, if left unmitigated, reach significant proportions.

In identifying and analyzing potential cumulative impacts, WSDOT used joint guidance issued by WSDOT, FHWA Washington Division, and the US Environmental Protection Agency Region 10, entitled *Guidance on Preparing Cumulative Impact Analyses* (2008). The guidance outlines eight steps for identifying and assessing cumulative impacts:

1. Identify the resources that may have cumulative impacts to consider in the analysis;
2. Define the study area and timeframe for each affected resource;
3. Describe the current status and historical context for each;
4. Identify direct and the indirect impacts that may contribute to a cumulative impact;
5. Identify other historic, current and reasonably foreseeable actions that may affect resources;
6. Assess potential cumulative impacts to each resource; determine magnitude and significance;
7. Report the results; and
8. Assess and discuss potential mitigation issues for all adverse impacts.

For the cumulative impacts analysis, WSDOT considered effects within spatial and temporal boundaries. In framing the historic and future context, analysts looked at the land use and transportation development patterns since the early 1800's. Study areas were defined for each resource. The cumulative effects evaluation used the same study areas used in assessing direct effects. In addition, WSDOT considered the information provided in the 2017 EA and sought regional data and studies prepared by Pierce County, JBLM, and PSRC. For traffic congestion on I-5, WSDOT also considered Thurston County and through-traffic. See the Transportation and Land Use sections (Sections 3.3 and 3.15) of this SEA for more information.

WSDOT relied on the information in the discipline studies and the regional and local studies referenced in Section 3.15. Information provided in the

affected environment and direct effects analysis helped to characterize current conditions and future trends.

WSDOT considered the potential for cumulative effects to all resource areas analyzed in this EA. In addition, the measures to minimize direct effects of the Project were evaluated in making the cumulative effect determination. For example, temporary construction effects that are fully mitigated during construction are not likely to contribute to a cumulative effect. In general, the study focused on construction and operational effects of the proposed Project.

Consistent with the Joint Guidance, WSDOT's study of cumulative effects only focused on the resource areas where potential direct and indirect effect was identified. If there are no project impacts on a particular resource, then WSDOT did not include that resource in the cumulative effects report since the Project cannot contribute toward a cumulative effect.

### 3.18.4 Historical and Present Context (Including Reasonably Foreseeable Projects)

WSDOT considered how this project, in combination with past, present and future actions is likely to affect the natural and built environment. The Nisqually people have lived in the Project area's watershed for thousands of years. In 1833, the Hudson's Bay Company established a fur trading post at Fort Nisqually.

The Project corridor and the entire Puget Sound region have been heavily urbanized over the past 100 years. Natural areas have been dramatically altered. Waterways have been channelized, wetlands filled or drained. The area has only fractions of the populations of native animals, birds and fish it had at statehood. Development has also deforested much of the area, decreased water and air quality, increased noise levels, contaminated soils.

The history of trails and roads throughout the area provides insights into how people historically moved between where they lived and worked, and neighboring communities. In 1910 surveyors were "*establishing the most feasible location*" for a "*north and south trunk road*" from Blaine to Vancouver<sup>1</sup>. Their survey may not have gone through the Project corridor; however, maps

<sup>1</sup> Third Biennial Report of the Highway Commissioner, 1910, p. 40.

of the time show a projected "Pacific Highway" route west of American Lake. (The Pacific Highway and I-5 are east of the Lake.) Kroll's 1915 map shows a road running approximately along the future highway path through the Build Alternative<sup>2</sup>. A segment of what was called Permanent Highway No. 12 was paved in concrete from the south Tacoma city limits to the north edge of Camp (later Fort) Lewis in 1918<sup>3</sup>, and by 1920 "*the only remaining unpaved portion of the highway between Tacoma and Olympia [was] across the Nisqually flat.*"<sup>4,5</sup>

The Pacific Highway was expanded to four lanes (two lanes in each direction) through the Project corridor ca. 1940-41. From ca. 1957 to 1959 the highway was upgraded to a freeway and widened to six lanes (three in each direction) in places. In the early 1970s the freeway between Exits 116 and 120 was widened to six lanes. In the mid-1970s the freeway from Exit 123 to Exit 127 was widened to eight lanes (four in each direction). Collector-distributor lanes were added to the Exit 120 interchange in the early 1970s. The Center Drive (Exit 118) interchange was built ca. 1997.

The region's natural features, the lakes, creeks, Nisqually River and delta influence human development patterns. The past 100 years has defined much of the present land use and development trends. Today, growth throughout Pierce County is directed by the comprehensive plans and other land use policies developed by the County and local jurisdictions.

#### North Study Area EA (2017)

WSDOT collected information on contemporary, nearby project during environmental review for the North Study Area portion of this project. Projects underway during that time period included the WSDOT Point Defiance Bypass Rail Project and rail improvements on the South Transit owned rail line adjacent to I-5. Amtrak trains are expected to reinitiate service in this corridor in the near future. Interchange improvements to existing at-grade rail crossings have been made. Other passenger rail improvements included the extension of Sounder Commuter Rail Service to DuPont. The City of Lakewood made several local roadway improvements, including the 150th Street SW and the Madigan

<sup>2</sup> Kroll's Map of Pierce Co., Washington, Kroll Map Company, Seattle, 1915.

<sup>3</sup> Seventh Biennial Report of the State Highway Commissioner, 1918, p. 92.

<sup>4</sup> Eighth Biennial Report of the State Highway Commissioner, 1921, p. 83.

<sup>5</sup> Craig Holstine email, 1/27/2016.

Access project at the I-5/Berkeley Street Interchange. The Pierce County Readiness Center at Camp Murray was completed in 2016. Joint Base Lewis-McChord reported several projects, including a new elementary school and a major new medical facility, the National Intrepid Spirit Center, that opened in December 2017.

### **South Study Area SEA (2019)**

Much of the South Study Area on the west side of I-5 is located in the City of DuPont. The City of DuPont's Comprehensive Plan includes the goals for the City's future development. Land use in the South Study Area is intended to be a combination of commercial, office, and mixed-use, with some residential and open space areas. The Comprehensive Plan's transportation project list includes the I-5/Steilacoom-DuPont Road interchange with the project description, "Construct new interchange to add capacity." As proposed, the Build Alternative would provide relief to worsening congestion and provide grade separation between cars and trains at the Steilacoom-DuPont Road interchange. Individual elements of the Build Alternative have been evaluated to ensure their consistency with regionally-adopted policies and priorities and are included on the financially-constrained project list in PSRC's *Transportation 2040* plan. They are also included in the WSDOT *Highway System Plan* and in the City of DuPont's six-year TIP.

Other recent and reasonably foreseeable projects in the City of DuPont were inventoried for the South Study Area portion of this environmental review. Active projects in the area represent the varied planned uses in the City's Comprehensive Plan outlined above. Projects include a City plan to widen a 1.3 mile stretch of the existing DuPont-Steilacoom Road from two to four lanes between the new Exit 119 and Wharf Road, which is also the location of JBLM's Integrity Gate. A access driveway was recently completed providing improved freight access to the Amazon fulfillment center via Wharf Road. In addition to the new access, the northern portion of the existing vehicle parking lot will be reconfigured to accommodate new trailer parking. Other projects planned within DuPont include: a 60-bed Patriot's Landing Memory Care Facility; two warehouse buildings on a 21-acre vacant parcel in DuPont Industrial Park; two other office/warehouse buildings at Center Plaza; and three new warehouse buildings on an approximate 93-acre site in DuPont Corporate Park. The City is

planning to construct a new Public Works building within the City Hall complex to be completed by 2021 and considering a bond measure to fund construction of a future community center. These and additional recent and foreseeable City projects are shown in Table 3.18-1.

The South Study Area also includes JBLM on both sides of I-5. The size, population, and services offered on JBLM make it comparable to a fully functioning city. JBLM is currently designing a 150 inmate Regional Correctional Facility south of the intersection with Railroad Avenue and Alder Road. Other foreseeable JBLM projects include a new Army Reserve Logistics Center, an aviation parts storage facility, a Clear Water Rinse System at the Gray Army Airfield, and a Hot/Bulk Refueling Facility at the Gray Army Airfield. These and other JBLM projects are listed in Table 3.18-1.

The SR 704 Cross Base Highway Project is not considered among the reasonably foreseeable future projects because FHWA rescinded its August 2004 Record of Decision on August 29, 2017.

### **3.18.5 What Were the Results of the Cumulative Effects Analysis?**

The Build Alternative is designed to meet WSDOT and FHWA environmental stewardship guidance as well as to comply with all environmental laws. It would improve an existing segment of I-5 which was built in 1960. All reasonable measures to minimize adverse effects have been incorporated into the Build Alternative design. The measures combine avoidance, minimization, mitigation, and enhancement. An example of enhancement included in the Build Alternative is a shared use bicycle and pedestrian pathway across I-5 that would be constructed as part of the reconfigured Exit 119 interchange. Pedestrian crossing signals and crosswalks would be provided to facilitate movement of non-motorized users across the interchange. The improved connections provided by the Build Alternative would allow persons stationed or working at JBLM, but living in adjacent communities, the opportunity to walk or bicycle to duty station or work activities or to patronize nearby businesses.

**Table 3.18-1 Recent and Proposed Development Proposals in Study Area**

Project Description	Jurisdiction
Point Defiance Bypass Service opened in December 2017. Service was immediately closed due to derailment of the inaugural run of the Cascades. Service has not yet resumed.	AMTRAK/Sound Transit
Constructed a 90-room Fairfield Inn hotel with parking, utilities, and landscaping on a 2.41 acre site at 1515 Wilmington Ave.	DuPont
Constructed a 5-story 140 room Hilton Home2 Suites Hotel with parking, utilities, and landscaping at Station Drive and Southbound I-5 Exit 119 off-ramp.	DuPont
Constructed a 1-story 9,275 sq. ft. learning center with 42 parking stalls and related improvements on a 1.6 acre site at McNeil Street.	DuPont
Constructed a 31-room addition to the Liberty Inn Hotel at 1400 Wilmington Street.	DuPont
Construct a 5,000 sq. ft. drive through bank branch of the Navy Federal Credit Union with 4 drive-through lanes, 63 parking stalls and related improvements on a 2.4 acre site next to southbound I-5 Exit 119 off-ramp.	DuPont
Widen DuPont–Steilacoom Road for a 1.3 mile stretch between Exit 119 and Wharf Road.	DuPont
Construct 3 new warehouse distribution buildings with landscaping, parking areas, and utility and roadway improvements at DuPont Corporate Park (93.16 acres).	DuPont
Subdivide Tract 1 of Hoffman Hill Division 5 Phase 1 plat. (2.03 acres) into 16 residential lots including landscaping, utilities, and private alleys.	DuPont
Construct 2 office/warehouse buildings along with grading, parking, landscaping, stormwater and sewer facilities on a 5.84 acre site (Center Plaza Bldgs 5 & 6).	DuPont
Construct the one-story, 60 bed Patriot’s Landing Memory Care Facility located on structured underground parking.	DuPont
Construct 9,672 square foot Champions Center Church to be located in the existing building at 2620 Williams Place NW, Suites 137-149. Changes include signage and a 252 seat auditorium, classroom space, gathering spaces, and a bookstore/coffee shop.	DuPont
Modify a previously approved site plan at Northwest Logistics Center to reduce building space and add trailer parking. The proposal includes construction of a warehouse building with associated parking, landscape, stormwater and sewer facilities, and street frontage improvements.	DuPont
Construct two office warehouse buildings on an approximate 21-acre vacant parcel in DuPont Industrial Park. The project includes grading, parking, landscaping, water and sewer extensions, stormwater facilities, and franchise utility improvements. Includes the improvement of existing trail easement as part of Sequalitchew Creek Trail.	DuPont
Construct a new access driveway off of Wharf Road located near the northwest corner of the Amazon Fulfillment Center. The project will reconfigure an existing parking lot and relocate an existing guard shack.	DuPont
Rezoning of City of DuPont Business & Technology Park from Business to Mixed Use Village. The proposed zoning will allow a mixture of retail, commercial, offices, manufacturing, mixed-use, residential & recreational uses.	DuPont
Construction of two lots over two phases at Barksdale Station. Phase 1 is a Starbucks Coffee Shop with drive thru lane. Phase two is construction of a new building with no identified user.	DuPont
Pioneer Aggregate Mine Expansion and Sequalitchew Creek Restoration. Restore and enhance Sequalitchew Creek watershed, including flows along the entire length of the Creek, as long desired by the City and conservation groups and to support CalPortland’s mining in the North and South Parcels subject to various restrictions and in compliance with existing laws and regulations.	DuPont
Future Public Works building at City Hall Complex – estimated for construction in 2020-2021	DuPont
Future community center – dependent on bond funding	DuPont
Construct the Northwestern Joint Regional Correctional Facility (PN 61147) at Joint Base Lewis-McChord. This will be a medium security 150 inmate capacity structure covering 23.2 acres.	JBLM
Army Reserve Center	JBLM
Aviation Parts Storage Facility	JBLM
Clear Water Rinse System	JBLM
Not/Bulk Refueling Facilities	JBLM
Adoption of the Steilacoom Historic School District’s 2017-2023 Capitol Facilities Plan by the Steilacoom Historic School District.	Steilacoom Historic School District

Source: SEPA Register Search, conducted June 2019

WSDOT finds that the Build Alternative, together with the past, present and foreseeable future projects, would have only minor contributions to cumulative effects on the natural and community resources in the study areas. The results of the analysis for each resource or discipline area are on the following pages.

### ***Transportation***

The Project directly benefits the interstate and local transportation network. With the Build Alternative there are beneficial cumulative effects on transportation. Future planned transportation projects that could also affect traffic conditions in the Build Alternative were considered for the cumulative effects analysis. The Build Alternative would contribute a positive cumulative effect on regional and local transportation.

### ***Air Quality***

The central Puget Sound region has designated maintenance areas for carbon monoxide and particulate matter. The region is in attainment for all other criteria pollutants. In general, the air quality in the central Puget Sound region has either maintained or seen improvements over the last five years. Cleaner cars, industries, and consumer products have contributed to cleaner air throughout much of the United States, including in the central Puget Sound region, and this trend is likely to continue. Without the Build Alternative, regional air quality is still likely to improve between the present and 2030 because of trends towards cleaner vehicles and industries.

The Build Alternative would reduce congestion on I-5 and at the improved Steilacoom-DuPont interchange. Based on the air quality analysis completed for the proposed improvements, the Build Alternative would not cause or contribute to any violation of the NAAQS for any of the priority pollutants including Carbon Monoxide and Particulate Matter. Mobile Source Air Toxics (MSAT) emissions for both the Build and No Build Alternative are projected to be well below existing conditions due to technological advancements. Greenhouse gas emissions for the Build Alternative are likely to be slightly reduced compared to the No Build Alternative as a result of improved traffic flow. Construction may cause minor temporary air quality disturbances from dust and construction-related emissions. Measures have been incorporated in the Build Alternative to control temporary air quality issues during construction. The construction and operation of the Build Alternative is not likely to contribute to a cumulative effect on air quality.

### ***Noise***

In 1930 the Tacoma Airfield was built and in 1940 renamed McChord. In the late 1950s, I-5 was built, and traffic noise from the highway, arterial roads and air traffic has substantially increased ambient noise levels in comparison to pre-war years. The number of residences negatively affected by road noise has increased as traffic levels have increased and infilling closer to the roadway has occurred in the established neighborhoods.

Project-related noise from construction and operations has been assessed and is described in Section 3.5. In the vicinity of the reconfigured interchange, noise levels would be reduced due to the new ramps and the new security wall. Additionally, in locations where there is a noise increase, the Build Alternative would incorporate noise barriers where reasonable and feasible to reduce impacts. Compared to the No Build Alternative, the Build Alternative would reduce noise adjacent to the roadway by constructing noise barriers at up to two new locations. The Build Alternative in combination with current and future projects is likely to result in a slight reduction in the cumulative road noise in the area.

### ***Geology and Soils***

The Puget Sound region has undergone multiple glaciations that have deposited a variety of soil types. Within the Build Alternative, low slope gradients, climatic conditions, and soil textures have produced an environment that is naturally resistant to erosion. Human activities since the late 19th century have substantially changed the topography near the corridor. The original construction of I-5 excavated areas to create bridge footings and facilitate connections with local streets. The Build Alternative would result in minor changes to topography through excavation and filling. Cumulative effects on soil erosion are not expected to increase substantially beyond current levels. The Build Alternative is not likely to contribute to a cumulative effect on geology and soils.

## Water Resources

Over the last several decades, urban development and the discharge of untreated stormwater have reduced water quality in the resource study area. Stormwater regulations since the 1990s have been aimed at treating and reducing pollutants in runoff before discharge to streams and lakes. Compensatory mitigation is associated with any new development that impacts streams. State and local governments are actively working to maintain and improve water resources.

The construction of the Build Alternative may have minor temporary effects on the adjacent water bodies and streams; construction would incorporate measures to protect groundwater and address runoff. The Build Alternative would provide long-term stormwater treatment where none currently exists, a minor benefit to water quality. The Build Alternative would have a minimal contribution of impervious surface in combination with other past, present, and future projects. Overall, the Build Alternative is not likely to contribute to a cumulative effect on water resources.

## Wetlands

Wetlands in the study area have been substantially affected by past and present land use actions. Taken together, these effects have resulted in significant wetland loss in the resource study area. In recent decades, local, state, and federal agencies have set rules and implemented regulations to protect wetlands. Compensatory mitigation is associated with any new development that impacts wetlands. The City of DuPont has several planned neighborhoods that were platted around wetlands. The 2015 update to the City's Comprehensive Plan conditions certain activities when adjacent to the wetlands in order to preserve the natural character and to protect habitat function. The area has active volunteer groups and private landowner efforts that have helped restore damaged wetlands and streams.

The Build Alternative will have permanent and temporary impacts on wetlands and streams incorporating measures to protect groundwater and surface water. Temporary impact areas will be mitigated through native plantings on site while minor wetland impacts will be mitigated through the Pierce County In-Lieu-Fee (ILF) Mitigation Program. The Build Alternative also incorporates rigorous stormwater treatment and control. The Build Alternative is not likely to contribute a cumulative effect on water quality and wetlands.

## Fish, Wildlife and Vegetation

Human development and land use patterns impact fish and wildlife habitat and vegetation. Past development actions, including military base operations, road construction and housing, have adversely affected wildlife habitat within the study area. WSDOT considered the Build Alternative's minimization measures for effects to vegetation in combination with other current and future projects that seek to improve habitat and the environmental protection provided through local agencies' critical area ordinances. The area has benefited from the collaborative efforts like the Nisqually National Refuge, environmental projects on JBLM, and various restoration actions by Nisqually Tribe, Pierce County and nongovernmental agencies like The Nature Conservancy (Fort Lewis Grow the Army Final EIS). The Build Alternative is not likely to contribute a cumulative effect on these resources.

## Hazardous Materials

Hazardous materials are not themselves a resource that would be evaluated for cumulative effects. Hazardous materials can, however, enter the air and water and eventually affect human health and ecosystems. Hazardous materials can be associated with contaminated soils and groundwater, building materials encountered through demolition, accidental spills at construction sites, and leaking underground storage tanks. Depending on the type of contamination, there can be risks to worker safety and public health as well as environmental damage. The risk of encountering hazardous materials during the construction of the Build Alternative is low, however, and safeguards would be in place to minimize temporary impacts, including the WSDOT Spill Prevention Control and Countermeasures Plan for construction projects.

In general, new development projects remediate past contamination and result in improved conditions. The Build Alternative is not likely to contribute to a cumulative environmental effect from hazardous materials releases. The Build Alternative is not expected to result in a discharge of hazardous materials, although there are known areas of contamination from past land uses. If any inadvertent discharges occur, these will be contained and adverse effects avoided.

### *Visual Quality*

The transformation of the visual landscape began with the arrival of non-indigenous settlers in the mid-19th century. Over a century-and-a-half, people harvested forests, created farms and built transportation routes for trade and access to resources, steadily developing the Puget Sound region. Urban centers including Tacoma and communities to the south were built and connected through rail and roadways. The military camps and railroad along with the roadways became significant features of the visual landscape.

The direct impacts on visual quality result from the new, grade-separated and thus elevated interchange and the proposed noise walls. In the context of the existing urban environment and future highway, rail, and military operations, the visual elements of the Build Alternative would not contribute to a cumulative visual impact.

### *Archaeological and Historic Resources*

Past and present development has removed or altered the character of many cultural resources in the Puget Sound region during the last 150 years. The development and subsequent loss of character or integrity of historic properties follows a national trend, which led to the passage of federal and state regulations to protect these resources. Although many resources have already been lost, the rate of attrition is slowing because of federal, state, and local protections and an increasing public interest in preserving the nation's cultural heritage for future generations.

Based on the cultural resources analysis and coordination with the Tribes and DAHP, the Build Alternative is not expected to significantly impact cultural resources. Cultural resources coordination requirements include measures to address inadvertent discoveries.

### *Socioeconomic and Environmental Justice*

WSDOT considered the Build Alternative's anticipated direct and indirect effects on social elements including environmental justice populations to evaluate whether it contributes to any adverse cumulative effects. The Build Alternative does not cause any displacements, nor would it impact any community resources. The social and economic aspects of reducing the congestion on I-5 and connecting roads would generally benefit the entire study area.

### *Land Use*

Land use trends were established within a short period after the Puget Sound region was settled by non-indigenous people in the mid-19th century. Over a century-and-a-half, the area was steadily developed. Urban centers including Tacoma and communities to the south were built and connected through rail and roadways.

The federal government had a big role in setting the land use pattern of the military reservation. The Build Alternative includes unincorporated Pierce County and the relatively new City of DuPont.

The Build Alternative would not affect land use or induce growth and development in the region. As noted under the potential indirect effects, any future development or redevelopment will be consistent with land use plans and policies for that area. The Build Alternative is not likely to contribute to a cumulative effect on land use.

### *Economics*

WSDOT examined the potential economic impacts in the City of DuPont in addition to the broader scope of the socioeconomic analysis. Compared to the No Build Alternative, the Build Alternative would not significantly affect local business. Some short-term, construction-related effects are anticipated, however, in the context with current and future actions, these are not likely to adversely impact customers, workers or business owners. No contribution to cumulative effects is likely to result from the Build Alternative.

### 3.18.6 What Mitigation Measures Were Considered?

The Build Alternative would result in long-term improvements to transportation and would further the goals of regional and local land use and transportation plans. Overall, operations of the Build Alternative would not contribute to adverse cumulative impacts and no mitigation would be necessary.

### 3.18.7 How Were Potential Climate Change and Extreme Weather Risks Considered and Addressed?

All of WSDOT's major capital projects undergoing environmental review consider climate change and extreme weather events as part of the agency's strategic plan commitment. The Project team examined available information about climate trends and the results of WSDOT's assessment of vulnerable infrastructure. WSDOT is aware that past trends for a specific resource (water, habitat, air) may not be accurate predictions for the future; instead, we need to look at scientifically-based projections of the changing climate as part of our analysis of cumulative effects.

The results of WSDOT's vulnerability assessment (WSDOT, 2011) show the section of I-5 through the Project area to be of low vulnerability to climate-related threats and resilient to future climate-related effects. The Build Alternative may experience extreme wind, rain and snow storms and more days of extreme heat; however, this segment of I-5 is not prone to severe flooding and is outside of the zone for potential impacts from sea-level rise. The Build Alternative would include elements that address stormwater flow to reduce the likelihood of localized flooding.

The construction and operation of the Build Alternative would consume energy and emit GHGs into the atmosphere. Operation of the Build Alternative would not be measurably different from the No Build Alternative and thus would not contribute to a cumulative effect. Construction of the Build Alternative would have temporary release of emissions. WSDOT has taken steps to minimize fuel use during construction to reduce GHG emissions by construction equipment by setting up construction areas, staging areas, and material transfer sites in ways that reduce equipment and vehicle idling. Considered with the effects of past, present, and reasonably foreseeable future actions, the Build Alternative would have a negligible contribution to cumulative effects on energy and GHG emissions. WSDOT is active in the statewide and regional efforts to reduce VMT and GHG emissions.

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# APPENDICES

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- A. Preliminary Commitments
- B. Discipline Studies and List of Preparers
- C. References
- D. Distribution List
- E. Agency and Tribal Correspondence
- F. Public Outreach
- G. Project Exhibits / Plans

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# A PRELIMINARY COMMITMENTS

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The following preliminary commitments are listed to “assist with agency planning and decision making” and to “aid an agency’s compliance with NEPA when no environmental impact statement is necessary” [40CFR 1501.3(b) and 1508.9(a)(2)]. The number after the title in each area of effect refers to the section of Chapter 3 in this Environmental Assessment in which it is contained.

1. **Transportation (Section 3.3)** A Construction Transportation Management Plan would be developed to manage traffic through the Project’s work zones during each construction phase. During construction, on- and off-ramps at Steilacoom-DuPont interchange would be scheduled for temporary closures one ramp at a time such that the other ramps continue to provide local access. Three lanes of I-5 would be kept open in both the northbound and southbound direction on I-5 during daytime and peak travel times.
2. **Air Quality (Section 3.4)** Measures would be taken during construction to reduce dust for the protection and comfort of motorists or area residents.
3. **Noise (Section 3.5)** Noise abatement walls are proposed at two locations to mitigate modeled existing and future noise levels. Construction noise levels would be mitigated by using best management practices (BMPs) such as use of mufflers and engine enclosures on heavy equipment, use of the quietest equipment available near sensitive receivers, and/or limiting equipment idling time.
4. **Geology and Soils (Section 3.6)** Fill material would be placed in small batches and compacted in accordance with WSDOT specifications. Cut slopes would be of limited height and slope to minimize erosion and maximize stability. BMPs to minimize erosion including covering exposed slopes with plastic, installing drains and/or limiting soil moving to dry weather conditions would be implemented. Long-term mitigation to minimize erosion and maximize slope stability would include replanting vegetation (including mulching or hydroseeding), as well as replanting. Structures such as new overpasses would be designed to meet current seismic (earthquake) standards.
5. **Water Resources (Section 3.7)** A Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control and Countermeasures Plan would be implemented to protect surface water and groundwater resources. BMPs such as controlling sediment-laden runoff from entering streams or drainage inlets near work areas, and use of filter fabric downstream of all exposed slopes, would be used. Stormwater treatment facilities such as swales and infiltration ponds

- would also be constructed to treat runoff. If floodplain areas are impacted, compensatory flood storage would be provided. Work near surface water bodies may also be limited to dry weather periods to minimize impacts to streams and floodplains.
6. **Wetlands (Section 3.8)** Mitigation would occur to compensate for the 0.30 acres of permanent wetland impacts. Types of mitigation that may be used include restoration of disturbed wetland and buffer areas, or compensatory mitigation through the Pierce County In-Lieu Fee program for impacts to areas that cannot be restored due to fill or other permanent features.
  7. **Fish, Wildlife and Vegetation (Section 3.9)** Clearing limits would be limited to the minimum area necessary and marked with construction fencing. Staging areas would be a minimum of 300 feet from wetlands or streams wherever possible. Removal of Oregon white oak habitat would be mitigated by replanting in accordance with replacement standards and ratios specified in applicable codes. Coordination with USFWS would occur to conduct Mazama Pocket Gopher surveys prior to construction. Should evidence of pocket gophers be found in the Project area, potential Project impacts would be re-evaluated and USFWS consulted as necessary.
  8. **Hazardous Materials (Section 3.10)** During construction, BMPs would be implemented to address the potential for spills. If hazardous materials are encountered during construction, the effects would be mitigated using measures described in WSDOT's Standard Hazardous Materials Impacts and Mitigation Measures table.
  9. **Visual Quality (Section 3.11)** Potential mitigation measures for impacts to visual quality includes minimization of tree and shrub removal needed to construct noise barriers, application of aesthetic treatments to bridges and walls, replanting with native vegetation to maintain visual unity, replacement of trees removed for construction in accordance with the *Roadside Policy Manual*, and special planting standards for restoration of wetlands and buffers.
  10. **Archaeological and Historic Resources (Section 3.12)** Aesthetic enhancements to retaining walls, underpasses, and other improvements would be implemented as identified in collaboration with JBLM and documented in Appendix L of the future Design-Build contract.
  11. **Utilities (Section 3.16)** Early and frequent communication with utility companies would happen during design of the Build Alternative. Relocation and/or mitigation plans for existing utilities would be designed as needed between the Project team and utility provider(s).
  12. **Economics (Section 3.17)** A staged approach to construction of the interchange ramps would be implemented in order to ensure continual access to DuPont and JBLM from I-5. Drivers on I-5 would be notified of temporary access changes using variable message signs adjacent to I-5 during construction. A Traffic Management Plan would be prepared to document these mitigation measures and others that may be identified during design of the proposed improvements, and to establish traffic-related requirements that the build contractor must implement during construction.

# B DISCIPLINE STUDIES AND LIST OF PREPARERS

The following individuals contributed to the production of this environmental assessment:

Name	Company	Role
Paul Dreisbach	WSDOT	EA Reviewer, Indirect & Cumulative Effects Analysis
Jeff Sawyer	WSDOT	EA Reviewer
Victoria Book	WSDOT	EA Reviewer
Jim Laughlin	WSDOT	Reviewer – Noise
Karin Landsberg	WSDOT	Reviewer – Air Quality
Roger Kiers	WSDOT	Reviewer – Cultural Resources
Carl Ward	WSDOT	Reviewer – Fish, Wildlife and Vegetation/BA
Steve Shipe	WSDOT	Reviewer – 4(f) and 6(f) Analysis
Ed Winkley	WSDOT	Reviewer – Visual Quality Analysis
Carol Lee Roalkvam	WSDOT	Reviewer – Indirect & Cumulative Effects Analysis
Jean Carr	SCJ Alliance	Consultant Team Oversight, EA Editor

Studies and technical reports were completed during the environmental and design phases for the South Study Area and for the 2017 EA. They contain additional information that supports the conclusions found in this Environmental Assessment. They are incorporated by reference into this EA and listed on the next page. They may be found in their entirety at <http://wsdot.wa.gov/Projects/I5/MountsRdThorneLn/default.htm> as well as the locations listed at the end of Appendix B.

## **Cultural Resources Assessment**

*I-5 JBLM Vicinity Congestion Relief Project – South Study Area, Historical Research Associates, June 2019*

## **Addendum, Fish, Wildlife and Vegetation Discipline Report**

*I-5 JBLM Vicinity Congestion Relief Project – South Study Area, Parametrix, February 2019*

## **Noise Discipline Report**

*I-5 Joint Base Lewis-McChord–Congestion Relief Project, WSDOT, Michael Minor & Associates, November 2018*

## **Surface Water Discipline Report**

*I-5 JBLM Vicinity Congestion Relief Project – South Study Area, Osborn Consulting Inc, February 2019*

### ***Transportation Operations and Safety Summary Technical Memorandum***

*I-5 JBLM Vicinity Congestion Relief Study – South Study Area, SCJ Alliance, July 2019*

### ***Economic Analysis***

*I-5 JBLM Vicinity Congestion Relief – South Study Area, Community Attributes Inc., July 2019*

### ***Visual Impact Assessment***

*I-5 JBLM Vicinity Congestion Relief – South Study Area, SCJ Alliance, June 2019*

### ***Addendum, Wetland and Stream Delineation Report***

*I-5 JBLM Vicinity Congestion Relief – South Study Area, Parametrix, October 2018*

### ***Wetland Conceptual Mitigation Memorandum***

*I-5 JBLM Vicinity Congestion Relief – South Study Area, Parametrix, May 2019*

### ***Geology and Soils Technical Memorandum (2017 EA)***

*I-5 JBLM Vicinity Congestion Relief Project, Shannon and Wilson, June 2016*

### ***Hazardous Materials Analysis Report (2017 EA)***

*I-5 JBLM Vicinity Congestion Relief Project, Shannon and Wilson, April 2016*

### ***Air Quality Technical Memorandum (2017 EA)***

*I-5 JBLM Vicinity Congestion Relief Study, HW Lochner, September 2016*

### ***Land Use Technical Memo (2017 EA)***

*I-5 JBLM Vicinity Congestion Relief Project, SCJ Alliance, April 2016*

### ***Floodplain Resources Technical Memorandum (2017 EA)***

*I-5 JBLM Vicinity Congestion Relief Study, Shannon & Wilson, December 2015*

### ***Socioeconomic and Environmental Justice Discipline Report (2017 EA)***

*I-5 JBLM Vicinity Congestion Relief Project, WSDOT Eastern Region Environmental Office, July 2016*

**Discipline studies and reports may be obtained at the following locations. Offices may be closed due to COVID-19; please call ahead to make arrangements.**

<http://wsdot.wa.gov/Projects/I5/MountsRdThorneLn/default.htm>

#### **Federal Highway Administration**

Washington Division  
711 South Capitol Way, Ste 501  
Olympia, WA 98501  
360.534.9344

#### **WSDOT, Olympic Region**

##### **Environmental and Hydraulics Services Office**

Jeff Sawyer, Environmental and Hydraulic Manager  
Environmental and Hydraulics Services  
5720 Capitol Boulevard  
Tumwater, WA 98501  
360.570.6700

# C REFERENCES

## Federal Highway Administration (FHWA)

- 1998 Environmental Flowchart on Floodplains
- 1998 Highway Traffic Noise Model User's Guide (Report No. FHWA-PD-96-009)
- 2004 Highway Traffic Noise Model User's Guide (Version 2.5 Addendum) Final Report.
- 2010 Highway Traffic Noise Analysis and Abatement Guideline (23 Code of Federal Regulations [CFR], Part 772)
- 2012 Section 4(f) Policy Paper
- 2012 Interim Guidance Update on Mobile Sourced Air Toxic Analysis in NEPA Documents
- 2012 Order 6640.23A Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- 2014 Section 4(f) Tutorial
- 2015 Guidelines for the Visual Impact Assessment of Highway Projects (FHWA-HEP-15-029)

## Washington State Department of Transportation (WSDOT)

- 2000 Wetland Functions Characterization Tool for Linear Projects (Null et al.)
- 2007 2007-2026 Highway System Plan
- 2008 Guidance on Preparing Cumulative Impact Analyses
- 2009 Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Reports (June 2009)
- 2011 Traffic Noise Policy and Procedures Manual
- 2014 I-5 JBLM Congestion Relief Study, I-5 Corridor Feasibility Study
- 2014 I-5 JBLM Congestion Relief Study, Phase 2A – Alternative Analysis Development and Screening of Multimodal Options
- 2014 Highway Runoff Manual
- 2014 Washington State Freight Mobility Plan
- 2014 WSDOT Temporary Erosion and Sedimentation Control Manual

- 2014 Guidance for Project-Level Greenhouse Gas Evaluations under NEPA and SEPA (2014)
- 2015 I-5 JBLM Congestion Relief Study, Phase 2 – Multimodal Alternatives Analysis (March 2015)
- 2015 Environmental Procedures Manual, Section 432 Floodplains, Section 470 Hazardous Materials and Solid Waste, Section 459 Visual Impacts (2015)
- 2015 Biological Assessment Preparation for Transportation Projects Advance Training Manual (2015a)
- 2015 Roadside Policy Manual (2015b)
- 2016 Section #1-07.15(1) Standard Specifications for Road, Bridge and Municipal Construction (2016)
- 2016 Chapter 24.39(c) Local Agency Guidelines (April 2016)
- 2016 2015-2017 Sustainable Transportation Action Plan (June 2016)

#### **Environmental Protection Agency (EPA)**

- 2007 Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007)
- 2008 40 Code of Federal Regulations (CFR) Parts 51 and 93, Transportation Conformity Rule, Parts 1508.7 and 1508.8, Protection of the Environment Terminology and Index
- 2010 Appendix B of EPA's Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas

#### **Washington State Department of Ecology (DOE)**

- 2001 Urban Air Toxic Measurements in Seattle, conducted by the Laboratory for Atmospheric Research, Washington State University, Pullman, Washington (May 2001)
- 2012 Stormwater Management Manual for Western Washington
- 2014 Washington State Wetland Rating System for Western Washington (Hruby, 2014)
- 2014 Appendix A of DOE's Proposed State Implementation Plan Revision: Tacoma-Pierce County PM<sub>2.5</sub> Redesignation Request and Maintenance Plan (October 2014)

#### **Other References**

- 1964 Title VI of the Civil Rights Act of 1964
- 1967 Revised Code of Washington (RCW), Chapters 8.25 and 8.26 (as amended)
- 1970 National Environmental Policy Act of 1970 (as amended)
- 1987 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended)
- 1987 Civil Rights Restoration Act of 1987
- 1994 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (February 1994)
- 1998 Transportation Equity Act (TEA-21)

- 2006 Interagency Wetland Mitigation Guidance for Washington State, Part 1 and 2
- 2009 Puget Sound Regional Council (PSRC) Vision 2040 Growth Strategy
- 2010 Fort Lewis Grow The Army Final EIS, Chapter 4, page 49 (July 2010)
- 2010 U.S. Army Corps of Engineers, 1987 Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region Version 2.0 (May 2010)
- 2012 Department of Transportation Updated Environmental Justice Order 5610.2
- 2012 Washington Administrative Code (WAC), Chapter 173-400 (November 28, 2012)
- 2013 American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process (ASTM 1527-13)
- 2015 City of DuPont Comprehensive Plan Periodic Update (October 2015)
- 2015 Title 23, United States Code (USC), Section 109(h)
- 2016 Pierce County Code, Chapter 18E.30.050

## Websites

[Pierce County Buildable Lands Report 2014](https://www.co.pierce.wa.us/DocumentCenter/View/30444)

<https://www.co.pierce.wa.us/DocumentCenter/View/30444> Pg. 275

About Joint Base Lewis-McChord

<http://www.lewis-mcchord.army.mil/about.html>

Municipal Research and Services Center (MRSC),  
Washington City and Town Profiles

<http://mrsc.org/Home/Research-Tools/Washington-City-and-Town-Profiles.aspx#D>

Puget Sound Regional Council (PSRC) Employment Data

<http://www.psrc.org/data/employment/covered-emp>

## I-5 JBLM Vicinity Congestion Relief Study – Documents

- 2013 Existing Transportation Conditions Report (I-5 JBLM Vicinity Congestion Relief Study Reports – WSDOT 2013)
- 2014 Environmental Scan (I-5 JBLM Vicinity Congestion Relief Study Reports – WSDOT 2014)
- 2014 I-5 JBLM Vicinity IJR and Environmental Documentation Phase 1 – Corridor Plan Feasibility Study (WSDOT 2014)
- 2014 Alternatives Analysis Development and Screening of Multimodal Options (I-5 JBLM Vicinity Congestion Relief Study Reports – WSDOT)
- 2014 I-5 JBLM Vicinity Congestion Relief Study Travel Patterns and Characteristics

- 2015 NEPA Scoping Documentation
- 2015 I-5 JBLM Vicinity Congestion Relief Study – Phase 2, Multimodal Alternatives Analysis and Updated Environmental Scan
- 2015 Planning & Environmental Linkage Report
- 2016 Preliminary Stormwater Management Memorandum
- 2016 I-5 JBLM Vicinity Interchange Justification Report
- 2017 I-5, Mounts Road to Thorne Lane Corridor Improvements, Exit 119 Interchange Alternatives Analysis – Feasibility Study
- 2019 Access Revision Report for I-5, Exit 119 Interchange – Interstate 5, Mounts Road to Steilacoom-DuPont Road Corridor Improvements

# D DISTRIBUTION LIST

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Wide distribution of the Supplemental Environmental Assessment will continue to foster effective communication between FHWA, WSDOT, public agencies, tribal governments, and the local community regarding the I-5 JBLM Vicinity Congestion Relief Project.

## Federal Agencies

Office of Environmental Policy and Compliance,  
Washington, D.C. - Director

Federal Highway Administration

Federal Emergency Management Agency

National Marine Fisheries Service

National Resource Conservation Service

U.S. Department of Defense

U.S. Environmental Protection Agency, Region 10

U.S. Army Corps of Engineers, Seattle District Office

U.S. Fish and Wildlife Service

## State Agencies

Department of Archaeology and Historic Preservation

Department of Commerce

Department of Ecology

Department of Fish and Wildlife

Department of Natural Resources

Washington State Patrol – District 1, Tacoma

## Regional Agencies

Intercity Transit

Pierce Transit

Puget Sound Regional Council

Sound Transit

Thurston Regional Planning Council

Pierce County Planning Department

Pierce County SEPA Reviewer

Pierce County Sheriff's Department

**Local Agencies**

City of DuPont Community Development Department

City of DuPont Public Works Department

City of DuPont Fire Department

City of DuPont Police Department

City of DuPont SEPA Official

City of Lakewood Fire Department

City of Lakewood Planning Department

City of Lakewood Police Department

City of Lakewood SEPA Reviewer

Town of Steilacoom Community Development Department

Town of Steilacoom Fire Department

Town of Steilacoom Police Department

Town of Steilacoom SEPA official

**Native American Tribes**

Nisqually Indian Tribe

Puyallup Tribe of Indians

Squaxin Island Tribe

Yakama Nation

**Libraries**

Pierce County Library System (Lakewood, DuPont, and Steilacoom libraries)

**28th District Legislators**

Senator Steve O'Ban

Representative Mari Leavitt

Representative Christine Kilduff

**Additional Project Stakeholders**

Joint Base Lewis-McChord

Camp Murray

# **E** AGENCY AND TRIBAL CORRESPONDENCE

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- Appendix E-1 Federal Agencies
- Appendix E-2 State Agencies
- Appendix E-3 Tribal Correspondence, Purpose and Scope of Consultation

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# FEDERAL AGENCIES

## APPENDIX E-1

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Olympic Region  
Environmental & Hydraulic Services  
5720 Capitol Blvd, Tumwater, WA 98501  
P.O. Box 47440  
Olympia, WA 98504-7440  
360-570-6700 / FAX: 360-357-2601  
TTY: 1-800-833-8366  
www.wsdot.wa.gov

April 5, 2019

Mr. Brad Thompson  
Acting State Supervisor  
U.S. Fish and Wildlife Service  
Washington Fish and Wildlife Office  
510 Desmond Dr. SE, Suite 102  
Lacey, WA 98503-1263

RE: I-5/Mounts Rd to Steilacoom-DuPont Rd. - Corridor Improvements  
(aka, I-5/JBLM Vicinity Congestion Relief Project - South Study Area)  
Milepost 116.71 to 120  
Pierce County, Washington  
Informal Consultation  
WSDOT Project No. XL5419  
USFWS IPaC No. 01EWF00-2019-SLI-0492

Dear Mr. Thompson:

The Washington State Department of Transportation (WSDOT), on behalf of the Federal Highway Administration (FHWA), is proposing a mobility and safety project on Interstate 5 (I-5) in Pierce County, Washington. The project requires approval from the FHWA. Therefore, it is subject to requirements under Section 7(c) of the Endangered Species Act.

The project area is located in Sections 25, 34, 35, and 36 of Township 19 North, Range 1 East, and in Section 30 of Township 19 North, Range 2 East; Water Resource Inventory Area (WRIA) 11 (Nisqually) and 12 (Chambers-Clover); and 6<sup>th</sup> field HUC 171100150307 (Nisqually River-Frontal Puget Sound) and 171100190304 (Sequalitchew Creek-Frontal Cormorant Passage).

Within the project limits project work includes widening I-5, widening or replacing bridges over the highway and nearby railways, replacing the existing interchange at Steilacoom-DuPont Road (exit 119), constructing a new intersection between Steilacoom-DuPont Road and Wilmington Drive, and installing stormwater management facilities, illumination, traffic signals, Intelligent Transportation Systems, and signage. This project is scheduled to occur between January 2022 and June 2024. Early coordination was conducted at a pre-BA meeting that was held on June 21, 2018, at the WSDOT Headquarters office in Olympia. The meeting was attended by a representative from USFWS (Leslie Durham), WSDOT (Bill Elliott, Jeff Sawyer, Jeff

Mr. Brad Thompson  
April 5, 2019  
Page 2

Dreier, and Mark Bakeman), and the consultant team (Mike Hall [Parametrix] and Jean Carr [SCJ Alliance]).

WSDOT has determined that the Mounts Road to Steilacoom-DuPont Road project activities warrant an effect determination of “may affect, not likely to adversely affect” for Roy Prairie pocket gopher (*Thomomys mazama glacialis*) and water howellia (*Howellia aquatilis*) as documented in the enclosed Biological Assessment. Other species and critical habitats listed for this project were evaluated and it was determined this project will have “no effect” to these species and habitats due to lack of occurrence.

It is our understanding that with federal concurrence this satisfies our responsibilities under Section 7(c) of the Endangered Species Act at this time. We will continue to remain aware of any change in status of these species and will be prepared to reevaluate potential project impacts if necessary.

If you have any questions or require additional clarification please contact Paul Dreisbach by phone at 360-570-6683 or e-mail at DreisbP@wsdot.wa.gov.

Sincerely,

Carl W. Ward Digitally signed by Carl W. Ward  
Date: 2019.04.05 07:34:38  
-07'00'

Carl Ward  
Assistant Environmental & Hydraulic Manager  
WSDOT Olympic Region

Enclosure

e-cc: FHWA Washington Division  
Leslie Durham, USFWS  
DeeDee Jones, USFWS  
Sharon Rainsberry, USFWS  
Tara Stone, WSDOT ESO  
Kelly McAllister, WSDOT ESO  
Bill Elliott, WSDOT OR  
Dave Molenaar, WSDOT OR EHS  
Paul Dreisbach, WSDOT OR EHS  
Mike Hall, Parametrix  
Jean Carr, SCJ Alliance



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Washington Fish and Wildlife Office  
510 Desmond Dr. SE, Suite 102  
Lacey, Washington 98503



MAY 07 2019

In Reply Refer To:  
**01EWF00-2019-I-0808**  
XRef No. 01EWF00-2018-SLI-0492  
XRef No. 01EWF00-2016-I-0993

Carl Ward  
Assistant Environmental & Hydraulic Manager, Olympic Region  
Washington State Department of Transportation  
PO Box 47440  
Olympia, Washington 98504-7440

Dear Mr. Ward:

This letter is in response to your request for informal consultation on the Interstate 5 (I-5) Mounts Road to Steilacoom-DuPont Road Corridor Improvements Project<sup>1</sup>. The Federal Highway Administration (FHWA) has provided funds to the Washington State Department of Transportation (WSDOT) to complete the congestion relief and safety improvements project. The project will improve mobility and safety along I-5 near Joint Base Lewis–McChord (JBLM) by rebuilding the interchange at Steilacoom-DuPont Road (Exit 119) and making associated improvements to I-5 and the local street network in the vicinity.

On April 8, 2019 the U.S. Fish and Wildlife Service (Service) received your letter and Biological Assessment (BA) providing information in support of a "may affect, not likely to adversely affect" determination for the water howellia (*Howellia aquatilis*) and one of four listed subspecies of the Mazama pocket gopher (*Thomomys mazama*; MPG), the Roy Prairie pocket gopher (*Thomomys mazama glacialis*). The FHWA and WSDOT have concluded that the project will have "no effect" on additional listed species and designated critical habitat known to occur in Pierce County. There is no requirement for the Service to concur with "no effect" determinations, as these determinations rest with the action agency. This informal consultation has been conducted in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)(ESA).

<sup>1</sup> The project is also referred to in the Biological Assessment and other documents as the I-5 JBLM Vicinity Congestion Relief Project – South Study Area.

Carl Ward

2

The project is part of the overall I-5 Mounts Road to Thorne Lane Corridor Improvements Project, a portion of which was the subject of a previous ESA consultation. On August 31, 2016 the Service issued a Letter of Concurrence (Ref. No. 01EWF00-2016-I-0993) for that project action, located immediately north of the current proposed action. The prior project phase included mainline and interchange improvements from Steilacoom-DuPont Road (Exit 119) to the northern project limit at Gravelly Lake Drive (Exit 124).

For the current project (MP 116 to 119), the WSDOT proposes to widen or replace bridges over I-5 and nearby railways, replace the existing interchange at Steilacoom-DuPont Road (exit 119), construct a new intersection between Steilacoom-DuPont Road and Wilmington Drive, and install stormwater management facilities, illumination, traffic signals, Intelligent Transportation Systems, and signage.

Project work includes the following activities:

**Site Preparation** – clear and grub along the length of the project, remove existing structures including median barriers, sign structures, drainage structures, the bridges and abutment walls at Exit 119 and Pendleton Avenue, traffic signals, luminaires, fencing, pavement and markings.

**Earthwork** – excavate and fill in the median and along the northbound outside shoulder along I-5 to add a fourth lane in each direction. A large quantity of fill will be required to support the realigned Steilacoom-DuPont Road crossing over I-5 and the existing railroad line, and the rest of the reconstructed interchange.

**Drainage** – construct compost-amended vegetated filter strip, continuous inflow compost-amended bioswales, infiltration ponds, and a median tight line drainage system at super-elevated locations.

**Structures:**

- Replace the existing bridge at Exit 119 with two bridges. The new bridge at Clark Road (Exit 119A) will span I-5. The new bridge at the realigned Steilacoom-DuPont Road (Exit 119B) will span I-5 and the railroad tracks.
- Replace the existing I-5 bridge over Pendleton Avenue with two wider and higher structures for forward compatibility and widening of Pendleton Avenue.
- Widen the Laundry Spur bridge just north of Center Drive, to accommodate the northbound on-ramp from Center Drive as an added lane.
- Construct retaining walls along many of the new interchange ramps to avoid impacting the railroad right-of-way and to minimize impacts to the JBLM Garrison Historic District and the military family housing area north of Pendleton Avenue.
- Construct walls around the Laundry Spur bridge ends along the northbound roadway fill lines.
- Construct noise walls near Davis Lane and along the JBLM military family housing area along northbound I-5 near the Steilacoom-DuPont Road interchange.

**Erosion Control/Roadside Restoration** – Best Management Practices (BMPs) will be implemented to protect slopes, streams, and wetlands during construction. Restore wetlands in areas where temporary impacts occur and mitigate permanent wetland impacts through participation in the Pierce County in-lieu fee program.

**Roadway Paving and Marking:**

- Widen I-5 from Center Drive to north of Pendleton Avenue. Complete grading and paving along the median and install concrete barriers between northbound and southbound I-5 for the length of the project.
- Realign Steilacoom-DuPont Road and construct a roundabout intersection at the relocated intersection with Wilmington Drive. Grade, pave, and place pavement markers at the new interchange ramps and bridges.

**Permanent Signing and Illumination** – Replace the existing signs and install new roadside and overhead signing for the new reconstructed interchanges and auxiliary lanes. Install new luminaires at the new intersections and ramp terminals and along the new interchange ramps where they connect into the I-5 mainline. Remove the existing mainline luminaires along the median barrier.

**Traffic Signals** – Create signalized intersections at all of the ramp terminals. Remove the existing signal at Wilmington Drive and Barksdale Avenue. Install Intelligent Transportation Systems, including permanent and temporary ramp meters at the Steilacoom-DuPont interchange, cameras along mainline I-5, traffic data stations, and detector loops.

Overall, project construction will impact a total of 39.1 acres. The project will result in a total of 27.3 acres of fill (0.24 acres below the ordinary high water mark within wetlands), and a total of 9.6 acres of excavation (not in wetlands). To minimize potential for water quality impacts to wetlands and streams, the WSDOT will require that the contractor prepare a project-specific Stormwater Pollution Prevention Plan and a Temporary Erosion and Sediment Control Plan and implement them before beginning any earthwork.

The project will result in an additional 12 acres of pollution-generating impervious surface. The WSDOT proposes to provide both flow control and enhanced water quality treatment (via composted amended vegetative filter strips) as part of the design. These BMPs will provide infiltration for stormwater except for a section of roadway near Exit 119, where I-5 is cut into the ground at a low point. This low point is near a culvert that conveys stormwater from JBLM under the freeway before entering an open canal that drains to Bell Marsh. Runoff from approximately 9.3 acres of existing impervious surfaces discharges from I-5 to the JBLM cross culvert, which is the only available means of gravity-draining runoff from that segment of the roadway.

Stormwater runoff from the project is not expected to expose listed species to pollutants because no listed species occur in any of the receiving waterbodies in the action area. Because the project is located within the I-5 corridor, surrounding terrestrial habitats are regularly exposed to significant disturbance and provide limited suitability for listed species, in general. Project construction is expected to begin January 2022 and last through June 2024. No work below the

ordinary high water mark of any stream is anticipated; therefore, no in-water work window will be needed. Work will occur primarily during daylight hours on week days. Some night time and weekend work will occur for ramp and intersection switchovers and for I-5 paving and striping.

Sufficient information has been provided to determine the effects of the proposed project to federally listed species and to conclude whether the project is likely to adversely affect those species. There is no designated critical habitat for any listed species within the project action area and therefore will not be discussed further in this document. Our concurrence is based on information in your letter, information in the BA, successful implementation of the BMPs and minimization measures and the following rationale:

**Water Howellia**

Water howellia is an annual flowering plant in the bellflower family (Campanulaceae). The species may occur in Clark, Spokane, Mason, Thurston and Pierce Counties. The dominant habitat for water howellia is small, vernal, freshwater wetlands and glacial pothole ponds. These vernal ponds and wetlands usually fill with water over the fall, winter and early spring, but then at least partially dry up towards the end of the growing season (Mincemoyer 2005, pg. 7). The species typically blooms May through July, depending on water levels. The nearest known population of water howellia occurs on JBLM more than 5 miles away from the project corridor. Regulatory mechanisms are currently in place to provide protection to water howellia habitat on the base.

Field assessments were conducted during late July and August, 2015 as part of the overall I-5 Mounts Road to Thorne Lane Corridor Improvements Project. Those surveys determined that potentially suitable habitat for water howellia occurs in a few of the wetlands in and adjacent to the project corridor where disturbance could occur. No water howellia plants were found during the surveys.

For the current project, the WSDOT had biologists qualified in plant identification survey five wetlands within 100 feet of the project footprint on July 17, 2018 (one wetland survey extended 300 feet from the project footprint). Two of the wetlands had potentially suitable habitat for water howellia, however, no water howellia plants were found during this survey. Although these assessments were conducted outside of the flowering season and presence can be variable depending on hydrology, the affected wetlands are significantly disturbed and lack hydraulic surface connection to occupied wetlands for seed dispersal. In addition, water howellia is more likely to be found in undisturbed wetlands with "flashy" hydrology (Summe, 2015).

Based on the available information, water howellia presence in the affected wetlands is unlikely and direct effects are considered discountable. Additionally, in areas surrounding the extant, larger meta-populations, habitat loss is not considered a threat to the species due to the conservation strategies implemented in these locations (USFWS 2013, p.17). As such, all indirect effects of the action to water howellia are considered insignificant.

Carl Ward

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**Roy Prairie Pocket Gopher**

Three subspecies of the MPG occur in Thurston County (*T. m. pugetensis*, *tumuli*, and *yelmensis*) and one subspecies occurs in Pierce County (*T. m. glacialis*). On April 9, 2014, the Service published a final rule listing all four of these subspecies as threatened throughout their ranges (79 FR 19760; April 9, 2014). MPGs are small fossorial rodents from the family Geomyidae (“true gophers”). MPGs are regional endemics found only in western Washington, western Oregon, and northern California. The subspecies present in the vicinity of the project is the Roy Prairie pocket gopher. This subspecies occurs in Pierce County, Washington, and has been found in the vicinity of the project on portions of JBLM.

In Washington, specifically around the south Puget Sound, MPGs live in open meadows, prairies, and grassland habitats of the glacial outwash plain, where there are porous, well-drained soils. They do not require high quality prairie, but instead can live on a wide range of sites, provided that the vegetative cover is mostly dominated by grasses and forbs with sparse woody cover, and especially where soils support the perennial forbs that MPGs prefer.

Much of the suitable habitat that historically occurred across the ranges of the four listed MPG subspecies has been lost to development or converted to incompatible land uses. However, populations do persist today on partially-developed sites, including road right-of-ways, on municipal properties, tree farms, airports, and in agricultural settings. Poor habitat connectivity across the landscape isolates many of these populations.

MPG habitat, especially suitable soils and vegetation, is vulnerable to damage. Even temporary disturbance resulting from equipment access, staging, excavation, earth moving, grading, and filling can damage surface and subsurface soil properties, profiles, and structure (e.g., soil compaction). On some sites, this damage may persist for years, or indefinitely. Damage to MPG burrows and tunnel systems, and damage or removal of vegetation (forage resources), imposes an energetic burden on individuals. When operated on occupied habitat, heavy equipment poses a risk of collapsing MPG burrows and tunnel systems, and may physically injure or kill individuals.

The project area includes approximately 4.0 linear miles of existing and proposed highway right-of-way at the edge of, and possibly farther north of, the current and historical range of the Roy Prairie pocket gopher. Mapped soils are suitable for MPG and are predominantly Spanaway series gravelly, sandy loams, which surround smaller, discontinuous acreages of Nisqually series loamy sand (or fine sand), and soils from the Spanaway-Nisqually complex.

Staff from the Service, Washington Department of Fish and Wildlife, and WSDOT conducted screenings on portions of the project to determine if the species was present and if there was potentially suitable habitat in the action area in 2015 (July 23 and October 1), 2017 (July 6), and 2018 (October 2). The screening effort focused on the two largest tracts of potentially suitable habitat, north and south of I-5 near the Steilacoom-Dupont Road interchange. All screenings failed to identify signs of MPG use or occupancy. At the Service’s recommendation, the

Carl Ward

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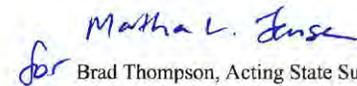
WSDOT will ensure additional surveys are completed in 2019 or closer to the time of construction to verify absence of the species from areas where construction will occur. If any MPG activity is identified in the project area, the WSDOT and FHWA will re-initiate consultation.

Based on the results of the screenings combined with the overall habitat conditions, it is extremely unlikely that MPGs occur in the project vicinity or will be affected by the project. There is minimal risk of encountering MPGs or substantially damaging occupied burrows. Based on the available information, the Service considers the risk of injuring or killing individual MPGs to be discountable. Additionally, proposed impacts to unoccupied areas of suitable soils and roadside vegetation will not significantly reduce available MPG habitat or measurably disrupt normal MPG behaviors (i.e., the ability to successfully feed, move, and/or shelter). The Service considers the direct and indirect habitat effects to the Roy Prairie pocket gopher to be insignificant.

**Concurrence**

Based on the analysis in the BA and subsequent information provided and summarized above, we conclude that the subject action is not likely to adversely affect the water howellia or the Roy Prairie subspecies of Mazama pocket gopher. This concludes consultation pursuant to the regulations implementing the ESA. Our review and concurrence with your effect determination is based on the implementation of the project as described. It is the responsibility of the FHWA to ensure that projects that they authorize or carry out are in compliance with the regulatory permit and/or the ESA, respectively. This project should be re-analyzed and re-initiation may be necessary if 1) new information reveals effects of the action that may affect listed species or critical habitat in a manner, or to an extent, not considered in this consultation, 2) if the action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this consultation, and/or 3) a new species is listed or critical habitat is designated that may be affected by this project. The Service appreciates your efforts to protect listed species and the habitats on which they depend. If you have any questions about this letter or our joint responsibilities under the ESA, please contact Leslie Durham at (360) 753-9532 ([leslie\\_durham@fws.gov](mailto:leslie_durham@fws.gov)) or Martha Jensen at (360) 534-9000 ([martha\\_l\\_jensen@fws.gov](mailto:martha_l_jensen@fws.gov)).

Sincerely,

  
Brad Thompson, Acting State Supervisor  
Washington Fish and Wildlife Office

Carl Ward

7

cc:

FHWA, Olympia, WA (D. Moberg)  
FHWA, Olympia, WA (C. Callahan)  
WSDOT, Tumwater, WA (P. Dreisbach)  
WSDOT, Tumwater, WA (D. Molenaar)  
WSDOT, Olympia, WA (K. McAllister)  
WSDOT, Olympia, WA (M. Bakeman)  
USFWS, Lacey, WA (L. Durham)  
USFWS, Lacey, WA (M. Jensen)

#### Literature Cited

- Summe, Amy. 2015. Consulting Biologist for WSDOT, Shannon & Wilson, Inc. Seattle, Washington. Telephone conversation with Ted Thomas, Invertebrate and Plant Ecologist, U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey, Washington. Topic: Habitat preference for water howellia, August 31, 2015.
- Mincemoyer, S. 2005. Range-wide status assessment of *Howellia aquatilis* (water howellia) – revised December 2005. Report to the U.S. Fish and Wildlife Service. Montana Natural Heritage Program, Helena, MT. 21 pp. + appendices.
- U.S. Fish and Wildlife Service (USFWS). 2013. Water howellia (*Howellia aquatilis*) 5-Year Review: Summary and Evaluation. Montana Ecological Services Field Office, Helena, Montana. 39 pp.

**From:** [Kirk Wilcox](#)  
**To:** [Sacks, Daniel I CIV USARMY CENWS \(US\)](#)  
**Cc:** [Elliott, Bill](#); [Jean Carr](#); [Dreisbach, Paul](#)  
**Subject:** I-5 JBLM - Draft Section 4(f) Section  
**Date:** Friday, June 28, 2019 10:21:21 AM  
**Attachments:** [2019-0627Section 4\(f\)+6\(f\)\\_clean.docx](#)

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Dan,

Here is the draft Section 4(f)/6(f) text that will be part of the draft Supplemental Environmental Assessment going to WSDOT for internal review in two weeks. Please note that while FHWA has reviewed and concurred with this, Section 4(f)/6(f) cannot be finalized until the Section 106 consultation process with the State Historic Preservation Officer (SHPO) and interested Tribes is completed.

Please contact us with any questions or comments.

Thanks,

Kirk

### **Parametrix**

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**Kirk Wilcox, PE**

Office: 253-604-6751

Cell: 253-370-1891

[kwilcox@parametrix.com](mailto:kwilcox@parametrix.com)

### 3.13 SECTION 4(F) AND 6(F) RESOURCES

Section 4(f) refers to a section of the Department of Transportation Act of 1966 that restricts transportation projects from using land from significant publicly owned parks, recreation areas, wildlife and waterfowl refuges, or public or privately-owned historical sites unless the following conditions apply:

- There is no feasible and prudent alternative to the use of the property.
- The action includes all possible planning to minimize harm to the property resulting from such use.
- The use of the property, including measures to minimize or mitigate impacts, will have a *de minimis* impact.

The proposed Build Alternative would use land within the Fort Lewis Garrison Historic District which is eligible for listing on the National Register of Historic Places and therefore a 4(f) resource. This chapter addresses the use of the Historic District land for a transportation project.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act protects recreational lands purchased or improved with Land and Water Conservation Act funds. There are no Section 6(f) properties in the ½ mile study area.

#### 3.13.1 How were Section 4(f) and 6(f) resources evaluated?

Historic and archaeological resources were identified and evaluated in the *Cultural Resources Inventory for I-5 JBLM Vicinity Congestion Relief Project – South Study Area*. As described in Section 3.12, the Area of Potential Effects (APE) encompasses the horizontal and vertical direct impact area of the proposed Build Alternative, a one parcel buffer around the Build Alternative footprint on private lands, and a 200-foot buffer around the Build Alternative footprint on federal lands. The study area for parks, recreation areas and refuges includes all the land within ½ mile of the Build Alternative footprint. The study area is mapped in Figure 3.13-1. Within this area all parks, schools, historic resources and wildlife refuges were identified and mapped (see Figure 3.13-1).

Documents and data sources reviewed as part of the 4(f) analysis include:

- Pierce County GIS data (2009) City of DuPont digital map resources (2009)
- WSDOT GIS data from the Department of Archaeology & Historic Preservation (2015)
- Cultural Resources Inventory for I-5 JBLM Vicinity Congestion Relief Project – South Study Area (2019)

### 3.13.2 What Section 4(f) Resources are in the Study Area?

The first step in evaluating Section 4(f) impacts is to identify all the qualifying properties within the study area. There are 21 qualifying resources within the 4(f)-study area. There are no wildlife or waterfowl refuges in the study area.

The 2019 Cultural Resources Inventory for the I-5 JBLM Vicinity Congestion Relief Project – South Study Area, and Section 3.12 of this EA describe the historic and archaeological resources in detail. The 4(f) eligible resources, within the study area include 8 historic properties, 1 archaeological site, 11 parks/recreational resources, and 2 historic districts. Each of these resources is noted in Table 3.13.-1 and mapped on Figure 3.13-1.

Table 3.13-1 4(f) Resources in the Study Area	
<b>Historic Properties</b>	
<b>1</b>	Northern Pacific Railway
<b>2</b>	JBLM Building 4320 - Salvation Army Red Shield Inn/Lewis Army Museum
<b>3</b>	JBLM Building 4274 - Red Cross Hostess House/Family Resource Center
<b>4</b>	NCO Quarters
<b>5</b>	NCO Garage
<b>6</b>	JBLM Warehouse 4170/71
<b>7</b>	JBLM Building 4176 – Quartermaster’s Gasoline Filling Station
<b>8</b>	JBLM Building 4201 – Red Cross Field Office
<b>Archaeological Resource</b>	
<b>9</b>	Greene Park
<b>Historic Districts</b>	
<b>10</b>	Fort Lewis Garrison Historic District
<b>11</b>	DuPont Historic Village
<b>Park and Recreation Resources</b>	
<b>12</b>	Bell Hill Community Park
<b>13</b>	Eagles Pride Golf Course
<b>14</b>	Chloe Clark Elementary School
<b>15</b>	Ross Park
<b>16</b>	Clocktower Park
<b>17</b>	Sellers Park
<b>18</b>	Ifrati Park
<b>19</b>	City of DuPont Trails
<b>20</b>	Robinson Park
<b>21</b>	Ethel Lumsdon Park
<b>21</b>	Bell Hill Neighborhood Park

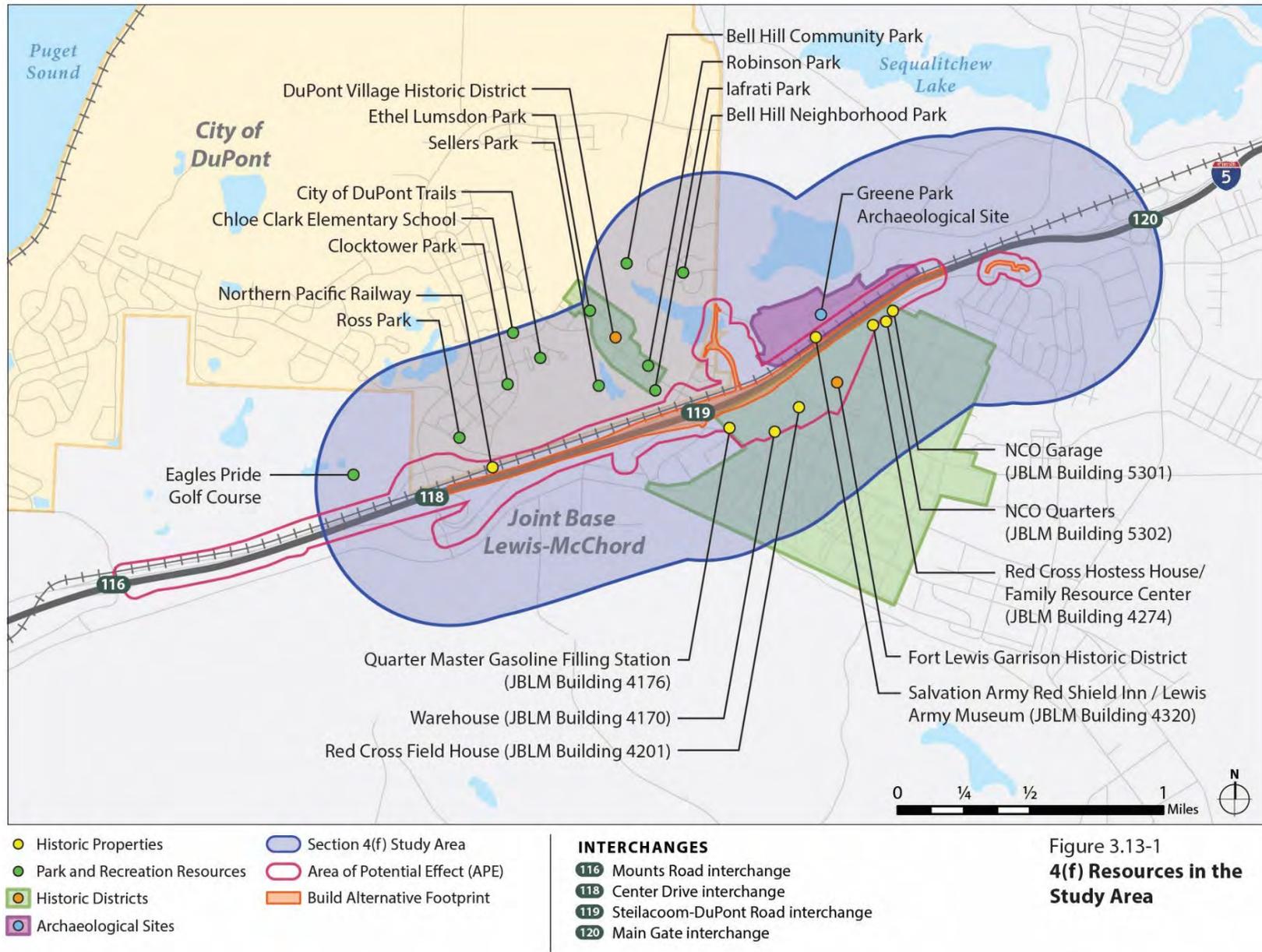


Figure 3.13-1  
4(f) Resources in the Study Area

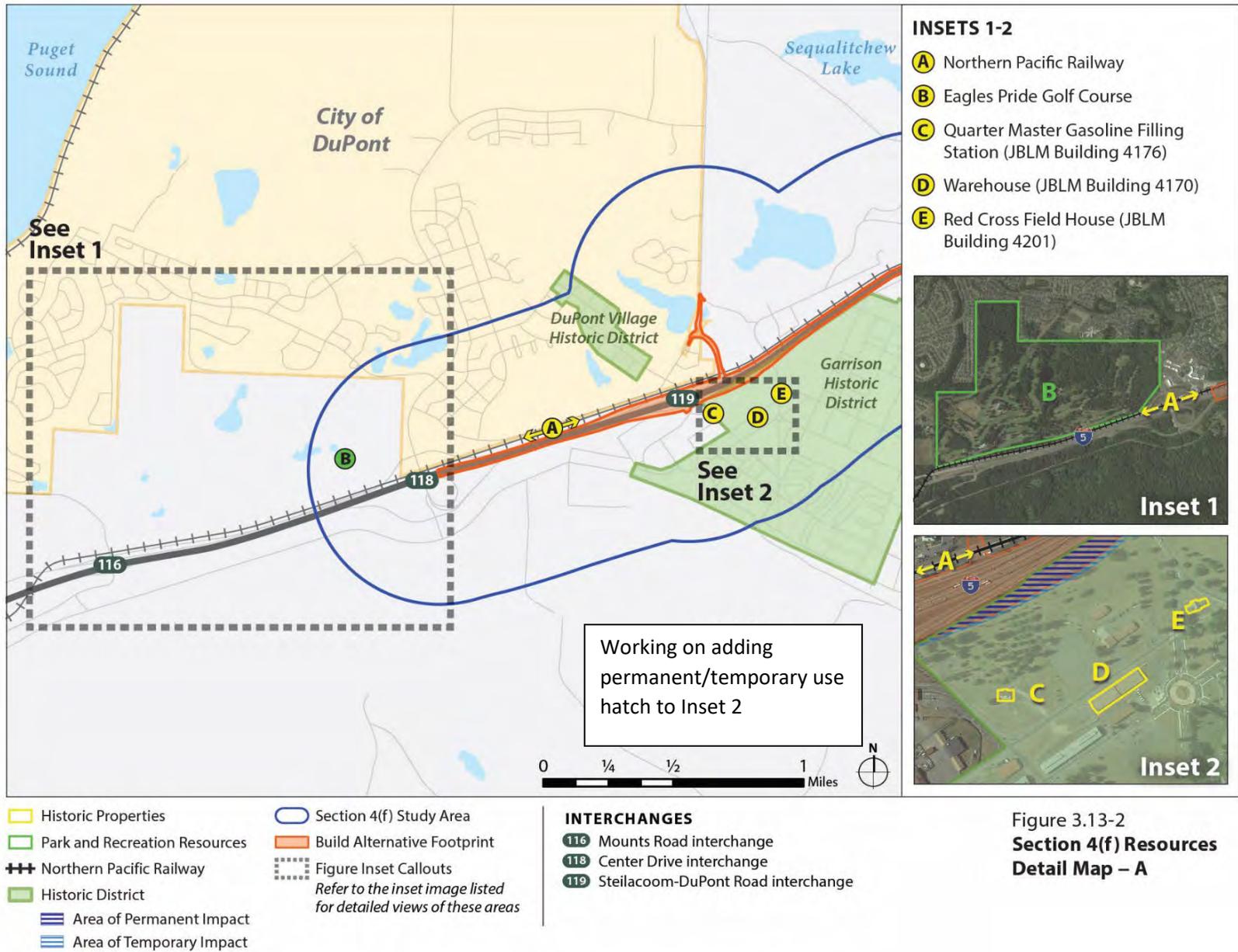
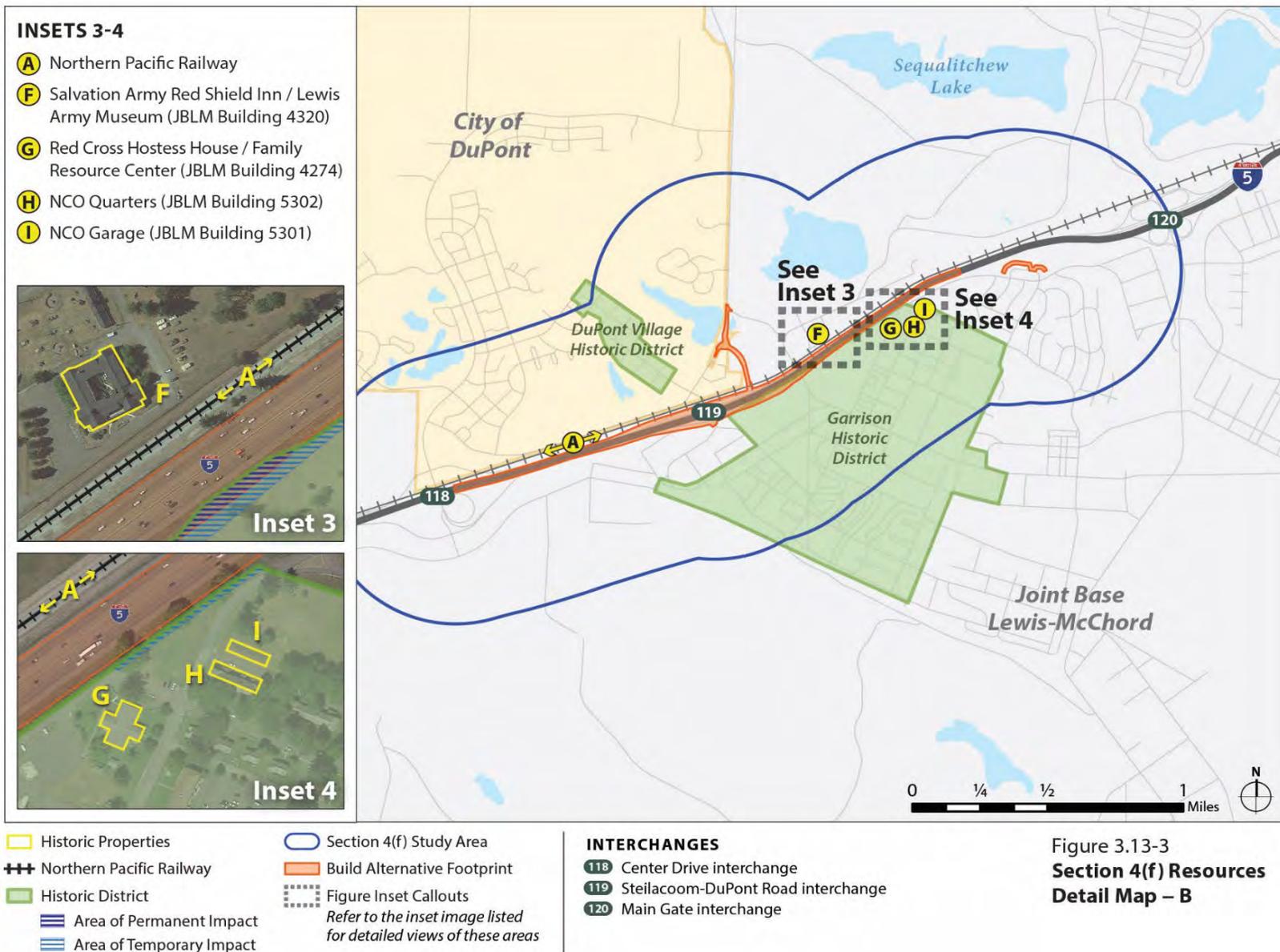


Figure 3.13-2  
**Section 4(f) Resources  
 Detail Map - A**



### 3.13.3 What Would Be the Impact of the No Build Alternative?

The proposed project would not be constructed under the No Build Alternative; therefore, no Section 4(f) resources would be impacted.

### 3.13.4 What Would Be the Long-Term Impact of the Build Alternative?

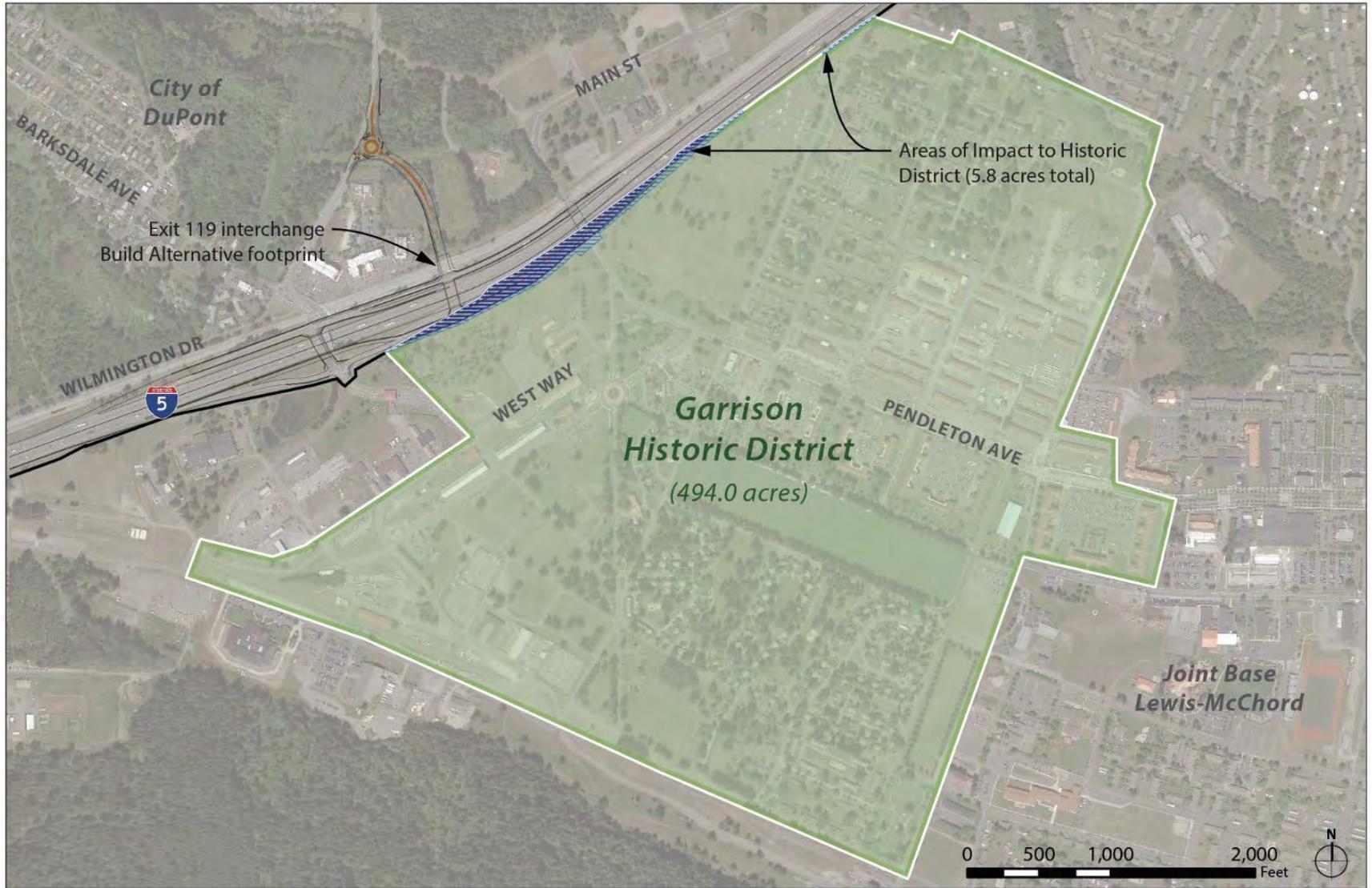
Section 23 CFR 774.17 defines what constitutes use of an eligible Section 4(f) property as a result of transportation project actions. A project has a 4(f) property use if it permanently incorporates Section 4(f) eligible land into a transportation facility, temporarily uses Section 4(f) eligible land for project construction-related activities, or creates proximity impacts that are so severe the protected activities, features or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

As shown on Table 3.13.-2 the Build Alternative uses one 4(f) resource in the study area. The Build Alternative would use a portion of the 494-acre Fort Lewis Garrison Historic District (District) for the proposed widening of Interstate 5 and new interchange at Exit 119 (Steilacoom DuPont Road). The Build Alternative will result in a permanent use of 3.8 acres of the District, and temporary use of 2.1 acres of the District as shown on Figure 3.13-4.

Table 3.13-2 4(f) Resources in the Study Area		
		Build Alternative 4(f) Use?
<b>Historic Properties</b>		
1	Northern Pacific Railway	No
2	JBLM Building 4320 - Salvation Army Red Shield Inn/Lewis Army Museum	No
3	JBLM Building 4274 - Red Cross Hostess House/Family Resource Center	No
4	NCO Quarters	No
5	NCO Garage	No
6	JBLM Warehouse 4170/71	No
7	JBLM Building 4176 – Quartermaster’s Gasoline Filling Station	No
8	JBLM Building 4201 – Red Cross Field Office	No
<b>Archaeological Resource</b>		
9	Greene Park	No
<b>Historic District</b>		
10	Fort Lewis Garrison Historic District	Yes
<b>Park and Recreation Resources</b>		
11	Bell Hill Community Park	No
12	Eagles Pride Golf Course	No
13	Chloe Clark Elementary School	No
14	Ross Park	No
15	Clocktower Park	No
16	Sellers Park	No
17	Ifrati Park	No
18	City of DuPont Trails	No
19	Robinson Park	No
20	Ethel Lumsdon Park	No
21	Bell Hill Neighborhood Park	No

The District is located on the east side of Interstate 5 in the vicinity of Exit 119 (Steilacoom DuPont Road). It is immediately adjacent to Interstate 5 on the District's western boundary. The majority of the District is outside the Build Alternative footprint and the project's APE. The District includes several historic buildings and features constructed for the U.S. Military, including rail lines, barracks, officers' quarters, warehouses, garages, a Red Cross Field Office, an historic gas station, gun sheds, a hospital and nurses' quarters, roads, monuments, and landscape features and views. It has been determined eligible for listing in the National Register of Historic Places and is currently listed in the Washington Historic Register.

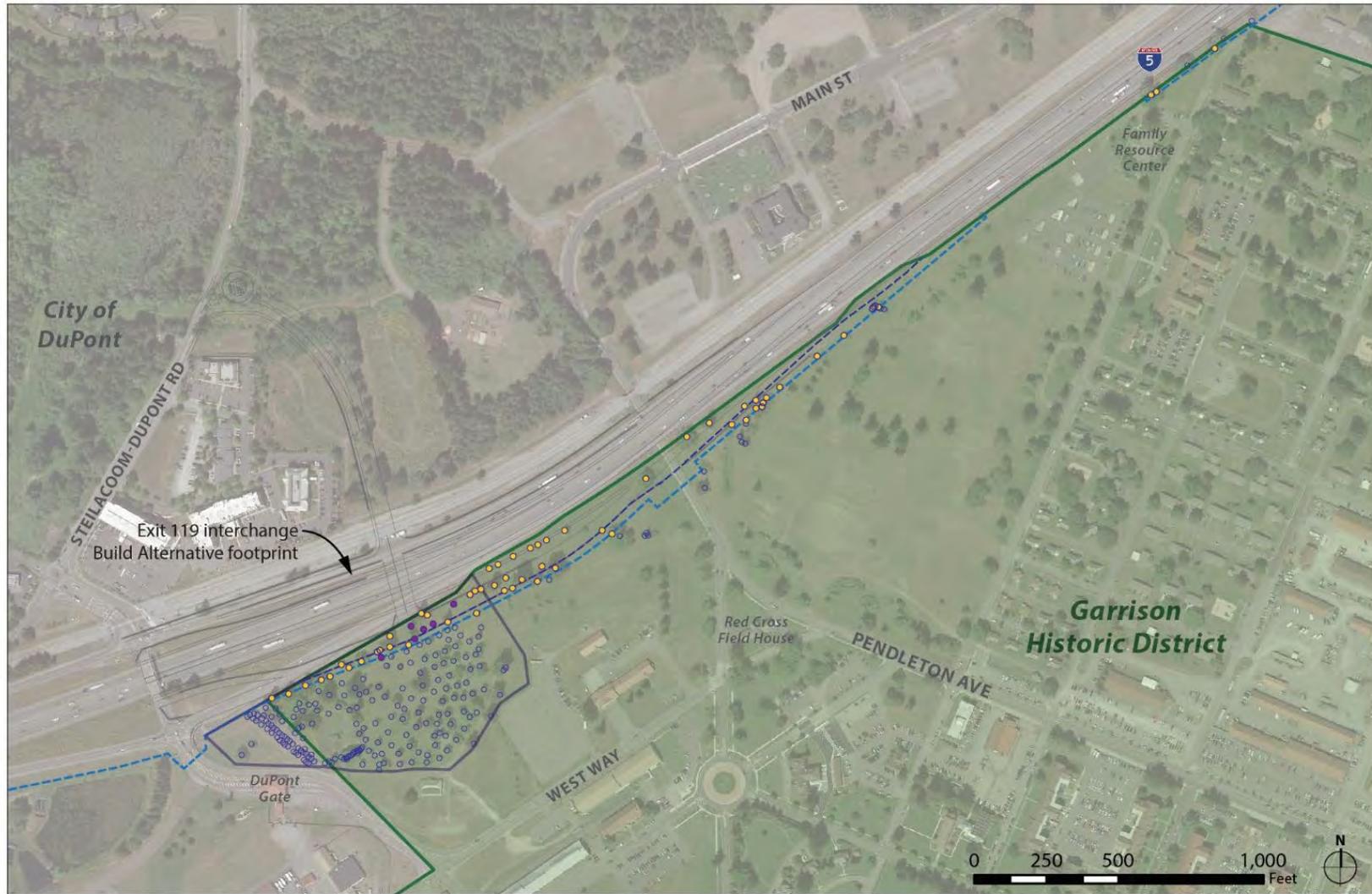
The District has a period of significance dating from 1917 to 1948, ending before the construction of I-5 (1957). Today, I-5 follows portions of the former Pacific Highway which historically provided access to Camp Lewis. Pacific Highway no longer exists in this area. I-5 still provides access to the District and key buildings including the Red Cross Field House and Red Cross Hostess House. The proposed project does not change the relationship of these buildings to I-5 but may obscure the view of I-5 from them and the view of the buildings from I-5. While the local transportation network is critical to the functioning of JBLM, views of the freeway are not a recognized character defining feature of the District that qualifies it for inclusion in the NRHP. Alterations to the views of I-5 does not diminish the integrity of the District or the buildings within it.



- Garrison Historic District Boundary
- Area of Permanent Impact to Historic District (3.8 acres)
- Area of Temporary Impact to Historic District (2.0 acres)

**Figure 3.13-4**  
**Impacts on Garrison**  
**Historic District**

The Fort Lewis Memorial Arboretum is located on the western edge of the District within the area of 4(f) use. The arboretum is currently under consideration by DAHP for listing on the Washington Historic Register, but it does not qualify for listing in the NRHP, and therefore it is not a separate a 4(f) resource. However, it is an element of the larger District so included here to provide information and context regarding the portion of the arboretum within the proposed 4(f) use area. The Arboretum is approximately 7 acres in size and was established in 1970 by a committee interested in promoting plantings on military installations to enhance their beauty and honor men and women who served in uniform, both living and dead. Trees planted within the Arboretum were paired with a plaque denoting the service member to whom the tree was dedicated. Some plaques have been lost or moved over the years. A total of 216 trees are located within the Arboretum, of which 131 were dedicated to specific individuals. The Arboretum was not designed or landscaped by a famous person and does not exhibit or contain exceptional or unique architectural or landscape features that would qualify it for NRHP listing. It is an element of the landscape within the 4(f)-use area. Within the Arboretum there are 26 trees in the Build Alternative impact area, of which 6 have a commemorative plaque associated with them as shown on Figure 3.13-5. Due to their location within the impact area, these 26 trees would be removed, reducing the total number of trees within the Arboretum from 216 to 190 and the number of dedicated trees from 131 to 125. Within the 5.9-acre impact area there are a total of 64 trees, including those within and outside the Arboretum.



- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><span style="color: blue;">---</span> Extent of Permanent Impact</li> <li><span style="color: blue;">---</span> Extent of Permanent and Temporary Impact</li> <li><span style="border: 2px solid green; display: inline-block; width: 20px; height: 10px;"></span> Garrison Historic District Boundary</li> <li><span style="border: 2px solid purple; display: inline-block; width: 20px; height: 10px;"></span> Fort Lewis Memorial Arboretum Boundary</li> </ul> | <p><b>TREES IN THE HISTORIC DISTRICT</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid blue; border-radius: 50%; width: 10px; height: 10px; display: inline-block;"></span> Tree Locations</li> <li><span style="border: 1px solid orange; border-radius: 50%; width: 10px; height: 10px; display: inline-block;"></span> Trees Impacted by Build Alternative</li> <li><span style="border: 1px solid purple; border-radius: 50%; width: 10px; height: 10px; display: inline-block;"></span> Trees with Commemorative Plaque Impacted by Build Alternative</li> </ul> |
|--|---|

Figure 3.13-5  
**Impacted Trees in Garrison Historic District**

The JBLM Cultural Resources Report concluded the Build Alternative would have no adverse effect on the cultural and historic resources within the study area, including the Fort Lewis Garrison Historic District. The 2019 Cultural Resources Report concluded the Build Alternative will not alter, directly or indirectly, any of the characteristics of the Garrison Historic District that qualify the property for inclusion in the National Register. WSDOT is seeking concurrence from the Department of Archaeology and Historic Preservation (DAHP) on the determination of no adverse effect.

The Build Alternative will result in the permanent use of 0.8 percent of the total 494-acre Fort Lewis Garrison Historic District. The proposed improvements will partially shield I-5 and freeway traffic from view within JBLM, and block or partially shield views of the Fort Lewis Garrison Historic District from drivers on I-5. The District will retain integrity of location, setting, design, materials, workmanship, feeling and association.

It is WSDOT's conclusion that the use of the Garrison Historic District will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). The permanent or temporary use of a property can be determined as either *de minimis* or not *de minimis*. A *de minimis* determination can only be made if the project impacts will not adversely affect the features, attributes or activities that qualify the park, recreation area, historic area or refuge for protection. FHWA has concluded the project's impacts on the District will be *de minimis*. The Project's Section 106 consultation with the SHPO and tribes has not been completed at time of this writing and must be brought to conclusion before the Section 4(f) *de minimis* determination can be finalized.

### 3.13.5 What Would the Short-Term or Construction Impact of the Build Alternative Be?

There would be short-term, temporary construction impacts within the Fort Lewis Garrison Historic District associated with site access needed for construction of the new Exit 119 A/B interchange retaining walls and the noise wall north of the Family Resource Building. The area of temporary impact would be 2 acres. The temporary use for construction access would be designed to minimize impact to vegetation, especially trees. The Build Alternative would not result in a temporary use of any of the other Section 4(f) resources identified in this evaluation.

### 3.13.6 What Efforts Were Made to Minimize Impacts of the Build Alternative?

Many measures were evaluated to minimize harm to the Section 4(f) resources within the study area. Plans for the Build Alternative were developed while being mindful of the existence and location of 4(f) resources. The Build Alternative design includes several features that would minimize use of land within the Fort Lewis Garrison Historic District, including:

1. Lane configuration. The middle lanes both northbound and southbound on Interstate 5 in the project area would be 11 feet wide, instead of the standard 12 feet wide to minimize the project footprint.
2. Interchange configuration. The Build Alternative interchange configuration is a tight diamond typically used in urban locations. This configuration places ramp intersections close to the freeway to minimize the project footprint at the expense of wider bridges to allow for adequate traffic queueing space.
3. Substantial use of retaining walls to minimize the footprint of I-5 and associated use of land within the District. The project includes

grade separation of the new freeway overcrossing of the adjacent railroad track. The new ramps and bridges would be substantially higher than existing grade. The elevation gains are supported entirely by retaining walls adjacent to I-5 and the interchange ramps. No fill slopes will be used within the Fort Lewis Garrison Historic District to minimize project impacts. The planned elevated ramp retaining walls have an added benefit of helping reduce the effects of freeway traffic noise on the District.

4. Intersection control type. Both roundabouts and signals were evaluated for intersection control at the ends of the ramps. Signalization of the ramp terminal intersections was selected over roundabouts because signals have a considerably smaller footprint requirement compared to roundabouts.
5. Stormwater management. No stormwater facilities are proposed on the east side of Interstate 5. The Build Alternative design includes routing of all stormwater to facilities located within the existing Interstate 5 right-of-way, or on the west side of Interstate 5. This further minimizes the project's use of land within the Garrison Historic District.

### 3.13.7 How Could Impacts of the Build Alternative be Mitigated?

All prudent measures were considered to minimize harm to Section 4(f) resources within the study area. Impacts to the landscape features of the Fort Lewis Garrison Historic District, including the removal of trees within the Memorial Arboretum and other parts of the District, would be mitigated through replanting of trees either within the Arboretum or other locations within the District. The project will remove a total of 64 trees within the District, 26 of which are within the Arboretum. The six Arboretum trees dedicated to a service member could be replaced with the same species tree and the plaque retained and replaced following completion of the project. Depending on the size, health, and species of dedicated trees, there may be the potential to remove and replant the existing trees. This would require consultation with a trained arborist to determine the likelihood of survival of the trees.

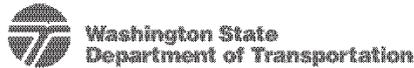
No record of the number, type, location and person for whom trees in the Arboretum were planted has been maintained by JBLM. As part of this project, this information has been documented and provided to the JBLM Department of Public Works, Environmental Division. This information will be a resource for future planning and documentation of the Arboretum.

Temporary construction impacts would be minimized by limiting the construction access to the minimum area needed to construct the retaining walls and noise wall, implementation of best management practices, providing cultural resource training to contractor staff, including cultural resource monitoring requirements during construction in the contract, and restoration of impacted areas to pre-use condition.

# STATE AGENCIES

## APPENDIX E-2

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Transportation Building  
 310 Maple Park Avenue S.E.  
 P.O. Box 47300  
 Olympia, WA 98504-7300  
 360-705-7000  
 TTY: 1-800-833-6388  
 www.wsdot.wa.gov

May 29, 2018

Allyson Brooks, Ph.D.  
 State Historic Preservation Officer  
 Department of Archaeology & Historic Preservation  
 PO Box 48343  
 Olympia, WA 98504-8343

Log: 2018-05-03830 FHWA  
 RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
 Section 106 Consultation and Area of Potential Effects

Dear Dr. Brooks:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Area of Potential Effects (APE).

The proposed improvements are within the southern portion of a larger project that proposes to make improvements along the I-5 corridor between the interchanges with Thorne Lane (Exit 123) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your office regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the "South Study Area") had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties.

A project footprint has now been established for the Steilacoom-DuPont interchange and we are continuing Section 106 consultation on the South Study Area, known as the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements. The proposed project in this area includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.

- The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
- The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.
- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

We initially define the APE for the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected, as shown on the enclosed exhibit. The APE has been drawn 200 feet from the edge of the proposed ground disturbance, except within the Fort Lewis Garrison Historic District; in this area, the APE is wider to account for potential visual, audible, or other indirect effects on historic properties within the district.

This project is also expected to require a permit from the U.S. Army Corps of Engineers (USACE). The USACE has designated FHWA to act on their behalf, and the Section 106 consultation will meet the Section 106 obligations of both the USACE and FHWA. Please note that the USACE will define the APE based on their regulated area of jurisdiction, so it may be smaller than the APE defined by WSDOT.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project APE. HRA is currently preparing a work plan for the assessment, which we will invite you to review as soon as it is available.

Should you have any questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at [kiersro@wsdot.wa.gov](mailto:kiersro@wsdot.wa.gov).

Sincerely,

Roger Kiers  
 WSDOT Archaeologist

Enclosures: APE Exhibit (3 sheets)

cc: Donna Turnipseed, JBLM Cultural Resources Program  
 Jeff Sawyer, WSDOT Olympic Region Environmental  
 Bill Elliott, WSDOT Project Engineer



Allyson Brooks Ph.D., Director  
State Historic Preservation Officer

June 4, 2018

Mr. Roger Kiers  
Cultural Resource Specialist  
WA State Dept. of Transportation  
P.O. Box 47332  
Olympia, WA. 98512-7332

In future correspondence please refer to:  
Project Tracking Code: 2018-06-03988  
Property: I-5/ Mounts Road to Steilacoom-DuPont Road Corridor Improvement Project  
Re: APE Concur

Dear Mr. Kiers:

Thank you for contacting the State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced project. In response, we have reviewed your description and map of the area of potential effect (APE).

We concur with your definition of the APE. Please provide us with your survey methodology before proceeding with any inventories. Along with the results of the inventory we will need to review your consultation with the concerned tribes, and other interested/affected parties. Please provide any correspondence or comments from concerned tribes and/or other parties that you receive as you consult under the requirements of 36 CFR 800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the SHPO in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800. Should additional information about the project become available, our assessment may be revised.

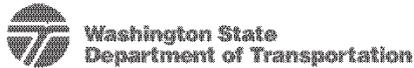
Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me.

Sincerely,

Dennis Wardlaw  
Transportation Archaeologist  
(360) 586-3085  
dennis.wardlaw@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation  
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065  
www.dahp.wa.gov





Transportation Building  
310 Maple Park Avenue S.E.  
P.O. Box 47300  
Olympia, WA 98504-7300  
360-705-7000  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

July 3, 2018

Dennis Wardlaw  
Transportation Archaeologist  
Department of Archaeology & Historic Preservation  
PO Box 48343  
Olympia, WA 98504-8343

Log: 2018-05-03830  
RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
Section 106 Consultation and Cultural Resources Survey Methodology

Dear Mr. Wardlaw:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Cultural Resources Methodology Memo.

As described in our initial Section 106 consultation letter sent on May 29, 2018, the subject project includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.
  - The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
  - The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.

- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.
- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project Area of Potential Effects (APE), which has been defined to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected. HRA has prepared the enclosed work plan for the assessment, which we are inviting you to review. Should you have any questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at [kiersro@wsdot.wa.gov](mailto:kiersro@wsdot.wa.gov).

Sincerely,

Roger Kiers  
WSDOT Archaeologist

Enclosures: Cultural Resources Methods Memo

cc: Jeff Sawyer, WSDOT Olympic Region Environmental  
Bill Elliott, WSDOT Project Engineer



Allyson Brooks Ph.D., Director  
State Historic Preservation Officer

July 30, 2018

Mr. Roger Kiers  
Cultural Resource Specialist  
WA State Dept. of Transportation  
P.O. Box 47332  
Olympia, WA. 98512-7332

In future correspondence please refer to:  
Project Tracking Code: 2018-05-03830  
Property: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements  
Re: Work Plan Review Comments

Dear Mr. Kiers:

Thank you for contacting the Washington State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation regarding the above referenced proposal. In response, we have reviewed the materials you provided for this project. At this time I have no comments for the methodology for the built environment survey. However, I do not agree with the proposed 1-2 meter interval for delineation of newly recorded archaeological sites. I am unconvinced of the utility of such a high interval for site delineation. I believe this would lead to diminishing returns for what can be learned through shovel probes alone. A five-meter interval for site boundary determination would be appropriate for this project.

We appreciate receiving copies of any correspondence or comments from concerned tribes and other parties that you receive as you consult under the requirements of 36 CFR 800.4(a)(4). These comments are based on the information available at the time of this review and on behalf of the SHPO pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800.

Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me.

Sincerely,

Dennis Wardlaw  
Transportation Archaeologist  
(360) 586-3085  
dennis.wardlaw@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation  
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065  
www.dahp.wa.gov





Transportation Building  
 310 Maple Park Avenue S.E.  
 P.O. Box 47300  
 Olympia, WA 98504-7300  
 360-705-7000  
 TTY: 1-800-933-6388  
 www.wsdot.wa.gov

June 14, 2019

Mr. Dennis Wardlaw  
 Transportation Archaeologist  
 Department of Archaeology & Historic Preservation  
 PO Box 48343  
 Olympia, WA 98504-8343

Log: 2018-05-03830  
 RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements, Cultural  
 Resources Assessment and Determination of No Historic Properties Adversely Affected

Dear Mr. Wardlaw:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review the cultural resources assessment prepared for the undertaking.

The proposed improvements are within the southern portion of a larger project that proposes to make improvements along the I-5 corridor between the interchanges with Gravelly Lake Dr. (Exit 125) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your office regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the “South Study Area”) had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties.

We re-initiated Section 106 consultation in May 2018 for the South Study Area (known as the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements) once the project footprint had been established for the Steilacoom-DuPont interchange. Historical Research Associates, Inc. (HRA) has completed the cultural resources assessment of the project area of potential effects (APE), in accordance with the survey methodology provided to your office in July 2018. The results of their assessment are document in a report dated June 12, 2019, which has been uploaded to WISAARD.

As documented in the report, the archaeological inventory identified seven archaeological resources previously recorded in the APE for the South Study Area, but three of those

(45PI1310, 45PI1316, and the Bottling Plant) are outside of the extent of ground disturbance (EOD). Additionally, a Hudson’s Bay Company (HBC) Trail Marker (45PI203) is located within the APE but outside of the EOD. It should be noted that 45PI1316 (Greene Park) is outside the extent of ground disturbance for the current project, but within the EOD for the North Study Area. Impacts to the site were addressed during previous consultation, in which WSDOT committed to constructing the proposed pedestrian path on fill in order to minimize ground disturbance and avoid adverse effects.

No new sites were identified during the current survey, but four previously recorded sites are within the extent of ground disturbance for the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements Project: 45PI769, 45PI1031, 45PI1393, and 45PI1394. All four of these sites were previously determined not eligible for listing in the NRHP. HRA revisited sites 45PI1031, 45PI1393, and 45PI1394 and expanded the site boundaries of 45PI1394, but found no evidence that would change the previous determinations of eligibility.

HRA evaluated 17 historic structures that had no previous determinations of eligibility on file with DAHP. HRA also re-evaluated the Fort Lewis Memorial Arboretum, which was previously determined not eligible for listing in the NRHP but required reevaluation to consider all potential criteria and criteria considerations, particularly as the resource neared the age of 50 years. As documented in the report and historic property inventories, none of these 18 resources are eligible for listing in the NRHP.

There are ten previously recorded NRHP-listed or eligible historic resources within the APE, including a portion of the NRHP-eligible Fort Lewis Garrison Historic District and seven architectural resources that contribute to that district and are individually eligible for NRHP-listing. The original road system and the rail system for Fort Lewis are also identified as contributing elements. The ten resources are discussed below.

The NRHP-eligible, WHR-listed **Fort Lewis Garrison Historic District** is primarily located outside the Project APE. While new construction and road-widening will take place within the district’s northern boundary, these activities are located along the I-5 corridor that borders the district and will permanently impact only 3.8 acres of the 494-acre district. Planned activities, particularly the construction of new sound walls, are designed to minimize the effects of noise and traffic associated with neighboring I-5. As the district is presently bordered by I-5 in these areas, the addition of new amenities designed to minimize the effects of traffic will not diminish the significance or integrity of the Fort Lewis Garrison Historic District.

Because views of I-5 are not character-defining, the Project will not alter, directly or indirectly, any of the characteristics that qualify the Garrison Historic District for the National Register in a manner that would diminish its integrity of location, setting, design, materials, workmanship, feeling, and association. Therefore, while the Project as proposed will alter the historic district, the effects will not be adverse.

**Building 4170/71** is a warehouse constructed in 1917 in an early industrial area of Camp Lewis. In spite of diminished integrity, the building is significant as a contributing resource to the Garrison Historic District and for its association with World War I and Camp Lewis. It was recently found eligible for independent listing in the NRHP. The building sits at the

southern edge of the APE. Between the building and I-5 are roadways, a parking lot, and a portion of the Memorial Arboretum, which screens the freeway from view. While the construction of an overpass and retaining walls may alter the distant view of I-5 from this building, these alterations will not alter, directly or indirectly, any of the characteristics of Building 4170/71 that qualify the property for inclusion in the National Register, as the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects. Therefore, the Project as proposed will not adversely affect Building 4170/71.

**Building 4176** (Quartermaster's Gasoline Filling Station) was completed in 1937 on the foundations of a former bus station. The building sits south of the Memorial Arboretum and has only a modest view of the freeway. As it is no longer used, and its gas pumps have been removed for restoration and have not yet been reinstalled, and it is located along a degraded roadway that is no longer in regular use, the gas station, while significant for its architectural character under NRHP Criterion C, and potentially eligible under Criterion A for its association with historic events, has already lost some integrity of setting, feeling, and association. In spite of this loss of integrity, the station was recently found eligible for independent listing in the NRHP.

Visual simulations suggest that visual access to I-5 from Building 4176 will be moderately affected by the addition of visual barriers, particularly at the Exit 119 interchange. While new construction will add visual elements to the building's viewshed, partially obscuring the building's view of I-5, these effects can potentially be considered beneficial, as they will limit the building's view of modern freeway traffic. The visual effect is minimized by Memorial Arboretum. During the months in which the trees are full, visual access to the freeway is minimal from Building 4176. The effect will be greater when the trees are bare during the winter months, but views of the freeway are not character-defining features that qualify the building for listing, and wall treatment options may further minimize the intrusion. The Project will not alter, directly or indirectly, any of the characteristics of Building 4176 that qualify the property for inclusion in the National Register, as the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects to its viewshed. Therefore, the Project as proposed will not adversely affect Building 4176.

**Building 4201** (the American National Red Cross Field House) was constructed in 1941. Designed in the Colonial Revival style, the building features a two-story central mass with a grand portico supported by square columns on the north elevation. The building faces north toward I-5 at the corner of Lewis Dr. and Pendleton Ave. and is significant for its architectural character under NRHP Criterion C. It may also be eligible under Criterion A for its association with the work of the Red Cross during World War II. It was recently found eligible for independent listing in the NRHP.

The Project will have no direct effects on Building 4201, as the building is located approximately 475 ft. south of the area of ground disturbance. Visual simulations suggest that visual access to I-5 from Building 4201 will be affected by the addition of visual barriers, particularly between the Exit 119 interchange and the Pendleton Ave. underpass. A new security wall rising from 3.5-ft to 8-ft will be constructed atop a retaining wall that rises from 0 to 20 ft (a combined 28 ft at its highest point at the Pendleton Ave. overpass) along the barrier between the base and I-5. The Pendleton Ave. underpass will be reconstructed

within view of this building. While new construction will add new visual elements to the viewshed, partially obscuring the building's view of I-5 by adding a tall, concrete wall along a portion of the north end of JBLM and the Garrison Historic District, the Project will not disrupt traditional transportation patterns. Furthermore, treatment options under consideration for the wall would minimize the visual intrusion. In spite of indirect effects to its viewshed, the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association, and will not be adversely affected.

**Building 4274** (the Red Cross Hostess House) is one of the most significant buildings on JBLM. It served originally as a recreational facility for convalescing soldiers. Significant architecturally as a World War I-era building built by the Red Cross and U.S. Army during the first wave of construction at Camp Lewis, the building is also significant for its associations with World War I and Camp Lewis. It was recently found eligible for independent listing in the NRHP.

The building sits near the northern border of the Fort Lewis Garrison Historic District. Its primary façade faces northeast toward the base and a portion of the freeway. It originally faced Idaho St. and a building across Idaho St., Building 502, which was removed when I-5 was constructed. As planned, the Project will widen the roadway along the border of the district and along existing roadways that presently exist between the Hostess House and the freeway. A sound wall is being constructed north of the Hostess House. While the road widening will encroach slightly on the boundary between the Hostess House and the freeway, and the proposed sound wall will add visual intrusions into the viewshed, the Project will not diminish the significance or integrity of the Hostess House and will not adversely affect the building.

**Building 4320** (the Red Shield Inn), built by the Salvation Army, was a meeting place and inn for the families and friends of nearby soldiers. Elaborately ornamented in the Swiss Chalet style, the Red Shield Inn, like the Red Cross Hostess House, is one of the most architecturally significant resources associated with the first wave of development at Camp Lewis. It now serves as the Fort Lewis Military Museum and was listed in the NRHP in 1979.

The proposed Project avoids creating retaining walls, noise walls, or other visual barriers between the freeway traffic and the building. The building, separated from I-5 traffic by a railroad, will not be affected by proposed cutting and filling between the freeway and the railroad line. The nearest proposed retaining wall, located to the southwest of the property, will not screen the building (which faces south toward the freeway) from views of the freeway and will not screen freeway traffic from views of the Red Shield Inn. It is possible that the building will lose some visual access to the base across I-5, but the freeway has long provided a wide barrier between Building 4320 and the base south of I-5. The building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects, and will not be adversely affected by the project.

**Building 5301** (NCO Quarters Garage) is a simple rectangular, wood-clad building with garage bays. It was constructed in 1948 and faces south toward Building 5302 and away from I-5. The building derives its significance from its association with housing on base and not with landscape elements like I-5 that exist outside the base's borders. It was recently found eligible for independent listing in the NRHP.

While the building is located roughly 200 ft. south of I-5, the Project will not substantially change views to or from the buildings or increase noise. The Project will not alter, directly or indirectly, any of the characteristics that qualify the property for inclusion in the NRHP.

**Building 5302** (NCO Quarters) was constructed as housing for noncommissioned officers in 1939. The building's façade faces south, away from I-5. As with the garage above, the building is located roughly 200 ft. to the south of I-5 and is significant for its architectural character and for its association with housing activities on base in the 1930s. It is not significant for its association with I-5, which it predates. It was recently found eligible for independent listing in the NRHP.

As with other buildings on base, the Project will not alter, directly or indirectly, any of the characteristics that qualify the property for inclusion in the NRHP. Visual simulations suggest that a proposed 12 to 16-ft noise wall along I-5 north of Building 5302, which faces southwest, will affect the viewshed from the side and rear of Building 5302, limiting visual access to I-5 and freeway traffic. Such effects may be considered a benefit, and views to and from the freeway are not considered a character-defining feature of the building that qualify it for listing. Given that the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects, the Project as proposed will not adversely affect Building 5302.

The **Camp Lewis Railroad** was documented in an HPI in WISAARD in October 2018. It is defined, according to the HPI, as a spur line from the Northern Pacific Railroad that served Camp Lewis and contributes to the Garrison Historic District. The rail line, which is partially within the APE, was determined eligible under Criterion A in 2018. While the rail line is primarily located within the Garrison Historic District, the east leg of a railroad wye runs along the edge of the project area of ground disturbance before turning southeast to join the main rail line. The railroad wye is no longer in use and has been terminated (ties removed) and a barricade erected approximately 5 m south of the fence line that marks the WSDOT ROW at I-5. The construction of I-5 terminated the wye, although it likely had not been in use since the end of World War II.

The Project will have no adverse effect on the Camp Lewis Railroad, as the line is primarily located near the southern border of the Garrison Historic District, approximately 750 ft. south of the area of ground disturbance. The abandoned wye that curves toward I-5 within the APE is in an area previously considered for use as a stormwater facility. However, that plan has been abandoned and no stormwater facilities will be located in this area; therefore, the Project will avoid the resource.

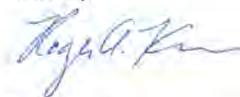
The **Fort Lewis Road System** is identified in the Garrison Historic District nomination as a contributing resource to the district, with many arterials dating to 1917. The nomination calls out a number of specific roads. The Project will not directly affect the majority of contributing roadways in the district, as they are located fully or partially outside the APE. Those within or partially within the APE include Pendleton Ave., West Way, Lewis Dr., 9th Division Rd., and the northern terminus of Idaho Ave. Of those within the APE, only Pendleton Ave., and the northern terminus of Idaho Ave. are within the area of direct effects. Pendleton Ave. will retain its original route under I-5, although the overpass will be expanded above it. Idaho Ave. will continue to terminate at its present location at the

intersection of Hospital Ave. Existing transportation routes will be maintained, and the Project will not directly affect existing transportation patterns or access routes to significant elements of the district. Given that the Project will not alter, directly or indirectly, any of the characteristics of the Garrison Historic District's roadways that qualify them for inclusion in the National Register as contributing features to the district, the Project as proposed will not adversely affect the Camp Lewis Road System.

In summary, while the Project as proposed will encroach on the boundaries of the eligible district, all of the encroachment will occur along the northwestern border, which has evolved over recent decades and no longer retains its character from the district's period of significance. The Project will also lead to indirect auditory and visual effects and diminish the physical land barriers between I-5 and significant resources including the NCO quarters and garage, the Hostess House, and the Red Shield Inn. Due to the minimal amount of land affected, and the Project's ability to maintain, if not improve, connectivity between I-5 and JBLM while minimizing auditory and visual effects, the Project will in no way diminish the significance or integrity of these historic properties.

Based on the results of the cultural resources assessment, WSDOT concludes that no historic properties will be adversely affected by the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements Project. We invite your review of the cultural resources assessment, our determinations of eligibility, and our determination of No Adverse Effect. If you have questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at [kiersro@wsdot.wa.gov](mailto:kiersro@wsdot.wa.gov).

Sincerely,



Roger Kiers  
WSDOT Archaeologist

Enclosures:

*Cultural Resources Inventory for the I-5 JBLM Vicinity Congestion Relief Project – South Study Area, Pierce County, Washington*, prepared by HRA, dated June 12, 2019 (via WISAARD)

cc: Donna Turnipseed, JBLM Cultural Resources Program  
Jeff Sawyer, WSDOT Olympic Region EHS  
Dean Moberg, FHWA Area Engineer



Allyson Brooks Ph.D., Director  
State Historic Preservation Officer

August 20, 2019

Mr. Roger Kiers  
Cultural Resource Specialist  
WA State Dept. of Transportation  
P.O. Box 47332  
Olympia, WA. 98512-7332

In future correspondence please refer to:  
Project Tracking Code: 2018-05-03830  
Property: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements  
Re: NO Adverse Effect

Dear Mr Kiers:

Thank you for contacting the State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) regarding the above referenced proposal. This action has been reviewed on behalf of the SHPO under provisions of Section 106 of the National Historic Preservation Act of 1966 (as amended) and 36 CFR Part 800. Our review is based upon documentation contained in your communication.

We concur that the current project as proposed will have "NO ADVERSE EFFECT" on historic properties within the APE that are listed in, or determined eligible for listing in, the National Register of Historic Places. In addition to our concurrence, we take this opportunity to recommend that WSDOT undertake measures to "soften" the loss of existing vegetation and enhance the aesthetics of the security/sound wall as it borders the Historic District, to include:

- 1) Afford the SHPO and JBLM Cultural Resources staff the opportunity to review and comment on a landscape plan that introduces trees and vegetation to help screen the wall and freeway traffic from the Historic Districts including the Family Resource Center; and
- 2) Afford the SHPO and JBLM Cultural Resources staff the opportunity to review and comment on concepts for special architectural treatment that would be applied to the design of the of the Pendleton Avenue underpass portal under the expanded I-5.

Please note that if new information about affected resources becomes available and/or the project scope of work changes significantly, please resume consultation as our assessment may be revised. Also, if any archaeological resources are uncovered during construction, please halt work immediately in the area of discovery and contact the appropriate Native American Tribes and DAHP for further consultation.

Thank you for the opportunity to review and comment. Please ensure that the DAHP Project Number (a.k.a. Project Tracking Code) is shared with any hired cultural resource consultants

and is attached to any communications or submitted reports. If you have any questions, please feel free to contact me.

Sincerely,

Dennis Wardlaw  
Transportation Archaeologist  
(360) 586-3085  
dennis.wardlaw@dahp.wa.gov

State of Washington • Department of Archaeology & Historic Preservation  
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065  
www.dahp.wa.gov



State of Washington • Department of Archaeology & Historic Preservation  
P.O. Box 48343 • Olympia, Washington 98504-8343 • (360) 586-3065  
www.dahp.wa.gov



July 29, 2020

Sydney Hanson  
Transportation Archaeologist  
Department of Archaeology & Historic Preservation  
PO Box 48343  
Olympia, WA 98504-8343

Log: 2018-05-03830  
RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements, Cultural Resources Assessment of Proposed Project Revisions at Mounts Road

Dear Ms. Hanson:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review the proposed revisions to the Build Alternative at the I-5/Mounts Road Interchange, and request your concurrence with our determination that the proposed revisions will have no effect on historic properties.

The proposed Build Alternative revisions at the Mounts Road Interchange are at the southern end of the South Study Area of the larger project that proposes to make improvements along the I-5 corridor between the interchanges with Gravelly Lake Dr. (Exit 125) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your office regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the "South Study Area") had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties. We re-initiated Section 106 consultation in May 2018 for the South Study Area (known as the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements) once the project footprint had been established for the Steilacoom-DuPont interchange. Historical Research Associates, Inc. (HRA) completed a cultural resources assessment of the project area of potential effects (APE). The results of their assessment were documented in a report dated June 12, 2019, and DAHP concurred with our finding of No Adverse Effect on August 20, 2019. We conducted additional consultation in December 2019 when project revisions were proposed at Pendleton

Avenue on JBLM. Again, DAHP concurred with our finding of No Adverse Effect for this additional work on January 7, 2020.

Since our last Section 106 consultation, the Olympic Region Traffic Office has requested that a new traffic signal be added to the project within the Mounts Road Interchange. The location of this traffic signal is just outside the previously evaluated extent of ground disturbance for the project, as depicted on Figure 1. Excavation for the signal pole foundation is estimated to be 4 ft. diameter and 11 – 12 ft. deep. Conduit installation associated with the new signal is expected to be primarily within the limits of existing roadways. The work will also include moving the existing signal controller cabinets for the southbound ramp meter system, which currently block the line of sight for drivers at the end of the southbound off-ramp, to a location on the adjacent slope as depicted on Figure 2. Due to the steep slope at this location, a fill retaining wall would likely be necessary to support the level area for the cabinets.

#### *Evaluation of Proposed Revision at Mounts Road*

Given that the proposed work is outside the previously evaluated APE, I have reviewed the proposal in order to take into account the effects of these revisions on properties listed in or eligible for listing in the NRHP, as described below. This evaluation included a review of historic records and previous survey reports and, based on prior fieldwork and the extent of previous ground disturbance, a virtual reconnaissance of the project site (Figures 3 and 4).

Although the proposed revisions at Mounts Road are partially outside the previously defined project APE, the work is within an area that was evaluated as part of the I-5, SR 510 to SR 512 Congestion Management (Stage 3) Project in January 2013 (Kiers 2013). The I-5, SR 510 to SR 512 Congestion Management (Stage 3) Project installed a series of ramp meters and other devices at multiple locations, including the I-5/Mounts Road interchange (the signal controller cabinets now being proposed for relocation were originally installed as part of that project). The southbound I-5 on-ramp at Mounts Road was within an area defined as Area 8 in the 2013 project.

The project vicinity is characterized by level to low rolling areas of well-drained glacial outwash sediments. The soils that have developed in these sediments at the Mounts Road interchange are mapped as Nisqually loamy fine sand (USDA NRCS 2020). Cultural materials found within these soils are likely to be relatively shallowly buried, due to the general lack of deposition that has occurred (apart from artificial fill) since the Pleistocene. According to WISAARD, the area has a moderate potential for cultural resources. The nearest previously recorded archaeological site, 45PI1405, is located approximately 600 m west of the current project. Site 45PI1405 consists of two apple trees that remain from a historic orchard on today's Eagles Pride Golf Course, and will not be affected by the current proposal. A more extensive account of the environmental and cultural context of the project vicinity is available in Durkin et al. (2019).

The project area has been disturbed multiple times in the past, by a series of projects that include the Old Pacific Highway/SR 99 (1936/1937), the original I-5 (1956), the current bridge over the adjacent railroad (1959), and the Old Nisqually Rd. Undercrossing over I-5 (1966). Although the proposed signal foundation may extend into intact glacial deposits, any surface deposits likely to contain archaeological materials have almost certainly been graded and removed by prior construction activity.

Based on this assessment, WSDOT concludes that no historic properties will be affected by the proposed revisions to the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements Project. The proposed ground disturbance will occur within the footprint of previous construction and is unlikely to encounter significant archaeological resources; we therefore maintain our previous determination that the project as a whole will have No Adverse Effect on historic properties. We request your review and concurrence with this determination. If you have questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at [kiersro@wsdot.wa.gov](mailto:kiersro@wsdot.wa.gov).

Sincerely,



Roger Kiers  
WSDOT Archaeologist

**References:**

- Durkin, B., S. Davis, C. Beckner, L. Compas  
2019 *Cultural Resources Inventory for I-5 JBLM Vicinity Congestion Relief Project – South Study Area, Pierce County, Washington*. Historical Research Associates, Inc., Seattle, WA.
- Kiers, Roger  
2013 *Cultural Resources Survey, I-5/SR 510 to SR 512 – Stage 3 Mobility Improvements, Thurston and Pierce Counties, Washington*. Washington State Department of Transportation, Olympia.
- USDA Natural Resources Conservation Service (NRCS)  
2020 *Web Soil Survey*. Available at:  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>, accessed May 2020.

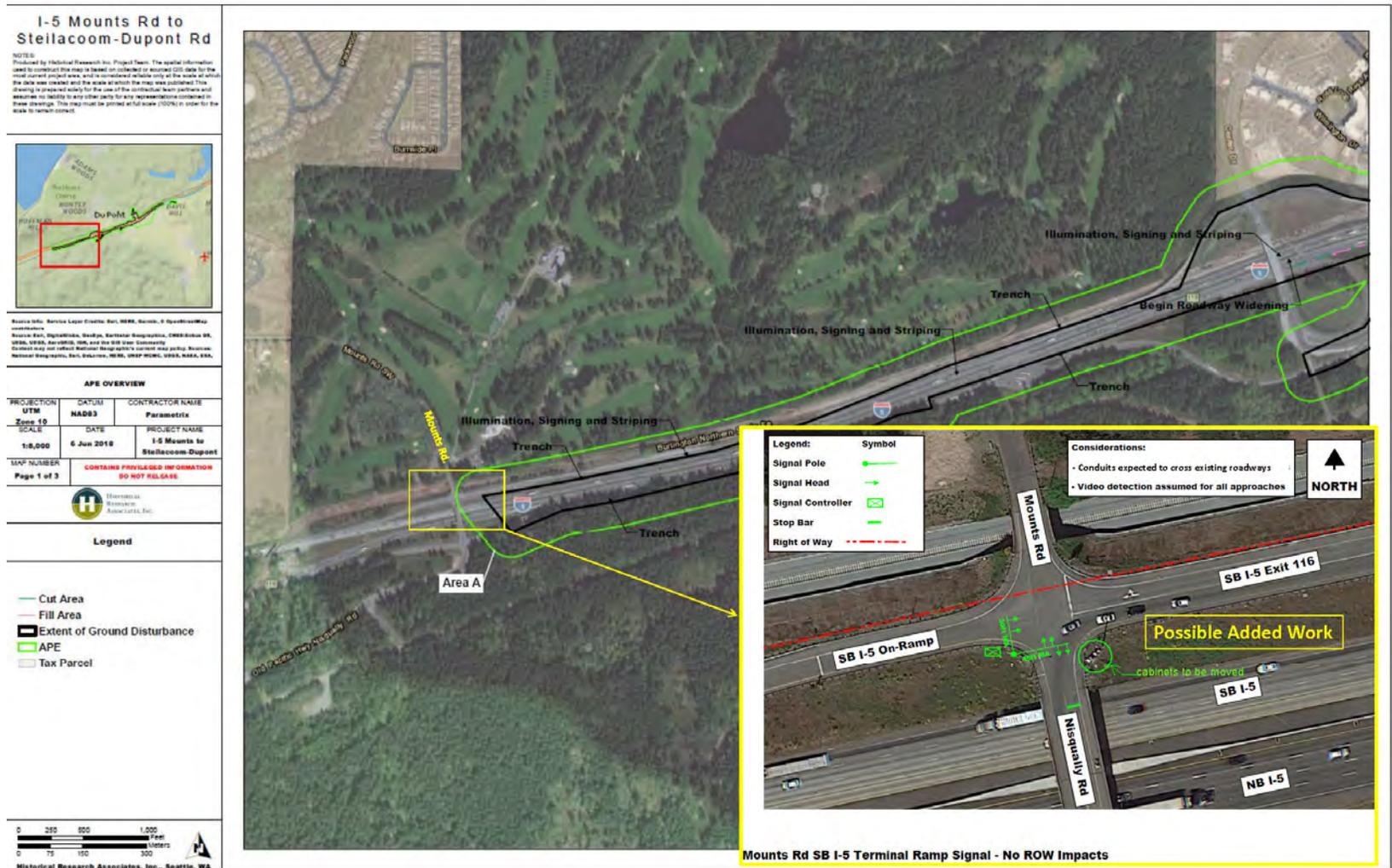


Figure 1. Location of proposed work at the I-5/Mounts Rd Interchange, in relation to the previously evaluated APE.



**I-5, Mounts Road Interchange  
Southbound Ramp Terminal Intersection**

**Re-locate controller boxes that  
current block driver view.**



Figure 2. Street level views of the existing controller boxes at the I-5/Mounts Road southbound off-ramp and their proposed relocation.



Figure 3. View of the proposed signal and controller location (yellow oval), from southbound I-5.



Figure 4. View of the proposed signal and controller location (yellow oval), looking north from the southbound on-ramp.

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# TRIBAL CORRESPONDENCE, PURPOSE AND SCOPE OF CONSULTATION

## APPENDIX E-3

Through the consultation exchange of letters following, we want to ensure that the Tribal Governments are afforded the opportunity to:

- ◆ Identify any concerns they may have regarding the effects of the proposed undertaking on historic properties;
- ◆ Advise FHWA and WSDOT on the identification and evaluation of historic properties, including those of traditional religious and cultural importance;
- ◆ Express their views on the undertaking's effects on such properties; and,
- ◆ Participate in the resolution of any adverse effects which the undertaking might have on their properties.

The first step in the Section 106 process, prior to the identification and evaluation of historic properties, is to identify the area of potential effect. Area of potential effect means the geographic area or areas within which the proposed undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The participation by the tribes as a consulting party in determining the area of potential effect is critical and is invited. Once this area has been defined, a cultural resources survey will be initiated. If the tribe has information about traditional cultural areas that might be affected by the proposed undertaking,

their input will be a valuable contribution to the cultural resources survey effort.

Once historic properties have been identified and evaluated for their historical significance in accordance with the criteria of the Keeper of the National Register of Historic Places, the effects of the proposed undertaking on any properties determined to be listed in or eligible for listing in the National Register are assessed. The tribe's participation in this effort is invited.

As defined by the Advisory Council on Historic Preservation, consultation means "...the process of seeking, discussing, and considering the views of other participants and, where feasible, seeking agreement with them regarding matters arising in the section 106 process."

Consultation is fundamental to the process of seeking ways to avoid, minimize or mitigate the effects of the undertaking on historic properties. Consequently, the tribe's active participation as a consulting party in the proposed undertaking is encouraged.

The letter exchange to document our consultation efforts follows.



**Olympic Region**  
 Environmental & Hydraulic Services  
 5720 Capitol Blvd  
 Tumwater, WA 98501  
 P O Box 47440  
 Olympia, WA 98504-7440

360-870-6700 / Fax 360-357-2801  
 TTY: 1-800-833-6388  
[www.wsdot.wa.gov](http://www.wsdot.wa.gov)

May 16, 2018

The Honorable Farron McCloud, Chairperson  
 Nisqually Tribe  
 4820 She-Nah-Num Dr. SE  
 Olympia, WA 98513

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
 Section 106 Consultation and Area of Potential Effects

Dear Chairperson McCloud:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places, we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

The proposed improvements are within the southern portion of a larger project that proposes to make improvements along the I-5 corridor between the interchanges with Thorne Lane (Exit 123) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your tribe regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the "South Study Area") had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties.

A project footprint has now been established for the Steilacoom-DuPont interchange and we are continuing Section 106 consultation on the South Study Area, known as the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements. The proposed project in this area includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher

The Honorable Farron McCloud  
 May 16, 2018  
 Page 2

bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.

- The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
- The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.
- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

We initially define the APE for the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected, as shown on the enclosed exhibit. The APE has been drawn 200 feet from the edge of the proposed ground disturbance, except within the Fort Lewis Garrison Historic District; in this area, the APE is wider to account for potential visual, audible, or other indirect effects on historic properties within the district.

This project is also expected to require a permit from the U.S. Army Corps of Engineers (USACE). The USACE has designated FHWA to act on their behalf, and the Section 106 consultation will meet the Section 106 obligations of both the USACE and FHWA. Please note that the USACE will define the APE based on their regulated area of jurisdiction, so it may be smaller than the APE defined by WSDOT.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project APE. HRA is currently preparing a work plan for the assessment, which we will invite you to review as soon as it is available.

We ask that you comment on the enclosed draft APE, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts. Should you have any comments regarding the draft APE, please provide a response by June 15, 2018 so we may discuss this undertaking and any identified areas of interest.

The Honorable Farron McCloud  
May 16, 2018  
Page 3

Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,



Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosures: APE exhibit (3 sheets)

cc w/enc: Jackie Wall, Nisqually Tribe Cultural Resources  
David Troutt, Nisqually Tribe Natural Resources  
Heidi Thomas, Nisqually Tribe Planning  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



**Olympic Region**  
Environmental & Hydraulic Services  
5720 Capitol Blvd.  
Tumwater, WA 98501  
P. O. Box 47440  
Olympia, WA 98504-7440

360-570-6700 / Fax 360-357-2601  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

May 16, 2018

The Honorable Bill Sterud, Chairperson  
Puyallup Tribe  
3009 Portland Ave  
Tacoma, WA 98404

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
Section 106 Consultation and Area of Potential Effects

Dear Chairperson Sterud:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places, we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

The proposed improvements are within the southern portion of a larger project that proposes to make improvements along the I-5 corridor between the interchanges with Thorne Lane (Exit 123) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your tribe regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the "South Study Area") had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties.

A project footprint has now been established for the Steilacoom-DuPont interchange and we are continuing Section 106 consultation on the South Study Area, known as the

The Honorable Bill Sterud  
May 16, 2018  
Page 2

I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements. The proposed project in this area includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.
  - The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
  - The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.
- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

We initially define the APE for the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected, as shown on the enclosed exhibit. The APE has been drawn 200 feet from the edge of the proposed ground disturbance, except within the Fort Lewis Garrison Historic District; in this area, the APE is wider to account for potential visual, audible, or other indirect effects on historic properties within the district.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project APE. HRA is currently preparing a work plan for the assessment, which we will invite you to review as soon as it is available.

We ask that you comment on the enclosed draft APE, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts.

The Honorable Bill Sterud  
May 16, 2018  
Page 3

Should you have any comments regarding the draft APE, please provide a response by June 15, 2018 so we may discuss this undertaking and any identified areas of interest. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,



Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosures: APE exhibit (3 sheets)

cc w/enc: Brandon Reynon, Puyallup Tribe Cultural Resources  
Russ Ladley, Puyallup Tribe Natural Resources  
Andrew Strobel, Puyallup Tribe Planning  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



**Olympic Region**  
Environmental & Hydraulic Services  
5720 Capitol Blvd  
Tumwater, WA 98501  
P.O. Box 47440  
Olympia, WA 98504-7440

360-570-6700 / Fax 360-357-2801  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

The Honorable Arnold Cooper  
May 16, 2018  
Page 2

May 16, 2018

The Honorable Arnold Cooper, Chairperson  
Squaxin Island Tribe  
SE 10 Squaxin Lane  
Shelton, WA 98584

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
Section 106 Consultation and Area of Potential Effects

Dear Chairperson Cooper:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places, we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

The proposed improvements are within the southern portion of a larger project that proposes to make improvements along the I-5 corridor between the interchanges with Thorne Lane (Exit 123) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your tribe regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the "South Study Area") had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties.

A project footprint has now been established for the Steilacoom-DuPont interchange and we are continuing Section 106 consultation on the South Study Area, known as the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements. The proposed project in this area includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher

bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.

- The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
- The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.
- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

We initially define the APE for the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected, as shown on the enclosed exhibit. The APE has been drawn 200 feet from the edge of the proposed ground disturbance, except within the Fort Lewis Garrison Historic District; in this area, the APE is wider to account for potential visual, audible, or other indirect effects on historic properties within the district.

This project is also expected to require a permit from the U.S. Army Corps of Engineers (USACE). The USACE has designated FHWA to act on their behalf, and the Section 106 consultation will meet the Section 106 obligations of both the USACE and FHWA. Please note that the USACE will define the APE based on their regulated area of jurisdiction, so it may be smaller than the APE defined by WSDOT.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project APE. HRA is currently preparing a work plan for the assessment, which we will invite you to review as soon as it is available.

We ask that you comment on the enclosed draft APE, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts. Should you have any comments regarding the draft APE, please provide a response by June 15, 2018 so we may discuss this undertaking and any identified areas of interest.

The Honorable Arnold Cooper  
May 16, 2018  
Page 3

Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,



Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosures: APE exhibit (3 sheets)

cc w/enc: Rhonda Foster, Squaxin Island Tribe Cultural Resources  
Andy Whitener, Squaxin Island Tribe Natural Resources  
Margaret Foley, Squaxin Island Tribe Planning  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



**Olympic Region**  
 Environmental & Hydraulic Services  
 5720 Capitol Blvd  
 Tumwater, WA 98501  
 P.O. Box 47440  
 Olympia, WA 98504-7440  
  
 360-570-6700 / Fax 360-357-2801  
 TTY: 1-800-833-6388  
 www.wsdot.wa.gov

May 16, 2018

The Honorable JoDe Goudy, Chairperson  
 Yakama Nation  
 P.O. Box 151  
 Toppenish, WA 98948

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
 Section 106 Consultation and Area of Potential Effects

Dear Chairperson Goudy:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in, or eligible for listing in, the National Register of Historic Places, we are initiating formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Area of Potential Effects (APE) required under Section 106 of the National Historic Preservation Act and 36 CFR 800.

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The Honorable JoDe Goudy  
 May 16, 2018  
 Page 2

bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.

- The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
- The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
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We ask that you comment on the enclosed draft APE, identify any traditional cultural properties that may exist within the project's APE, and identify any key tribal contacts. Should you have any comments regarding the draft APE, please provide a response by June 15, 2018 so we may discuss this undertaking and any identified areas of interest.

The Honorable JoDe Goudy  
May 16, 2018  
Page 3

Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,



Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosures: APE exhibit (3 sheets)

cc w/enc: Johnson Meninick, Yakama Nation Cultural Resources  
Phillip Rigdon, Yakama Nation Natural Resources  
Alvin Pinkham, Yakama Nation Planning  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



**Olympic Region**  
Environmental & Hydraulic Services  
5720 Capitol Blvd  
Tacoma, WA 98501  
P O Box 47440  
Olympia, WA 98504-7440

360-570-8700 / Fax 360-357-2601  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

June 29, 2018

The Honorable Farron McCloud, Chairperson  
Nisqually Tribe  
4820 She-Nah-Num Dr. SE  
Olympia, WA 98513

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
Section 106 Consultation and Cultural Resources Survey Methodology

Dear Chairperson McCloud:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Cultural Resources Methodology Memo.

As described in our initial Section 106 consultation letter sent on May 16, 2018, the subject project includes the following elements:

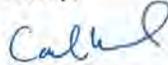
- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.
  - The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
  - The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.

The Honorable Farron McCloud  
June 29, 2018  
Page 2

- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project Area of Potential Effects (APE), which has been defined to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected. HRA has prepared the enclosed work plan for the assessment, which we are inviting you to review. Should you have any comments regarding the draft methodology memo, please provide a response by July 30, 2018. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

  
Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosure: Cultural Resources Methods Memo

cc: Jackie Wall, Nisqually Tribe Cultural Resources  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



**Olympic Region**  
 Environmental & Hydraulic Services  
 5720 Capitol Blvd.  
 Tumwater, WA 98501  
 P.O. Box 47440  
 Olympia, WA 98504-7440

360-570-6700 / Fax: 360-357-2601  
 TTY: 1-800-833-6388  
 www.wsdot.wa.gov

June 29, 2018

The Honorable Bill Sterud, Chairperson  
 Puyallup Tribe  
 3009 Portland Ave  
 Tacoma, WA 98404

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
 Section 106 Consultation and Cultural Resources Survey Methodology

Dear Chairperson Sterud:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Cultural Resources Methodology Memo.

As described in our initial Section 106 consultation letter sent on May 16, 2018, the subject project includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.
  - The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
  - The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.

The Honorable Bill Sterud  
 June 29, 2018  
 Page 2

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Sincerely,

*for* 

Jeff Sawyer  
 Environmental & Hydraulic Manager  
 Olympic Region

Enclosure: Cultural Resources Methods Memo

cc: Brandon Reynon, Puyallup Tribe Cultural Resources  
 Donna Turnipseed, JBLM Cultural Resources  
 Roger Kiers, WSDOT Cultural Resources  
 Bill Elliott, WSDOT Olympic Region Plans Engineer  
 Project File



**Olympic Region**  
Environmental & Hydraulic Services  
5720 Capitol Blvd  
Tumwater, WA 98501  
P.O. Box 47440  
Olympia, WA 98504-7440

360-570-6700 / Fax 360-357-2801  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

June 29, 2018

The Honorable Arnold Cooper, Chairperson  
Squaxin Island Tribe  
SE 10 Squaxin Lane  
Shelton, WA 98584

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
Section 106 Consultation and Cultural Resources Survey Methodology

Dear Chairperson Cooper:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Cultural Resources Methodology Memo.

As described in our initial Section 106 consultation letter sent on May 16, 2018, the subject project includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.
  - The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
  - The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.

The Honorable Arnold Cooper  
June 29, 2018  
Page 2

- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

Historical Research Associates, Inc. (HRA) will be completing the cultural resources assessment of the project Area of Potential Effects (APE), which has been defined to include areas that would be directly impacted by the above improvements, as well as areas that may be indirectly affected. HRA has prepared the enclosed work plan for the assessment, which we are inviting you to review. Should you have any comments regarding the draft methodology memo, please provide a response by July 30, 2018. Should you have any questions, please contact me at 360-570-6701, or by e-mail at SawyerJ@wsdot.wa.gov.

Sincerely,

Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosure: Cultural Resources Methods Memo

cc: Rhonda Foster, Squaxin Island Tribe Cultural Resources  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



June 29, 2018

The Honorable JoDe Goudy, Chairperson  
Yakama Nation  
P.O. Box 151  
Toppenish, WA 98948

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements,  
Section 106 Consultation and Cultural Resources Survey Methodology

Dear Chairperson Goudy:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is developing the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to comment on the draft Cultural Resources Methodology Memo.

As described in our initial Section 106 consultation letter sent on May 16, 2018, the subject project includes the following elements:

- At the Exit 119 interchange, the functionally obsolete existing bridge over I-5 at Steilacoom-DuPont Road would be replaced by two longer and higher bridges to accommodate the proposed additional I-5 lanes and minimum vertical clearances over I-5.
  - The new southern bridge at Exit 119A would provide I-5 interchange access to Clark Rd leading to the JBLM DuPont Gate.
  - The new northern bridge at Exit 119B would accommodate the realigned Steilacoom-DuPont Road crossings over I-5 and over the Sound Transit Railroad, physically separating the interchange traffic from train traffic and allowing removal of the existing at-grade railroad crossing.
- The interchange ramps would be reconstructed to connect to the new bridges over I-5.
- A new intersection would be constructed between Steilacoom-DuPont Road and Wilmington Drive.
- Two noise walls recommended for Lewis Main residential areas would be constructed pending an agreement for long term ownership and maintenance within the JBLM cantonment area.

**Olympic Region**  
Environmental & Hydraulic Services  
5720 Capitol Blvd  
Tumwater, WA 98501  
P.O. Box 47440  
Olympia, WA 98504-7440

360-570-6700 / Fax 360-357-2601  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

The Honorable JoDe Goudy  
June 29, 2018  
Page 2

- Supporting features such as stormwater management, illumination, traffic signals, Intelligent Transportation Systems, and signing would also be included in the project.

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Sincerely,

*for* Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosure: Cultural Resources Methods Memo

cc: Johnson Meninick, Yakama Nation Cultural Resources  
Donna Turnipseed, JBLM Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File



**Olympic Region**  
Environmental & Hydraulic Services  
5720 Capitol Blvd  
Tumwater, WA 98501  
P.O. Box 47440  
Olympia, WA 98504-7440

360-570-8700 / Fax 360-357-2601  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

June 17, 2019

The Honorable David Bean, Chair  
Puyallup Tribe  
3009 Portland Avenue  
Tacoma, WA 98404

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements, Cultural Resources Assessment and Determination of No Historic Properties Adversely Affected

Dear Chairperson Bean:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review the cultural resources assessment prepared for the undertaking.

The proposed improvements are within the southern portion of a larger project that proposes to make improvements along the I-5 corridor between the interchanges with Gravelly Lake Dr. (Exit 125) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. WSDOT has previously consulted with your office regarding the larger I-5 / JBLM Vicinity Improvement Project, and transmitted a cultural resources assessment for the project in early 2017. A project-specific Programmatic Agreement (PA), pursuant to Section 106 of the National Historic Preservation Act, was executed in May 2017, in part because the design for the southern portion of the project (the "South Study Area") had not been developed in sufficient detail to evaluate the effects of the undertaking on historic properties.

We re-initiated Section 106 consultation in May 2018 for the South Study Area (known as the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements) once the project footprint had been established for the Steilacoom-DuPont interchange. Historical Research Associates, Inc. (HRA) has completed the cultural resources assessment of the project area of potential effects (APE), in accordance with the survey methodology provided to your office in July 2018. The results of their assessment are document in a report dated June 12, 2019, which has been uploaded to WISAARD.

As documented in the report, the archaeological inventory identified seven archaeological resources previously recorded in the APE for the South Study Area, but three of those

The Honorable David Bean, Chair

June 17, 2019

Page 2

(45PI1310, 45PI1316, and the Bottling Plant) are outside of the extent of ground disturbance (EOD). Additionally, a Hudson's Bay Company (HBC) Trail Marker (45PI203) is located within the APE but outside of the EOD. It should be noted that 45PI1316 (Greene Park) is outside the extent of ground disturbance for the current project, but within the EOD for the North Study Area. Impacts to the site were addressed during previous consultation, in which WSDOT committed to constructing the proposed pedestrian path on fill in order to minimize ground disturbance and avoid adverse effects.

No new sites were identified during the current survey, but four previously recorded sites are within the extent of ground disturbance for the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements Project: 45PI769, 45PI1031, 45PI1393, and 45PI1394. All four of these sites were previously determined not eligible for listing in the NRHP. HRA revisited sites 45PI1031, 45PI1393, and 45PI1394 and expanded the site boundaries of 45PI1394, but found no evidence that would change the previous determinations of eligibility.

HRA evaluated 17 historic structures that had no previous determinations of eligibility on file with DAHP. HRA also re-evaluated the Fort Lewis Memorial Arboretum, which was previously determined not eligible for listing in the NRHP but required reevaluation to consider all potential criteria and criteria considerations, particularly as the resource neared the age of 50 years. As documented in the report and historic property inventories, none of these 18 resources are eligible for listing in the NRHP.

There are ten previously recorded NRHP-listed or eligible historic resources within the APE, including a portion of the NRHP-eligible Fort Lewis Garrison Historic District and seven architectural resources that contribute to that district and are individually eligible for NRHP-listing. The original road system and the rail system for Fort Lewis are also identified as contributing elements. The ten resources are discussed below.

The NRHP-eligible, WHR-listed **Fort Lewis Garrison Historic District** is primarily located outside the Project APE. While new construction and road-widening will take place within the district's northern boundary, these activities are located along the I-5 corridor that borders the district and will permanently impact only 3.8 acres of the 494-acre district. Planned activities, particularly the construction of new sound walls, are designed to minimize the effects of noise and traffic associated with neighboring I-5. As the district is presently bordered by I-5 in these areas, the addition of new amenities designed to minimize the effects of traffic will not diminish the significance or integrity of the Fort Lewis Garrison Historic District.

Because views of I-5 are not character-defining, the Project will not alter, directly or indirectly, any of the characteristics that qualify the Garrison Historic District for the National Register in a manner that would diminish its integrity of location, setting, design, materials, workmanship, feeling, and association. Therefore, while the Project as proposed will alter the historic district, the effects will not be adverse.

**Building 4170/71** is a warehouse constructed in 1917 in an early industrial area of Camp Lewis. In spite of diminished integrity, the building is significant as a contributing resource to the Garrison Historic District and for its association with World War I and Camp Lewis. It was recently found eligible for independent listing in the NRHP. The building sits at the southern edge of the APE. Between the building and I-5 are roadways, a parking lot, and a portion of the Memorial Arboretum, which screens the freeway from view. While the construction of an overpass and retaining walls may alter the distant view of I-5 from this building, these alterations will not alter, directly or indirectly, any of the characteristics of Building 4170/71 that qualify the property for inclusion in the National Register, as the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects. Therefore, the Project as proposed will not adversely affect Building 4170/71.

**Building 4176** (Quartermaster's Gasoline Filling Station) was completed in 1937 on the foundations of a former bus station. The building sits south of the Memorial Arboretum and has only a modest view of the freeway. As it is no longer used, and its gas pumps have been removed for restoration and have not yet been reinstalled, and it is located along a degraded roadway that is no longer in regular use, the gas station, while significant for its architectural character under NRHP Criterion C, and potentially eligible under Criterion A for its association with historic events, has already lost some integrity of setting, feeling, and association. In spite of this loss of integrity, the station was recently found eligible for independent listing in the NRHP.

Visual simulations suggest that visual access to I-5 from Building 4176 will be moderately affected by the addition of visual barriers, particularly at the Exit 119 interchange. While new construction will add visual elements to the building's viewshed, partially obscuring the building's view of I-5, these effects can potentially be considered beneficial, as they will limit the building's view of modern freeway traffic. The visual effect is minimized by Memorial Arboretum. During the months in which the trees are full, visual access to the freeway is minimal from Building 4176. The effect will be greater when the trees are bare during the winter months, but views of the freeway are not character-defining features that qualify the building for listing, and wall treatment options may further minimize the intrusion. The Project will not alter, directly or indirectly, any of the characteristics of Building 4176 that qualify the property for inclusion in the National Register, as the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects to its viewshed. Therefore, the Project as proposed will not adversely affect Building 4176.

**Building 4201** (the American National Red Cross Field House) was constructed in 1941. Designed in the Colonial Revival style, the building features a two-story central mass with a grand portico supported by square columns on the north elevation. The building faces north toward I-5 at the corner of Lewis Dr. and Pendleton Ave. and is significant for its architectural character under NRHP Criterion C. It may also be eligible under Criterion A

for its association with the work of the Red Cross during World War II. It was recently found eligible for independent listing in the NRHP.

The Project will have no direct effects on Building 4201, as the building is located approximately 475 ft. south of the area of ground disturbance. Visual simulations suggest that visual access to I-5 from Building 4201 will be affected by the addition of visual barriers, particularly between the Exit 119 interchange and the Pendleton Ave. underpass. A new security wall rising from 3.5-ft to 8-ft will be constructed atop a retaining wall that rises from 0 to 20 ft (a combined 28 ft at its highest point at the Pendleton Ave. overpass) along the barrier between the base and I-5. The Pendleton Ave. underpass will be reconstructed within view of this building. While new construction will add new visual elements to the viewshed, partially obscuring the building's view of I-5 by adding a tall, concrete wall along a portion of the north end of JBLM and the Garrison Historic District, the Project will not disrupt traditional transportation patterns. Furthermore, treatment options under consideration for the wall would minimize the visual intrusion. In spite of indirect effects to its viewshed, the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association, and will not be adversely affected.

**Building 4274** (the Red Cross Hostess House) is one of the most significant buildings on JBLM. It served originally as a recreational facility for convalescing soldiers. Significant architecturally as a World War I-era building built by the Red Cross and U.S. Army during the first wave of construction at Camp Lewis, the building is also significant for its associations with World War I and Camp Lewis. It was recently found eligible for independent listing in the NRHP.

The building sits near the northern border of the Fort Lewis Garrison Historic District. Its primary façade faces northeast toward the base and a portion of the freeway. It originally faced Idaho St. and a building across Idaho St., Building 502, which was removed when I-5 was constructed. As planned, the Project will widen the roadway along the border of the district and along existing roadways that presently exist between the Hostess House and the freeway. A sound wall is being constructed north of the Hostess House. While the road widening will encroach slightly on the boundary between the Hostess House and the freeway, and the proposed sound wall will add visual intrusions into the viewshed, the Project will not diminish the significance or integrity of the Hostess House and will not adversely affect the building.

**Building 4320** (the Red Shield Inn), built by the Salvation Army, was a meeting place and inn for the families and friends of nearby soldiers. Elaborately ornamented in the Swiss Chalet style, the Red Shield Inn, like the Red Cross Hostess House, is one of the most architecturally significant resources associated with the first wave of development at Camp Lewis. It now serves as the Fort Lewis Military Museum and was listed in the NRHP in 1979.

The Honorable David Bean, Chair  
June 17, 2019  
Page 5

The proposed Project avoids creating retaining walls, noise walls, or other visual barriers between the freeway traffic and the building. The building, separated from I-5 traffic by a railroad, will not be affected by proposed cutting and filling between the freeway and the railroad line. The nearest proposed retaining wall, located to the southwest of the property, will not screen the building (which faces south toward the freeway) from views of the freeway and will not screen freeway traffic from views of the Red Shield Inn. It is possible that the building will lose some visual access to the base across I-5, but the freeway has long provided a wide barrier between Building 4320 and the base south of I-5. The building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects, and will not be adversely affected by the project.

**Building 5301** (NCO Quarters Garage) is a simple rectangular, wood-clad building with garage bays. It was constructed in 1948 and faces south toward Building 5302 and away from I-5. The building derives its significance from its association with housing on base and not with landscape elements like I-5 that exist outside the base's borders. It was recently found eligible for independent listing in the NRHP.

While the building is located roughly 200 ft. south of I-5, the Project will not substantially change views to or from the buildings or increase noise. The Project will not alter, directly or indirectly, any of the characteristics that qualify the property for inclusion in the NRHP.

**Building 5302** (NCO Quarters) was constructed as housing for noncommissioned officers in 1939. The building's façade faces south, away from I-5. As with the garage above, the building is located roughly 200 ft. to the south of I-5 and is significant for its architectural character and for its association with housing activities on base in the 1930s. It is not significant for its association with I-5, which it predates. It was recently found eligible for independent listing in the NRHP.

As with other buildings on base, the Project will not alter, directly or indirectly, any of the characteristics that qualify the property for inclusion in the NRHP. Visual simulations suggest that a proposed 12 to 16-ft noise wall along I-5 north of Building 5302, which faces southwest, will affect the viewshed from the side and rear of Building 5302, limiting visual access to I-5 and freeway traffic. Such effects may be considered a benefit, and views to and from the freeway are not considered a character-defining feature of the building that qualify it for listing. Given that the building will retain integrity of location, setting, design, materials, workmanship, feeling, and association in spite of minor indirect effects, the Project as proposed will not adversely affect Building 5302.

The **Camp Lewis Railroad** was documented in an HPI in WISAARD in October 2018. It is defined, according to the HPI, as a spur line from the Northern Pacific Railroad that served Camp Lewis and contributes to the Garrison Historic District. The rail line, which is partially within the APE, was determined eligible under Criterion A in 2018. While the rail line is primarily located within the Garrison Historic District, the east leg of a railroad wye

The Honorable David Bean, Chair  
June 17, 2019  
Page 6

runs along the edge of the project area of ground disturbance before turning southeast to join the main rail line. The railroad wye is no longer in use and has been terminated (ties removed) and a barricade erected approximately 5 m south of the fence line that marks the WSDOT ROW at I-5. The construction of I-5 terminated the wye, although it likely had not been in use since the end of World War II.

The Project will have no adverse effect on the Camp Lewis Railroad, as the line is primarily located near the southern border of the Garrison Historic District, approximately 750 ft. south of the area of ground disturbance. The abandoned wye that curves toward I-5 within the APE is in an area previously considered for use as a stormwater facility. However, that plan has been abandoned and no stormwater facilities will be located in this area; therefore, the Project will avoid the resource.

The **Fort Lewis Road System** is identified in the Garrison Historic District nomination as a contributing resource to the district, with many arterials dating to 1917. The nomination calls out a number of specific roads. The Project will not directly affect the majority of contributing roadways in the district, as they are located fully or partially outside the APE. Those within or partially within the APE include Pendleton Ave., West Way, Lewis Dr., 9th Division Rd., and the northern terminus of Idaho Ave. Of those within the APE, only Pendleton Ave., and the northern terminus of Idaho Ave. are within the area of direct effects. Pendleton Ave. will retain its original route under I-5, although the overpass will be expanded above it. Idaho Ave. will continue to terminate at its present location at the intersection of Hospital Ave. Existing transportation routes will be maintained, and the Project will not directly affect existing transportation patterns or access routes to significant elements of the district. Given that the Project will not alter, directly or indirectly, any of the characteristics of the Garrison Historic District's roadways that qualify them for inclusion in the National Register as contributing features to the district, the Project as proposed will not adversely affect the Camp Lewis Road System.

In summary, while the Project as proposed will encroach on the boundaries of the eligible district, all of the encroachment will occur along the northwestern border, which has evolved over recent decades and no longer retains its character from the district's period of significance. The Project will also lead to indirect auditory and visual effects and diminish the physical land barriers between I-5 and significant resources including the NCO quarters and garage, the Hostess House, and the Red Shield Inn. Due to the minimal amount of land affected, and the Project's ability to maintain, if not improve, connectivity between I-5 and JBLM while minimizing auditory and visual effects, the Project will in no way diminish the significance or integrity of these historic properties.

Based on the results of the cultural resources assessment, WSDOT concludes that no historic properties will be adversely affected by the I-5 / Mounts Rd. to Stellacoom-DuPont Rd. Corridor Improvements Project. We invite your review of the cultural resources assessment, our determinations of eligibility, and our determination of No Adverse Effect.

The Honorable David Bean, Chair  
June 17, 2019  
Page 7

If you have questions or comments regarding the proposed project, you may contact me by phone at 360-570-6638, or by email at [kierstro@wsdot.wa.gov](mailto:kierstro@wsdot.wa.gov).

Sincerely,



Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

JBS:rk:pd:ip

Enclosure: *Cultural Resources Inventory for the I-5 JBLM Vicinity Congestion Relief Project – South Study Area, Pierce County, Washington*, prepared by HRA, dated June 12, 2019 (via WISAARD)

cc: Brandon Reynon, Puyallup Tribe Cultural Resources  
Russ Ladley, Puyallup Tribe Natural Resources  
Andrew Strobel, Puyallup Tribe Planning  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, WSDOT Olympic Region Plans Engineer  
Project File

**From:** [Shaun Dinubilo](#)  
**To:** [Piller, Inge](#); [Kiers, Roger](#)  
**Subject:** RE: I5 JBLM Pendleton to SHPO 122319, I-5 JBLM Pendleton to Squaxin Island Tribe  
**Date:** Tuesday, January 21, 2020 9:20:36 AM

---

Hi Inge and Roger,

Thank you for contacting the Squaxin Island Tribe Cultural Resources Department regarding the above listed project for our review and comment. After reviewing the letter and attachments, we concur with the No Adverse Effect to Historic Properties for this project.

Please let me know if you have any questions.

Shaun Dinubilo  
Archaeologist  
CR Department  
Squaxin Island Tribe  
200 S.E. Billy Frank Jr. Way  
Shelton, WA 98584  
Office Phone: 360-432-3998  
Cell Phone: 360-870-6324  
Email: [sdinubilo@squaxin.us](mailto:sdinubilo@squaxin.us)

-----Original Message-----

From: Piller, Inge [<mailto:PillerI@wsdot.wa.gov>]  
Sent: Thursday, January 16, 2020 12:12 PM  
To: Shaun Dinubilo <[sdinubilo@squaxin.us](mailto:sdinubilo@squaxin.us)>  
Subject: I5 JBLM Pendleton to SHPO 122319, I-5 JBLM Pendleton to Squaxin Island Tribe

Inge Piller  
Secretary Senior  
Olympic Region, Environmental & Hydraulic Services Washington State Department of Transportation  
360-570-6700  
[pilleri@wsdot.wa.gov](mailto:pilleri@wsdot.wa.gov)



Olympic Region  
Environmental & Hydraulic Services  
5720 Capitol Blvd, Tumwater, WA 98501  
P.O. Box 47440  
Olympia, WA 98504-7440  
360-570-6700 / FAX: 360-357-2601  
TTY: 1-800-833-6388  
www.wsdot.wa.gov

July 29, 2020

The Honorable Ken Choke, Chairman  
Nisqually Tribe  
4820 She-Nah-Num Dr. SE  
Olympia, WA 98513

RE: I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements, Section 106  
Consultation and Cultural Resources Assessment of Proposed Project Revisions at  
Mounts Road

Dear Chairman Choke:

The Washington State Department of Transportation (WSDOT), in cooperation with the Federal Highway Administration (FHWA), is continuing to develop the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements project to address a transportation need in Pierce County. In order to ensure that WSDOT takes into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places (NRHP), we are continuing formal Section 106 consultation pursuant to 36 CFR § 800.2(c)(4), under delegated authority from FHWA. We are inviting you to review the proposed revisions to the Build Alternative at the I-5/Mounts Road Interchange, and request your review of our determination that the proposed revisions will have no effect on historic properties.

The proposed Build Alternative revisions at the Mounts Road Interchange are at the southern end of the South Study Area of the larger project that proposes to make improvements along the I-5 corridor between the interchanges with Gravelly Lake Dr. (Exit 125) and Mounts Road (Exit 116) to relieve chronic traffic congestion and improve person and freight mobility. The cultural resources assessment of the project area of potential effects (APE) was documented in a report by Historical Research Associates dated June 12, 2019, which we transmitted on June 17, 2019. We conducted additional consultation in January 2020 when project revisions were proposed at Pendleton Avenue on JBLM.

Since our last consultation, the Olympic Region Traffic Office has requested that a new traffic signal be added to the project within the Mounts Road Interchange. The location of this traffic signal is just outside the previously evaluated extent of ground disturbance for the project (Figure 1 of the enclosed letter report). The work will also include moving the existing signal controller cabinets for the southbound ramp meter system, which currently block the line of sight for drivers at the end of the southbound off-ramp (Figure 2 of the enclosed letter report).

The Honorable Ken Choke  
July 29, 2020  
Page 2

As documented in the enclosed letter report, WSDOT has reviewed the proposed work in order to take into account the effects of these revisions on properties listed in or eligible for listing in the NRHP. Based on this review, WSDOT concludes that no historic properties will be affected by the proposed revisions to the I-5 / Mounts Rd. to Steilacoom-DuPont Rd. Corridor Improvements Project.

We invite your review of the enclosed cultural resources assessment. Should you have any comments or questions about this project, you may contact me at 360-570-6701 or by e-mail at sawyerj@wsdot.wa.gov.

Sincerely,

Jeff Sawyer Digitally signed by Jeff Sawyer  
Date: 2020.07.29 13:43:09  
-07'00

Jeff Sawyer  
Environmental & Hydraulic Manager  
Olympic Region

Enclosure: Cultural Resources Survey letter report, dated May 19, 2020

cc: Brad Beach, Nisqually Tribe Cultural Resources  
Roger Kiers, WSDOT Cultural Resources  
Bill Elliott, Project Manager  
Project File

SF 8045

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# F PUBLIC OUTREACH

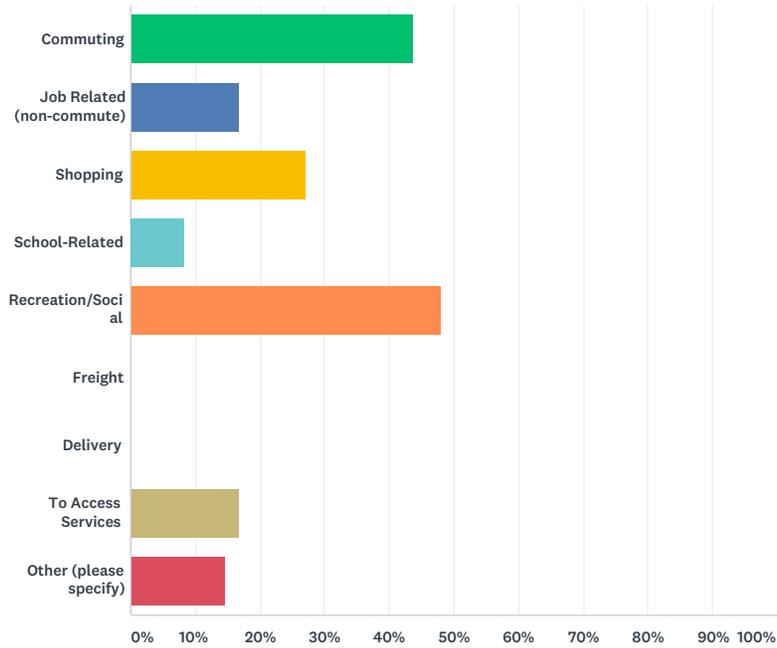
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An open house was held on April 11th, 2018, which provided an in-depth opportunity for broad community engagement. Over 120 people attended the open house, and approximately 50 comment forms were received. Comments provided feedback regarding the use of and access to the current interchange, and identification of specific interests and concerns relating to the construction and operation of the new interchange. A compilation of all comments received at the open house follows.

I-5 Mounts Road to Thorne Lane Corridor Improvements Project

Q1 How do you mainly use the I-5 Steilacoom-DuPont Interchange  
(please choose up to two responses)

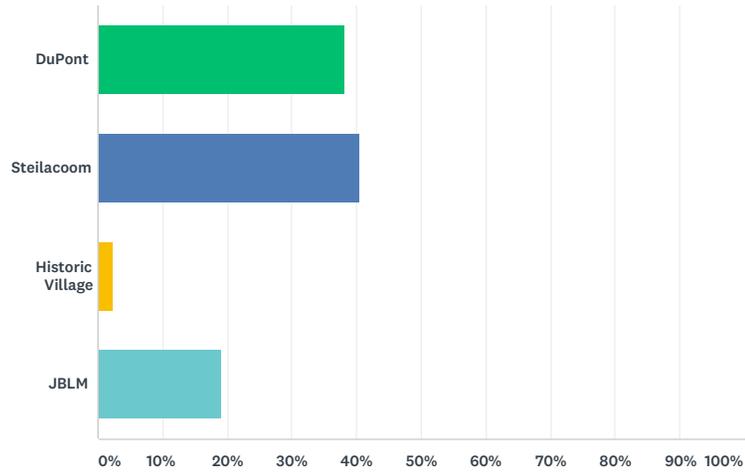
Answered: 48 Skipped: 1



ANSWER CHOICES	RESPONSES	Count
Commuting	43.75%	21
Job Related (non-commute)	16.67%	8
Shopping	27.08%	13
School-Related	8.33%	4
Recreation/Social	47.92%	23
Freight	0.00%	0
Delivery	0.00%	0
To Access Services	16.67%	8
Other (please specify)	14.58%	7
Total Respondents: 48		

Q2 What area do you mainly use this interchange to access? (please choose one option)

Answered: 42 Skipped: 7

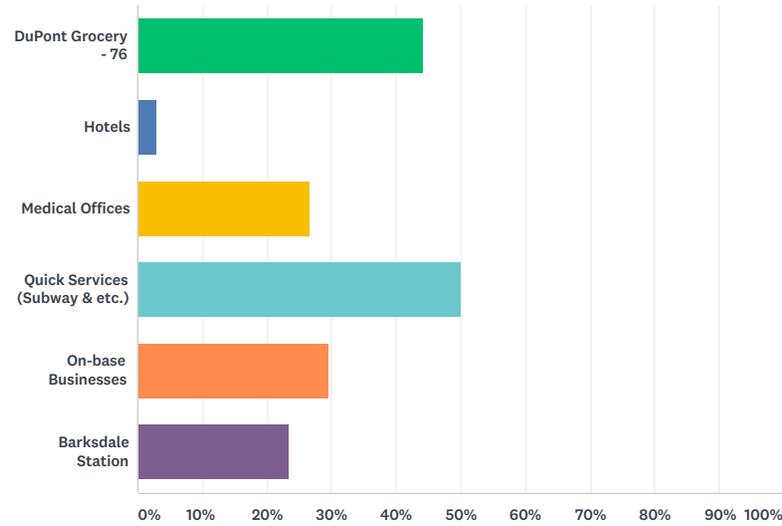


ANSWER CHOICES	RESPONSES	
DuPont	38.10%	16
Steilacoom	40.48%	17
Historic Village	2.38%	1
JBLM	19.05%	8
TOTAL		42

I-5 Mounts Road to Thorne Lane Corridor Improvements Project

Q3 Which businesses do you frequently visit near this interchange?  
(please choose all that apply)

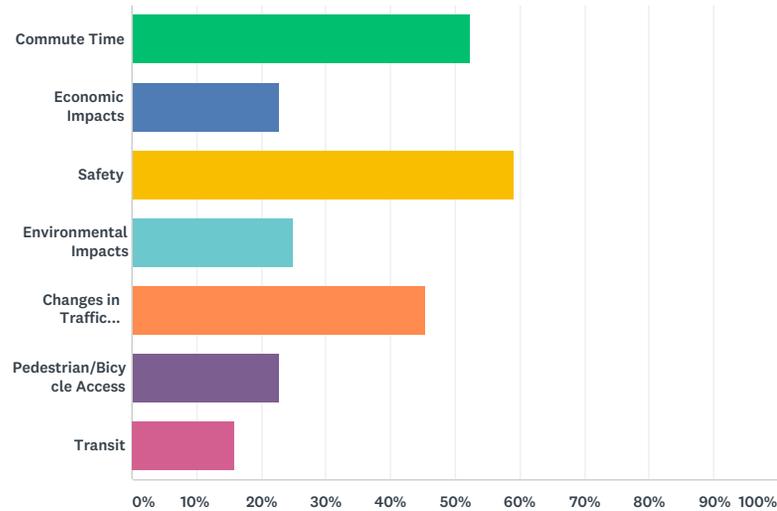
Answered: 34 Skipped: 15



ANSWER CHOICES	RESPONSES	
DuPont Grocery - 76	44.12%	15
Hotels	2.94%	1
Medical Offices	26.47%	9
Quick Services (Subway & etc.)	50.00%	17
On-base Businesses	29.41%	10
Barksdale Station	23.53%	8
Total Respondents: 34		

Q4 Please note any areas of particular interest or concern regarding the proposed new interchange (please choose all that apply).

Answered: 44 Skipped: 5

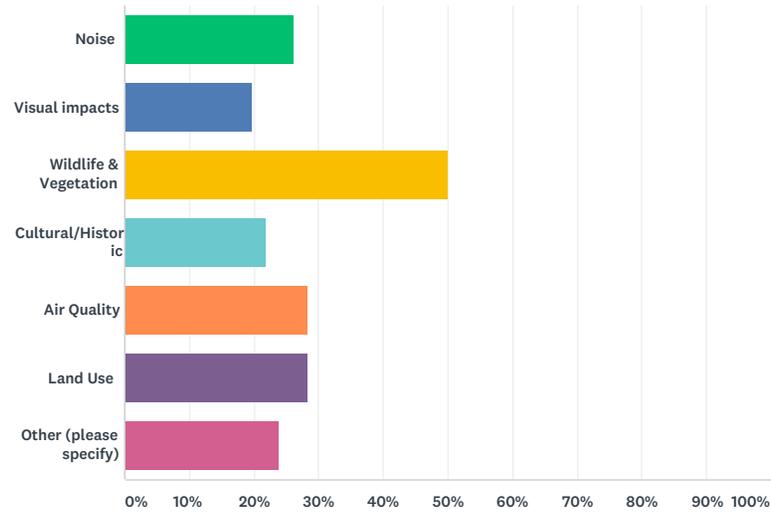


ANSWER CHOICES	RESPONSES	
Commute Time	52.27%	23
Economic Impacts	22.73%	10
Safety	59.09%	26
Environmental Impacts	25.00%	11
Changes in Traffic Patterns	45.45%	20
Pedestrian/Bicycle Access	22.73%	10
Transit	15.91%	7
Total Respondents: 44		

I-5 Mounts Road to Thorne Lane Corridor Improvements Project

**Q5 The potential environmental impacts for this project will be analyzed. Please note any areas of particular interest or concern (please choose all that apply).**

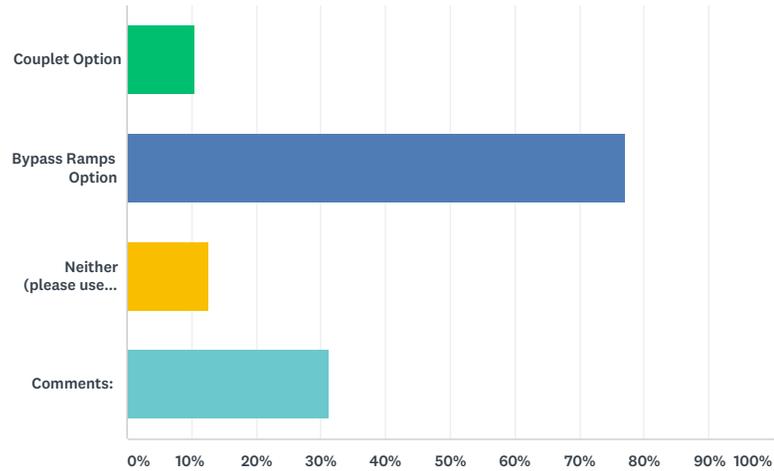
Answered: 46 Skipped: 3



ANSWER CHOICES	RESPONSES	
Noise	26.09%	12
Visual impacts	19.57%	9
Wildlife & Vegetation	50.00%	23
Cultural/Historic	21.74%	10
Air Quality	28.26%	13
Land Use	28.26%	13
Other (please specify)	23.91%	11
<b>Total Respondents: 46</b>		

Q6 Based on what you have learned by reviewing the on-line materials, which ramp scenario do you prefer for the Exit 119 interchange?

Answered: 48 Skipped: 1



ANSWER CHOICES	RESPONSES	
Couplet Option	10.42%	5
Bypass Ramps Option	77.08%	37
Neither (please use Comment Box to elaborate)	12.50%	6
Comments:	31.25%	15
Total Respondents: 48		

### Q7 What do you like about this project?

Answered: 40 Skipped: 9

#	RESPONSES	DATE
1	Removes conflict with rail road. And it the bypass option adds capacity.	4/25/2018 2:01 PM
2	the attempt to smooth traffic around dupont shops	4/24/2018 7:57 AM
3	It's addressing the JBLM traffic issue, which is definitely needed.	4/23/2018 3:12 PM
4	I like that this project will make the rail crossings above grade.	4/23/2018 9:13 AM
5	I like that it will help with the congestion in the area	4/23/2018 7:24 AM
6	Greater capacity in exit ramps.	4/23/2018 4:23 AM
7	Glad there finally addressing the problem	4/22/2018 11:06 PM
8	nothing	4/22/2018 5:08 PM
9	Maybe it will help with I-5 congestion...	4/21/2018 9:28 PM
10	Moving traffic faster around blockages. Not so much traffic in Lakewood to get to I-5 exit.	4/21/2018 7:13 AM
11	Build roads! Ease congestion	4/20/2018 11:07 PM
12	I like that Steilacoom Dupont Rd will be the top of the "T" instersection at Wilmington.	4/20/2018 9:01 PM
13	Expansion to accommodate the traffic. I'm looking forward to commute times being more predictable.	4/20/2018 8:47 PM
14	Improve traffic flow	4/20/2018 8:00 PM
15	should keep traffic moving and avoid railroad crossing	4/20/2018 7:03 PM
16	I like the bypass ramps option best.	4/20/2018 6:48 PM
17	Elevated bridge over railroad tracks.	4/20/2018 6:22 PM
18	Anything will help	4/20/2018 6:19 PM
19	It will separate the traffic for JBLM and traffic for hotels, down Dupont-Steilacoom Rd. Completely removes the train tracks from the equation.	4/20/2018 6:05 PM
20	relieves congestion	4/20/2018 4:25 PM
21	get it done	4/20/2018 2:51 PM
22	RR bypass	4/20/2018 12:59 PM
23	Separating base traffic from traffic going to steilacoom. No more train tracks.	4/20/2018 12:08 PM
24	Hopefully it will help traffic flow	4/20/2018 11:55 AM
25	Helping to ease congestion	4/20/2018 11:32 AM
26	Alternative ways to get onto and off I5	4/20/2018 11:18 AM
27	Hopefully, congestion around Ft. Lewis will be reduced, particularly on Sunday afternoons.	4/20/2018 11:18 AM
28	Elimination of on-grade railroad crossing.	4/20/2018 11:12 AM
29	I like that you want to improve traffic issues around the base.	4/20/2018 11:08 AM
30	Na	4/20/2018 11:01 AM
31	I'm not sure how helpful these changes will be since most traffic southbound and northbound goes past JBLM main gate and Lakewood exits	4/20/2018 10:55 AM
32	Seems to improve traffic flow and safety.	4/20/2018 10:46 AM

## I-5 Mounts Road to Thorne Lane Corridor Improvements Project

33	Removes RR crossing, removes inefficient left turn off of Steilacoom-dupont road and the quick right onto I-5S.	4/18/2018 9:48 AM
34	Increased space for exiting and entering JBLM Direct enhanced access from Dupont Steilacoom Rd to I-5 South will reduce thru traffic on Friday afternoons using Center Dr as a "short cut" which currently creates long traffic jams impacting local access/ safety.	4/17/2018 8:07 AM
35	Anything that will help separate the civilians from the military traffic will improve travel times. I take that exit to go through Steilacoom in an effort to avoid traffic on I-5. Military gate traffic is what slows me down the most.	4/13/2018 12:48 PM
36	I like the change connecting Steilacoom-DuPont Rd to I-5, for traffic flow and safety regarding train crossings. And I like the idea of a pedestrian/cyclist path alongside I-5, which I'd like to come all the way to Mounts Road, giving DuPont residents in this area a safe pedestrian connection to the rest of DuPont.	4/12/2018 9:46 PM
37	Simplicity of use	4/12/2018 1:39 PM
38	I like that we are getting more lanes on I5 and that the new bridges will go over the railroad tracks and avoid possible collisions with trains.	4/12/2018 11:29 AM
39	Limits the traffic in and near historic village in DuPont, removes the at-grade rail crossing, and helps with traffic issues at the current interchange.	4/12/2018 8:18 AM
40	Help traffic flow more smoothly during rush hour, safer to go over train tracks	4/11/2018 11:14 PM

I-5 Mounts Road to Thorne Lane Corridor Improvements Project

Q8 What don't you like about this project?

Answered: 35 Skipped: 14

#	RESPONSES	DATE
1	Wish construction could start sooner.	4/25/2018 2:01 PM
2	doesn't solve the problem(s) - need straight approaches, dedicated uses, little or no stops, it'll slow commercial traffic, and doesn't create new space to collect & disburse base traffic	4/24/2018 7:57 AM
3	It seems like more of the traffic happens north of DuPont, around the Thorne/Gravelly lake area. Once your at 119 things have usually thinned out, so I'm not sure this is the exact source of the problem.	4/23/2018 3:12 PM
4	I don't like that both proposals include lights on both sides of the freeway. The lights at that intersection create backups on base. I'd prefer roundabouts or diamond interchanges.	4/23/2018 9:13 AM
5	The long time it takes to finish the project is what I don't like.	4/23/2018 7:24 AM
6	Three stoplights to get to the North Fort and DuPont-Steilacoom Road.	4/23/2018 4:23 AM
7	Environmental impact	4/22/2018 11:06 PM
8	lack of overall improvement of I-5 travel	4/22/2018 5:08 PM
9	Takes a relatively simple exit and greatly complicates it.	4/21/2018 9:28 PM
10	How long will traffic be tied up to implement the changes?	4/21/2018 7:13 AM
11	Too slow	4/20/2018 11:07 PM
12	No roundabouts	4/20/2018 9:01 PM
13	The inevitable construction congestion that we'll have to endure until it's done.	4/20/2018 8:47 PM
14	nothing	4/20/2018 7:03 PM
15	No comment	4/20/2018 6:22 PM
16	It does not look like any additional thru lanes are planned. If you have ever driven this portion of I 5. All those exiting are negatively impacting the entire thru traffic for miles before those exits. Give them there own lane a mile before the actual exit and keep separated from the I5 traffic.	4/20/2018 6:19 PM
17	May be a little confusing.	4/20/2018 6:05 PM
18	taking toooo long	4/20/2018 2:51 PM
19	timing	4/20/2018 12:59 PM
20	The construction part	4/20/2018 11:55 AM
21	Should have been done years ago	4/20/2018 11:32 AM
22	impact on traffic during construction	4/20/2018 11:18 AM
23	Can there be fewer traffic lights?	4/20/2018 11:18 AM
24	I do not like that WSDOT appears to want to control traffic by stopping, controlling, or impairing its ability to flow freely. Take a look at the I-5 / I-512 intersection. It has constant stopped traffic on the freeway, ramps, and roadways. It is one of the worst intersections I have ever seen, and it does not take a genius to figure out why. It is a VERY dangerous section of roadway, I have witnessed many accidents in this location over the years. It is a very poorly designed intersection. And the intersections leading to and from it are also very poorly designed. Instead of being designed to encourage flow, they are designed to contain and hold parked and stopped volumes of traffic. The reason there is so much congestion is that the flow if traffic has several lights and impairments that force it to stop and go in all directions. Anytime you force a vehicle to stop, you are impairing traffic.	4/20/2018 11:08 AM
25	Na	4/20/2018 11:01 AM

## I-5 Mounts Road to Thorne Lane Corridor Improvements Project

26	No options for getting between DuPont and Lacey in the event I-5 is closed or blocked. By the time you build these proposed congestion will be worse. I don't see these options as eliminating or reducing the congestion between Olympia and Lakewood	4/20/2018 10:55 AM
27	The couplet option. Also, how long it will take to complete this project.	4/20/2018 10:46 AM
28	Adds extra intersection from Steilacoom-dupont road to I-5S	4/18/2018 9:48 AM
29	It can't happen sooner...	4/17/2018 8:07 AM
30	I just hope you do the construction at night.	4/13/2018 12:48 PM
31	The only thing I don't like is the slow timeline to complete the project and the traffic impact during construction.	4/12/2018 9:46 PM
32	Construction duration	4/12/2018 1:39 PM
33	I don't like auxiliary lanes or dueling entrances and exits. Going south, the merging and auxiliary lane are already too short at the 118 entrance and it's going to be worse merging over two lanes when going south. There's absolutely no resolution to the problem or thought about the volume of cars getting on and off the freeway on those short stupid auxiliary lanes between 118 and 119, which is a big problem. The ramps are so close together and it's causing problems that those timed lights are not solving. We need some separation from cars entering and exiting I5. The 118 ramp commuters need to be included in the bypass lanes that stretch out and merge with 119 entrances onto I5. And a bypass that is a separate exit to 119 from 118 bridge north needs included. The reverse is true for the exit south to 118, it needs added to the 119 bypass.	4/12/2018 11:29 AM
34	I would not support the couplet option as it would make it harder (more time) for residents and visitors to access the historic village area and shopping if they have to wait for numerous traffic stops. In addition, if the couplet were used I believe that more people would use exit 118 and drive through downtown DuPont to get to the Exit 119 area (if travelling northbound from Lacey area)	4/12/2018 8:18 AM
35	Don't like how it will impact traffic in DuPont and freeway but feel it will make it better in long run	4/11/2018 11:14 PM

Q9 Is there anything about the proposal you would like to see changed?

Answered: 31 Skipped: 18

#	RESPONSES	DATE
1	Integration of light rail/mass transit dedicated access/station. This is lipstick on a pig instead of a long-term comprehensive solution & therefore a tax sink.	4/24/2018 7:57 AM
2	Maybe a clearer presentation of how traffic will be affected?	4/23/2018 3:12 PM
3	Yes, as mentioned above. I'd prefer to see roundabouts or diamond interchanges rather than lights on both sides of the freeway.	4/23/2018 9:13 AM
4	no	4/23/2018 7:24 AM
5	No	4/22/2018 11:06 PM
6	nothing specifically	4/22/2018 5:08 PM
7	Simple is better, and less expensive.	4/21/2018 9:28 PM
8	No.	4/21/2018 7:13 AM
9	No	4/20/2018 11:07 PM
10	education about bicycle access and usage	4/20/2018 9:13 PM
11	Maybe use a roundabout instead of signal at Wilmington and Barksdale?	4/20/2018 9:01 PM
12	So far, things look like it could really improve trafficin the area.	4/20/2018 8:47 PM
13	no	4/20/2018 7:03 PM
14	No comment	4/20/2018 6:22 PM
15	More lanes added for thru traffic and a divided ramp way before the exit.	4/20/2018 6:19 PM
16	do it faster	4/20/2018 12:59 PM
17	Hopefully there is a plan for where the old road was	4/20/2018 12:08 PM
18	No	4/20/2018 11:55 AM
19	Not at this time	4/20/2018 11:32 AM
20	Adding more general purpose lanes to I5	4/20/2018 11:31 AM
21	I wonder whether the design deals well with traffic exiting the base.	4/20/2018 11:18 AM
22	Reduce the use of traffic controlling lights to NOTHING! Revise roads and intersections leading to and from the freeway to use traffic circles. Encourage traffic flow instead of discouraging it.	4/20/2018 11:08 AM
23	No	4/20/2018 11:01 AM
24	Maps for changes on I-5 South and North bound through Lakewood and JBLM main gate. Options between DuPont and Lacey when I-5 is closed or blocked.	4/20/2018 10:55 AM
25	Speed up all the reviews. Eliminate the couplet option.	4/20/2018 10:46 AM
26	Use roundabouts instead of traffic lights	4/18/2018 9:48 AM
27	An additional wildlife overpass (see above).	4/13/2018 12:48 PM
28	I would like the pedestrian path going south as far as Mounts Road if it's not already planned that far.	4/12/2018 9:46 PM
29	Not really	4/12/2018 1:39 PM
30	Yes, make exits separate from entrances to I5: Northbound, make a separating bypass exit to 119 before exit 118; northbound from 118 make an entrance bypass to merge with traffic entering I5 at 119; Southbound expand the 119 bypass to include a non-stop exit to 118. Southbound create a separate merge onto I5 from 119.	4/12/2018 11:29 AM

I-5 Mounts Road to Thorne Lane Corridor Improvements Project

31	Only if it provided better walking/running and biking lanes.	4/12/2018 8:18 AM
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### Q10 What else would you like us to know?

Answered: 22 Skipped: 27

#	RESPONSES	DATE
1	JBLM should be doing more to get more end-users to live on base. Get people out of their single occupant cars.	4/24/2018 7:57 AM
2	Please keep the community informed about timing - if things can be expedited that would be wonderful. If things are delayed, please honestly tell us why.	4/23/2018 9:13 AM
3	no	4/23/2018 7:24 AM
4	nothing	4/22/2018 5:08 PM
5	Why is the 4th general purpose lane going to be changed to an HOV lane in the future. End result is no improvement on I-5 for most of the drivers. Build an additional HOV lane after the 4th general purpose lane.	4/21/2018 9:28 PM
6	Getting the traffic to slow down, to move safely threw the area.	4/21/2018 7:13 AM
7	Nothing	4/20/2018 11:07 PM
8	If someone exits 119B heading towards Barksdale, will the Wilmington/Steil intersection have a protected left? I think a flashing yellow that turns green if a car waits there long enough is a good idea.	4/20/2018 9:01 PM
9	can't think of anything	4/20/2018 7:03 PM
10	No comment	4/20/2018 6:22 PM
11	I do not think you should put the exits so close to the jblm gate.	4/20/2018 6:19 PM
12	Nothing	4/20/2018 11:55 AM
13	N/a	4/20/2018 11:32 AM
14	Approximately how long will the construction take and how will it proceed....all at once? stages?	4/20/2018 11:18 AM
15	Additionally, the traffic safety board in our area need to make an effort to educate drivers to be better informed of how to use the freeway. Fast lanes are not Cruise Control lanes, slower traffic should keep to the right. We have some of the worst drivers in the world here in America, because we encourage poor driving habits and provide poor traffic management that encourages people to drive poorly, weaving in and out of traffic lanes, to make good time.	4/20/2018 11:08 AM
16	Na	4/20/2018 11:01 AM
17	That's it	4/20/2018 10:46 AM
18	Make sure there's enough space (i.e. double right turn lanes) for JBLM traffic to line up. Currently, there's stopped traffic in the right lane every morning from people waiting to get into the base. It's really dangerous to have stopped traffic in one lane and 60mph moving traffic in the next.	4/18/2018 9:48 AM
19	Traffic leaving JBLM wanting to enter I-5 N - that lane should be separated somehow to prevent it from blocking 119B's access to Dupont-Steilacoom Rd. Lane lines will likely not be enough to enforce. Plus if bypass option is used, this lane barrier will prevent "drive thrus" of folks trying to getting ahead like what happens often at the 56th St exit in Tacoma	4/17/2018 8:07 AM
20	Southbound vehicles exiting at Mounts Road regularly blow through the stop sign turning left, creating a very dangerous intersection. Cars on Mounts Road have the right of way. I've been witness to this for 14 years and it is VERY dangerous!	4/12/2018 9:46 PM
21	Fixing these bottlenecks in traffic will be awesome, I've been the designated driver with a co-worker to Tacoma for 10+ years and am very grateful that changes are being planned, but I fear that this is not going to be enough. I think you should just add the 5th lane now and ditch the auxiliary lanes as much as possible.	4/12/2018 11:29 AM

### I-5 Mounts Road to Thorne Lane Corridor Improvements Project

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22	We are trying to have DuPont Steilacoom Road widened between Exit 119 and Integrity Gate/Wharf Road. It would be nice if these projects were completed together. In addition, any project timeline improvements (sooner) would be appreciated as current configuration plays a major impact on residents and with a new ARCO gas station a possibility, it will be a few years of even more issues.	4/12/2018 8:18 AM
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## I-5 Mounts Road to Thorne Lane Corridor Improvements Project

### Q11 Please provide your contact information if you'd like more information about this project.

Answered: 21 Skipped: 28

ANSWER CHOICES	RESPONSES	
Name	100.00%	21
Company	0.00%	0
Address	90.48%	19
Address 2	9.52%	2
City/Town	90.48%	19
State/Province	100.00%	21
ZIP/Postal Code	95.24%	20
Country	0.00%	0
Email Address	90.48%	19
Phone Number	61.90%	13

# **G** PROJECT EXHIBITS / PLANS

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NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING,  
 SIGNING AND INTELLIGENT TRANSPORTATION SYSTEM (ITS)  
 IMPROVEMENTS, NO NEW ROADWAY SURFACE WOULD  
 BE CONSTRUCTED.

LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT
	PROPERTY LINE		PROPOSED FILL LIMIT
			FILL
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

I-5  
**MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS**

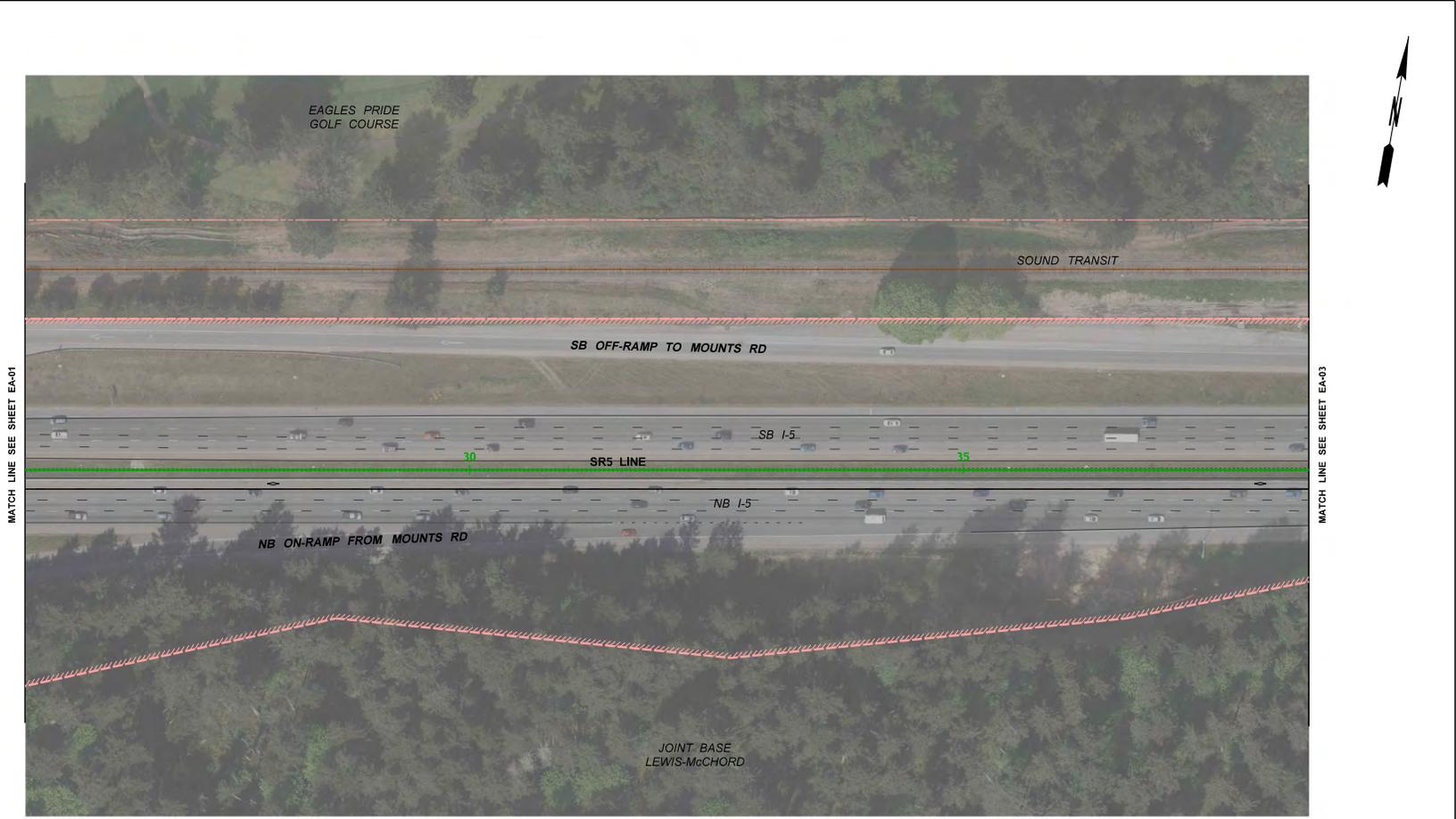
BUILD ALTERNATIVES EXHIBITS

EA-01

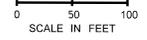
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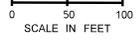
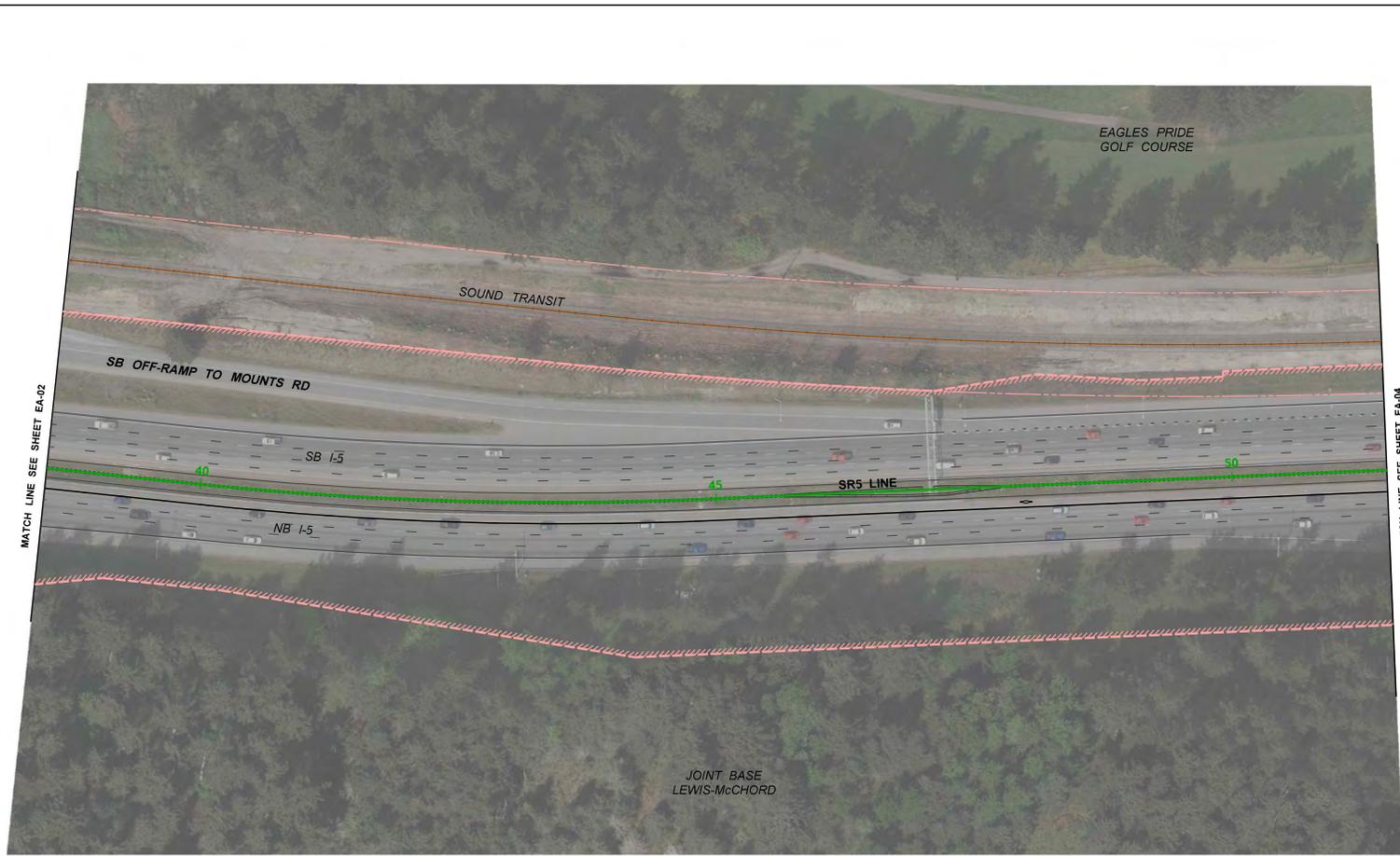


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 BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-02
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> WETLAND BOUNDARY</li> <li> - CUT -</li> <li> - FILL -</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> </ul>			

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**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING,  
 SIGNING AND INTELLIGENT TRANSPORTATION SYSTEM (ITS)  
 IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD  
 BE CONSTRUCTED.

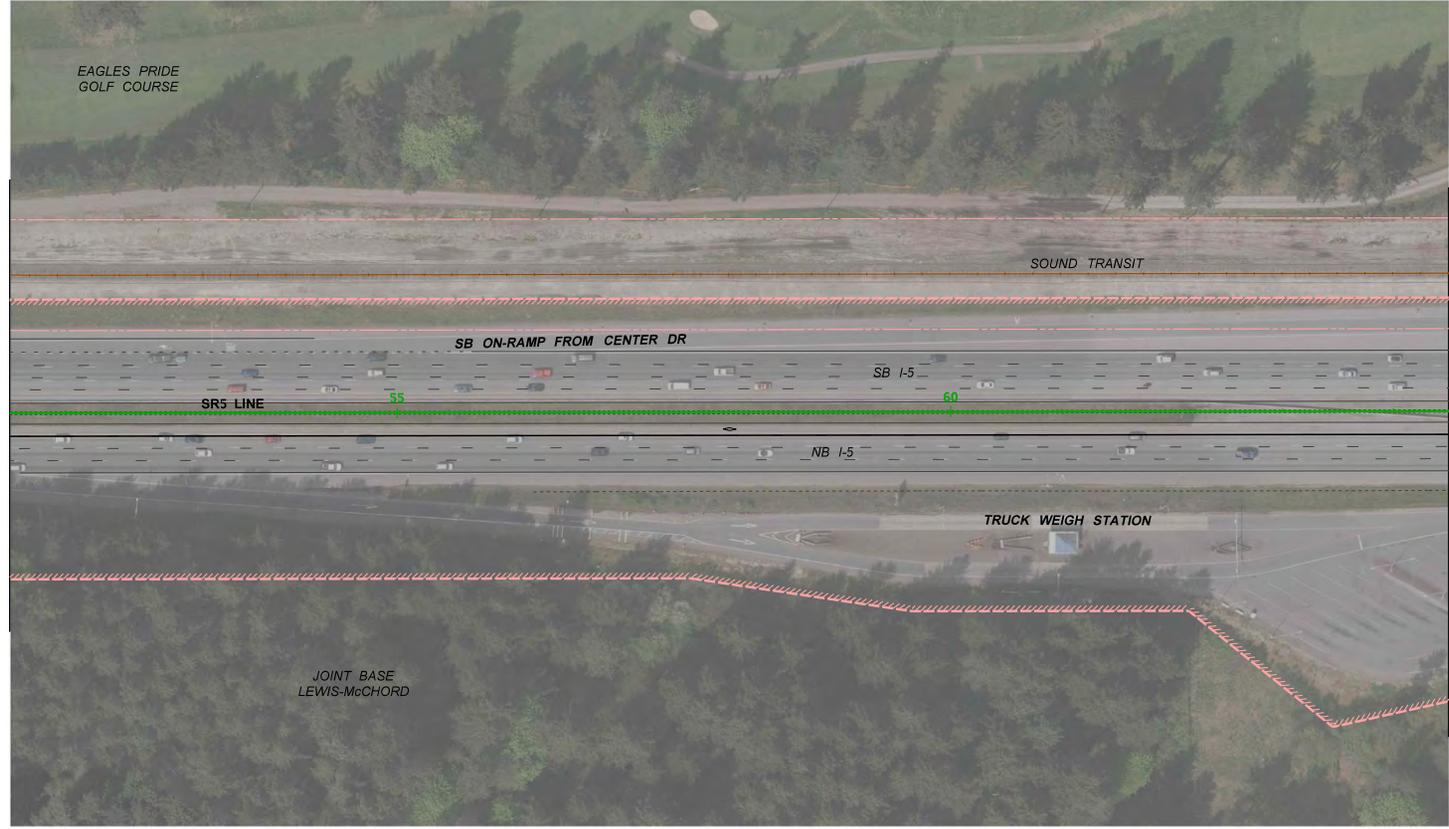
LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		FILL
	PROPERTY LINE		PROPOSED CUT LIMIT
			PROPOSED FILL LIMIT
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

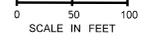
**I-5**  
**MOUNTS TO STEILACOOM-DUPONT RD**  
**CORRIDOR IMPROVEMENTS**  
 BUILD ALTERNATIVES EXHIBITS

**EA-03**  
 SHEET  
 3  
 OF  
 34  
 SHEETS

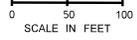
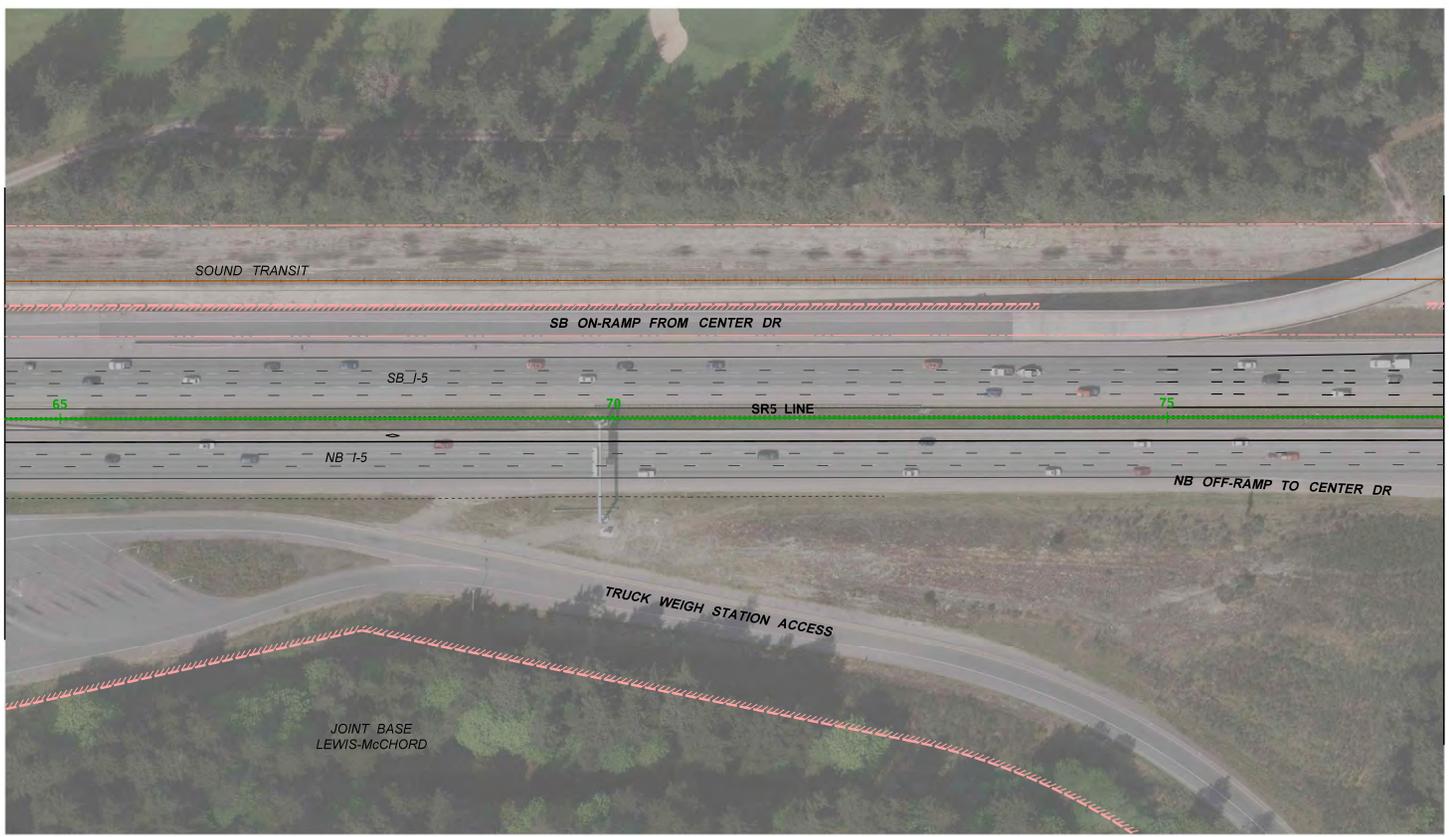
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NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING,  
 SIGNING AND INTELLIGENT TRANSPORTATION SYSTEM (ITS)  
 IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD  
 BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-04
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> WETLAND BOUNDARY</li> <li> CUT</li> <li> FILL</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> <li> PROPOSED CUT LIMIT</li> <li> PROPOSED FILL LIMIT</li> </ul>			

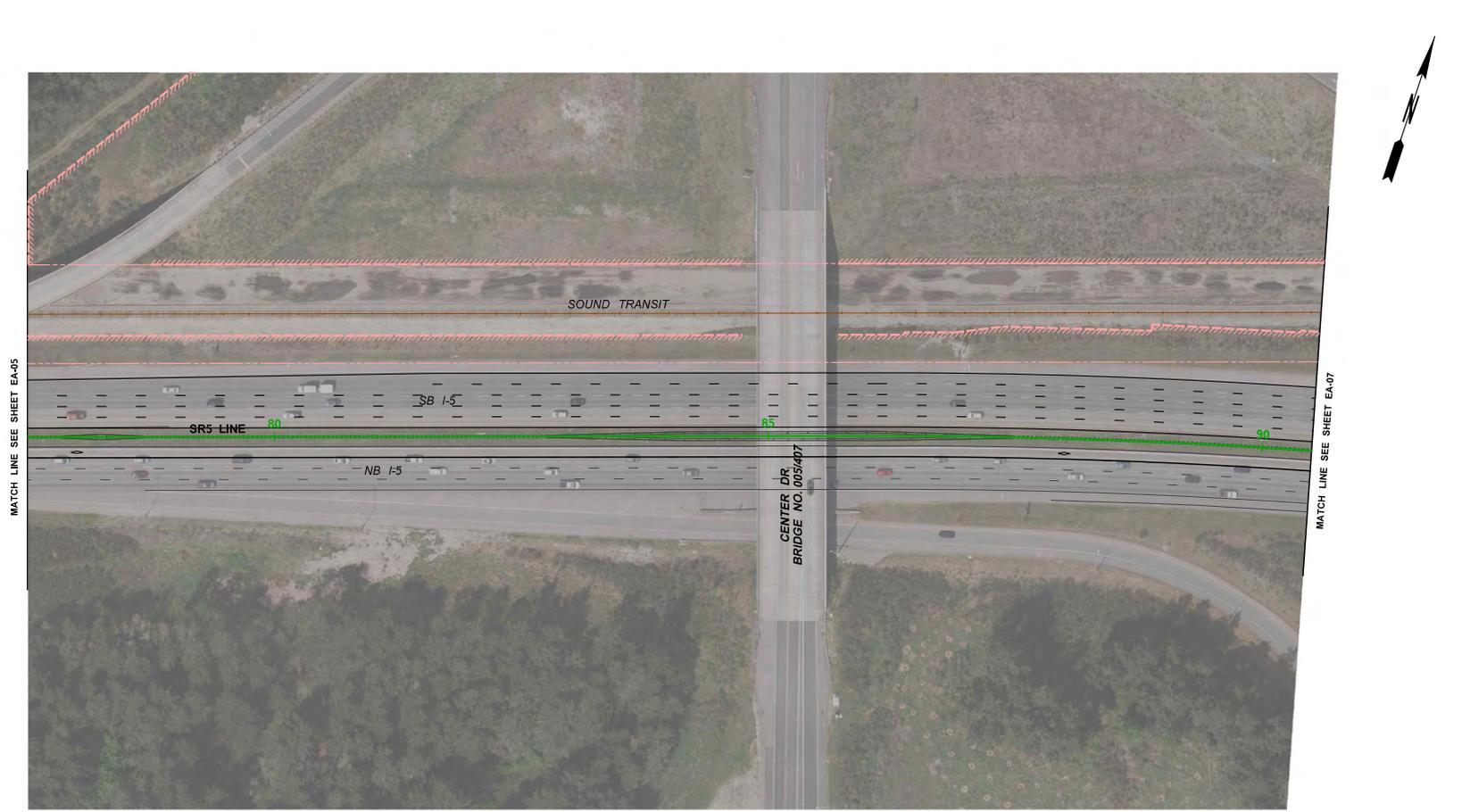


NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING,  
 SIGNING AND INTELLIGENT TRANSPORTATION SYSTEM (ITS)  
 IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD  
 BE CONSTRUCTED.

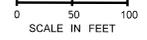
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LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-05
EXISTING RIGHT OF WAY PROPOSED LIMITED ACCESS PROPOSED RIGHT OF WAY PROPERTY LINE	WETLAND BOUNDARY CUT FILL BRIDGE	RETAINING WALL NOISE WALL HOV LANE SYMBOL			WETLAND BOUNDARY CUT FILL BRIDGE

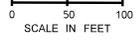
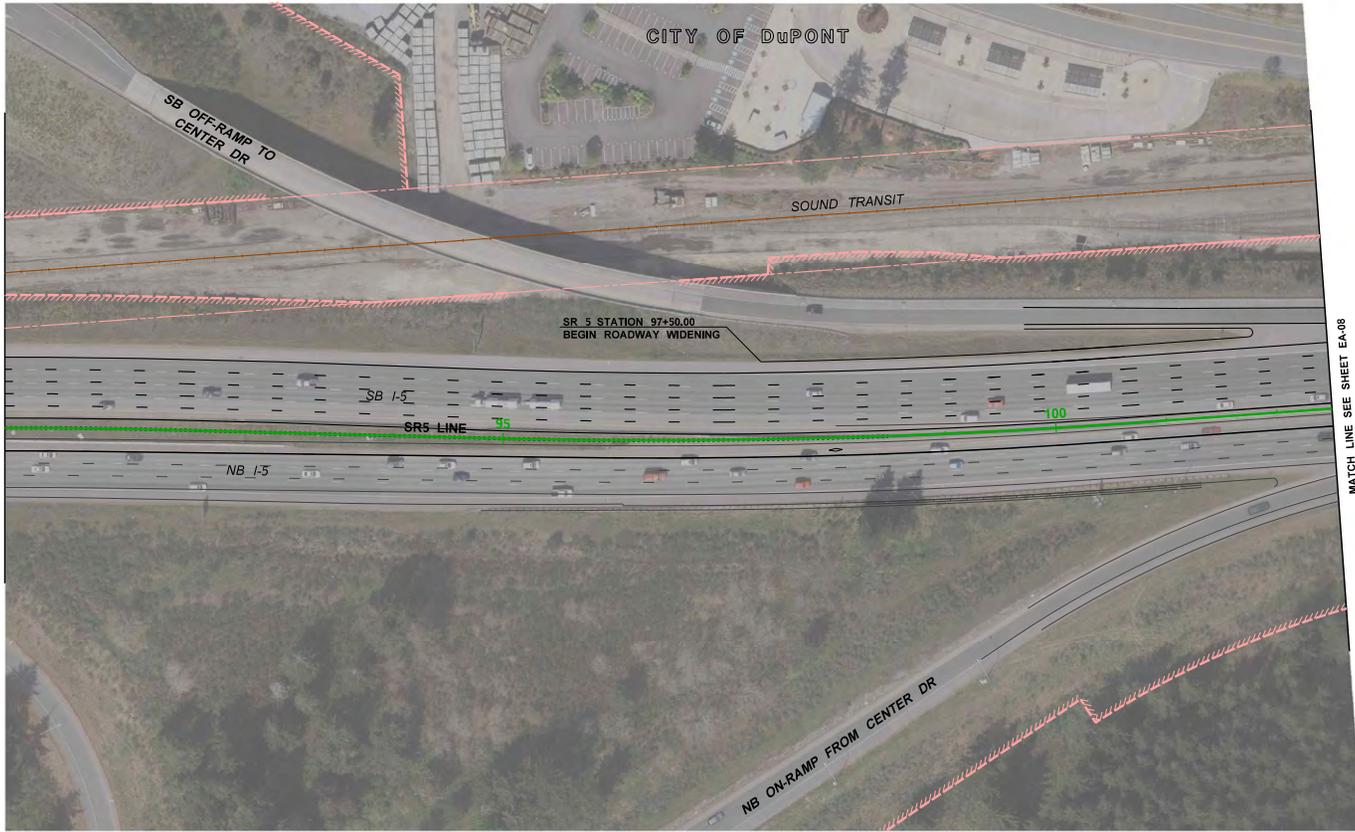
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**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING,  
 SIGNING AND INTELLIGENT TRANSPORTATION SYSTEM (ITS)  
 IMPROVEMENTS, NO NEW ROADWAY SURFACE WOULD  
 BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-06
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> W8</li> <li> WETLAND BOUNDARY</li> <li> CUT</li> <li> CUT</li> <li> FILL</li> <li> FILL</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> </ul>			SHEET 6 OF 34 SHEETS



NOTE:  
 PROPOSED WORK ON THIS SHEET FROM SR5 90+50 TO 97+50 IS LIMITED TO STRIPING, SIGNING AND INTELLIGENT TRANSPORTATION SYSTEM (ITS) IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

LEGEND

	EXISTING RIGHT OF WAY		WETLAND BOUNDARY		RETAINING WALL
	PROPOSED LIMITED ACCESS		PROPOSED CUT LIMIT		NOISE WALL
	PROPOSED RIGHT OF WAY		PROPOSED FILL LIMIT		HOV LANE SYMBOL
	PROPERTY LINE		BRIDGE		

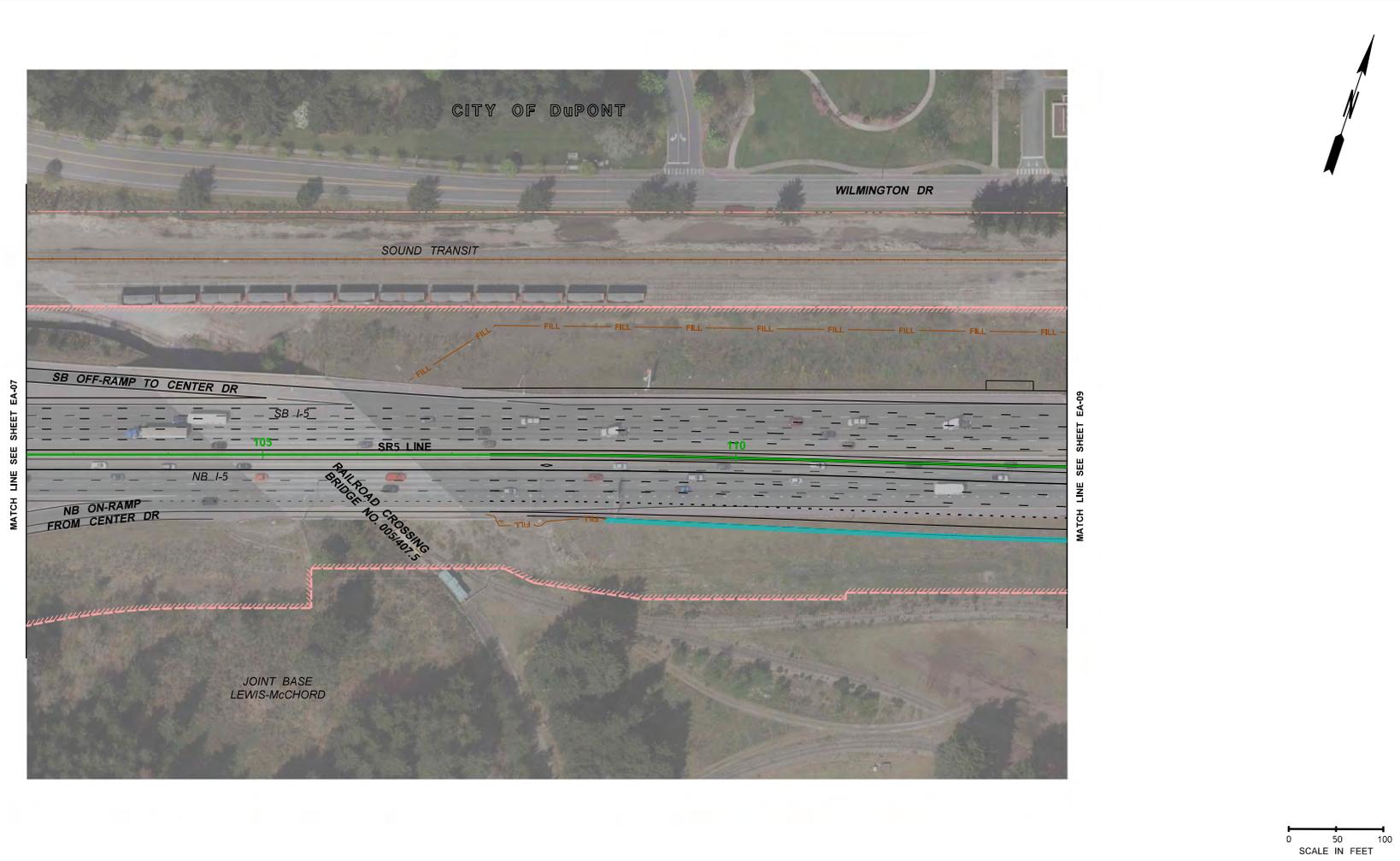
Washington State  
 Department of Transportation  
**Parametrix**

I-5  
 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS  
 BUILD ALTERNATIVES EXHIBITS

EA-07  
 SHEET  
 7  
 OF  
 34  
 SHEETS

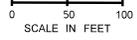
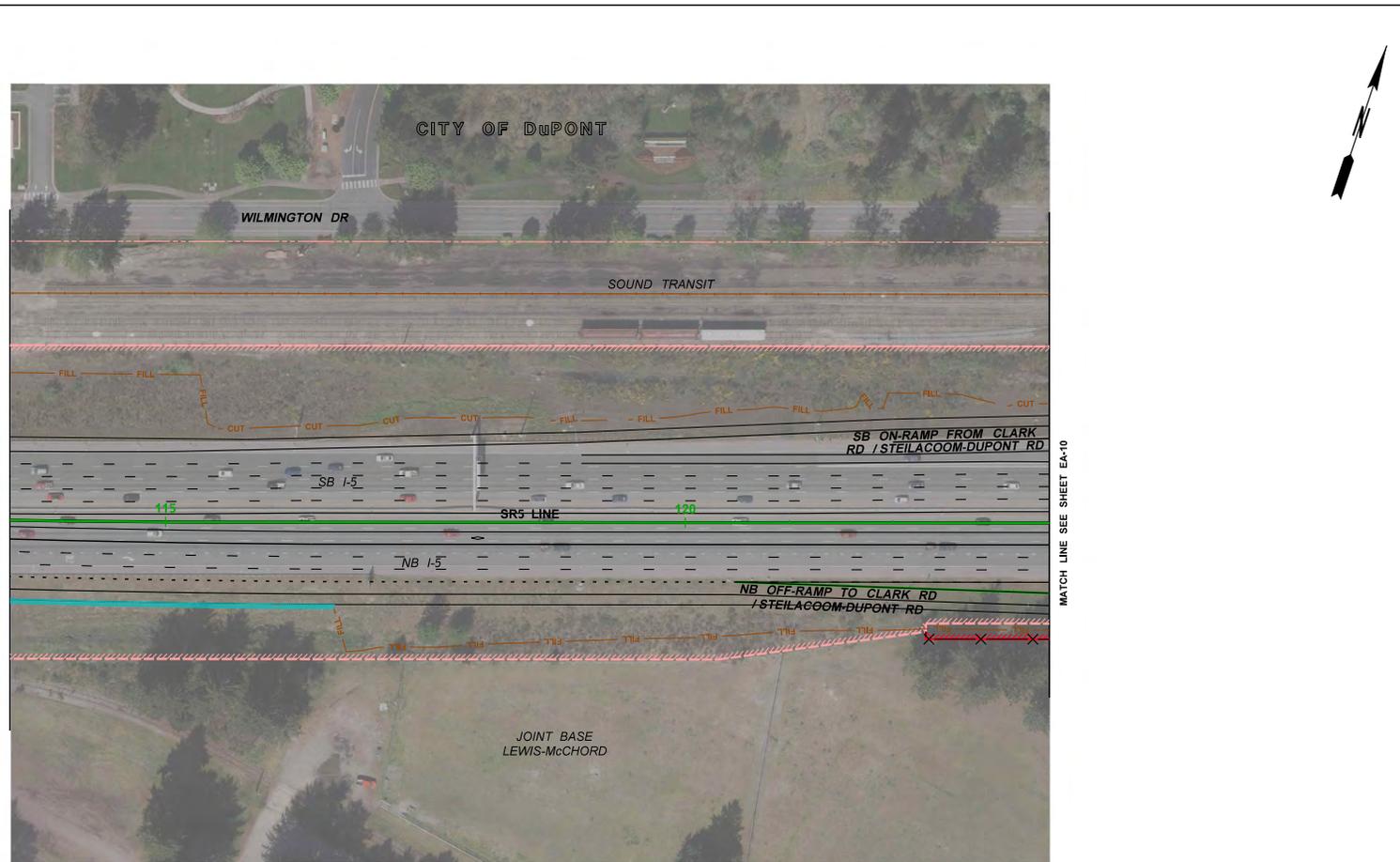
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LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-08
					SHEET 8 OF 34 SHEETS
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY		
	PROPOSED LIMITED ACCESS		CUT		RETAINING WALL
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT		NOISE WALL
	PROPERTY LINE		PROPOSED FILL LIMIT		HOV LANE SYMBOL
			BRIDGE		

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LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT
	PROPERTY LINE		PROPOSED FILL LIMIT
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

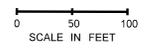
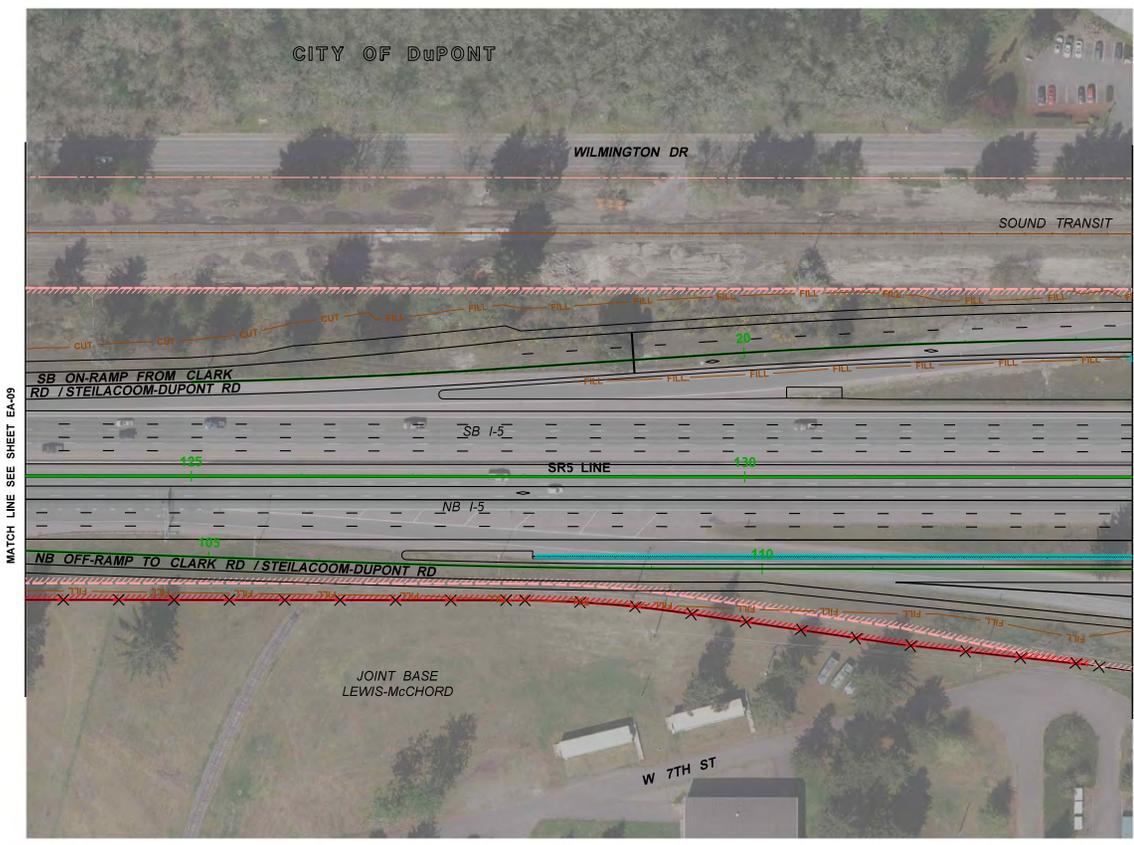
**I-5**  
**MOUNTS TO STEILACOOM-DUPONT RD**  
**CORRIDOR IMPROVEMENTS**

**BUILD ALTERNATIVES EXHIBITS**

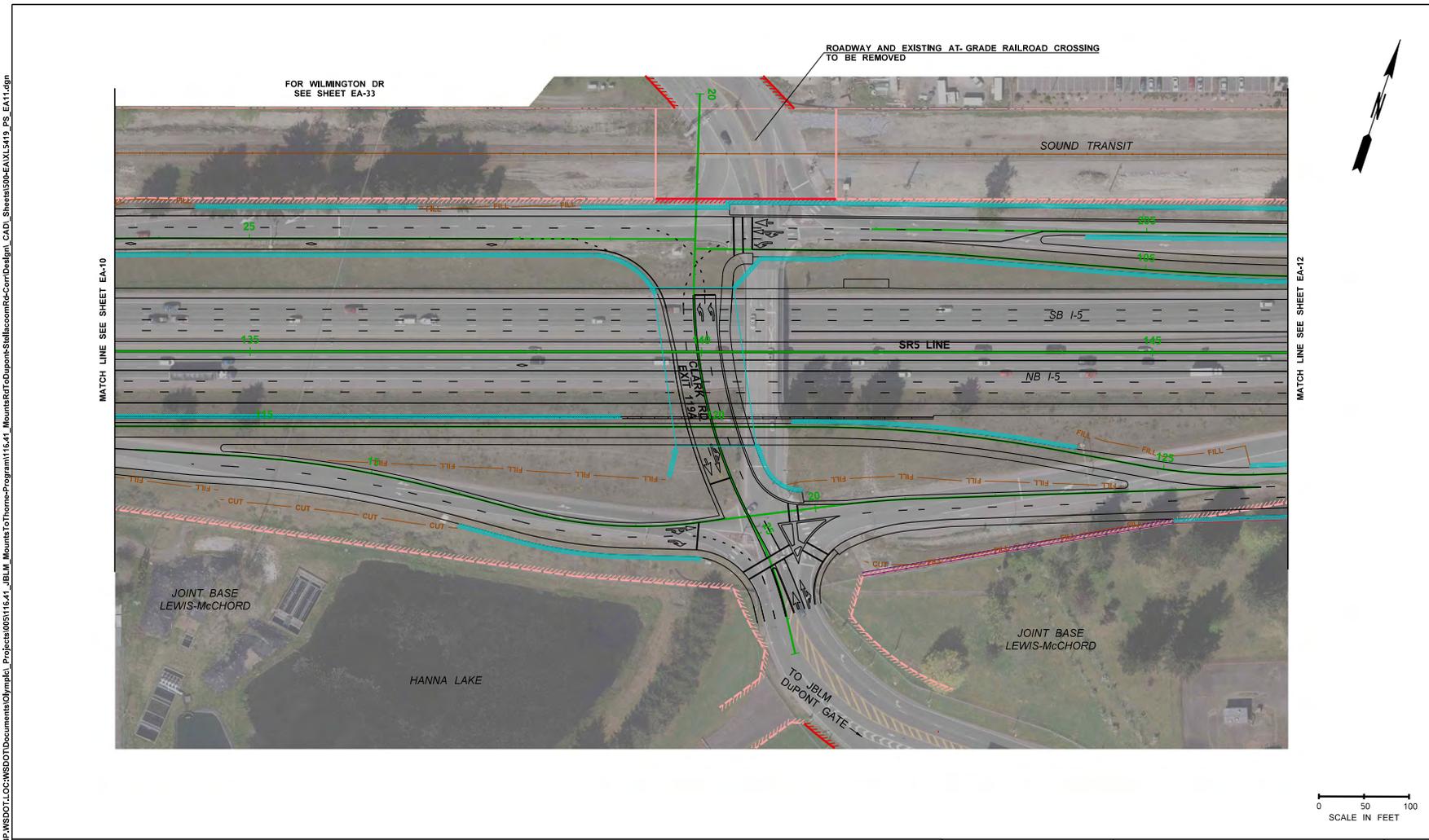
**EA-09**

SHEET  
**9**  
 OF  
**34**  
 SHEETS

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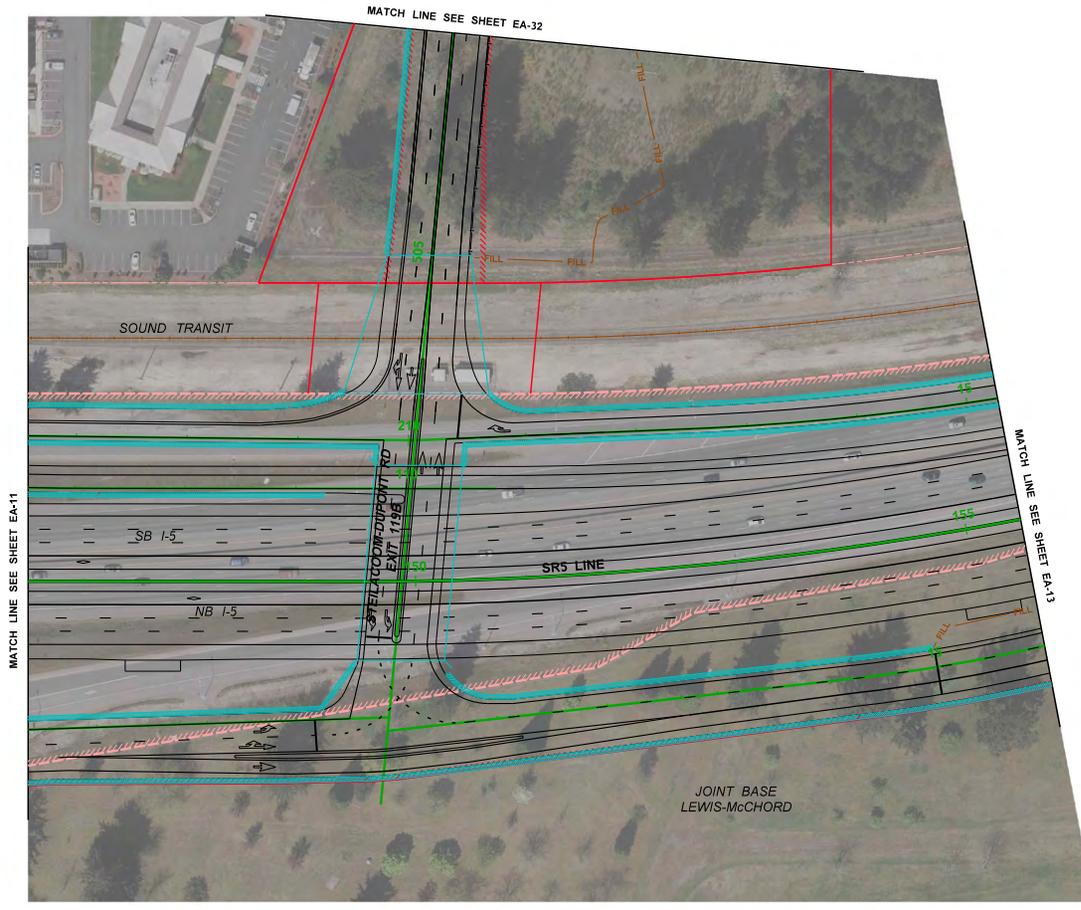
LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS	EA-10
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> WETLAND BOUNDARY</li> <li> PROPOSED CUT LIMIT</li> <li> PROPOSED FILL LIMIT</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> </ul>			BUILD ALTERNATIVES EXHIBITS



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<p><b>LEGEND</b></p> <p>  EXISTING RIGHT OF WAY   PROPOSED LIMITED ACCESS   PROPOSED RIGHT OF WAY   PROPERTY LINE                 </p>		<p>  W/B - - - WETLAND BOUNDARY   - CUT - - - PROPOSED CUT LIMIT   - FILL - - - PROPOSED FILL LIMIT                 </p>		<p>  RETAINING WALL   NOISE WALL   HOV LANE SYMBOL                 </p>		 Washington State Department of Transportation <b>Parametrix</b>	<p><b>I-5</b>                  MOUNTS TO STEILACOOM-DUPONT RD                  CORRIDOR IMPROVEMENTS</p> <p><b>BUILD ALTERNATIVES EXHIBITS</b></p>	<p><b>EA-11</b></p> <p>SHEET                  11                  OF                  34                  SHEETS</p>
<p>  EXISTING RIGHT OF WAY   PROPOSED LIMITED ACCESS   PROPOSED RIGHT OF WAY   PROPERTY LINE                 </p>		<p>  W/B - - - WETLAND BOUNDARY   - CUT - - - PROPOSED CUT LIMIT   - FILL - - - PROPOSED FILL LIMIT                 </p>		<p>  RETAINING WALL   NOISE WALL   HOV LANE SYMBOL                 </p>				

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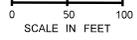
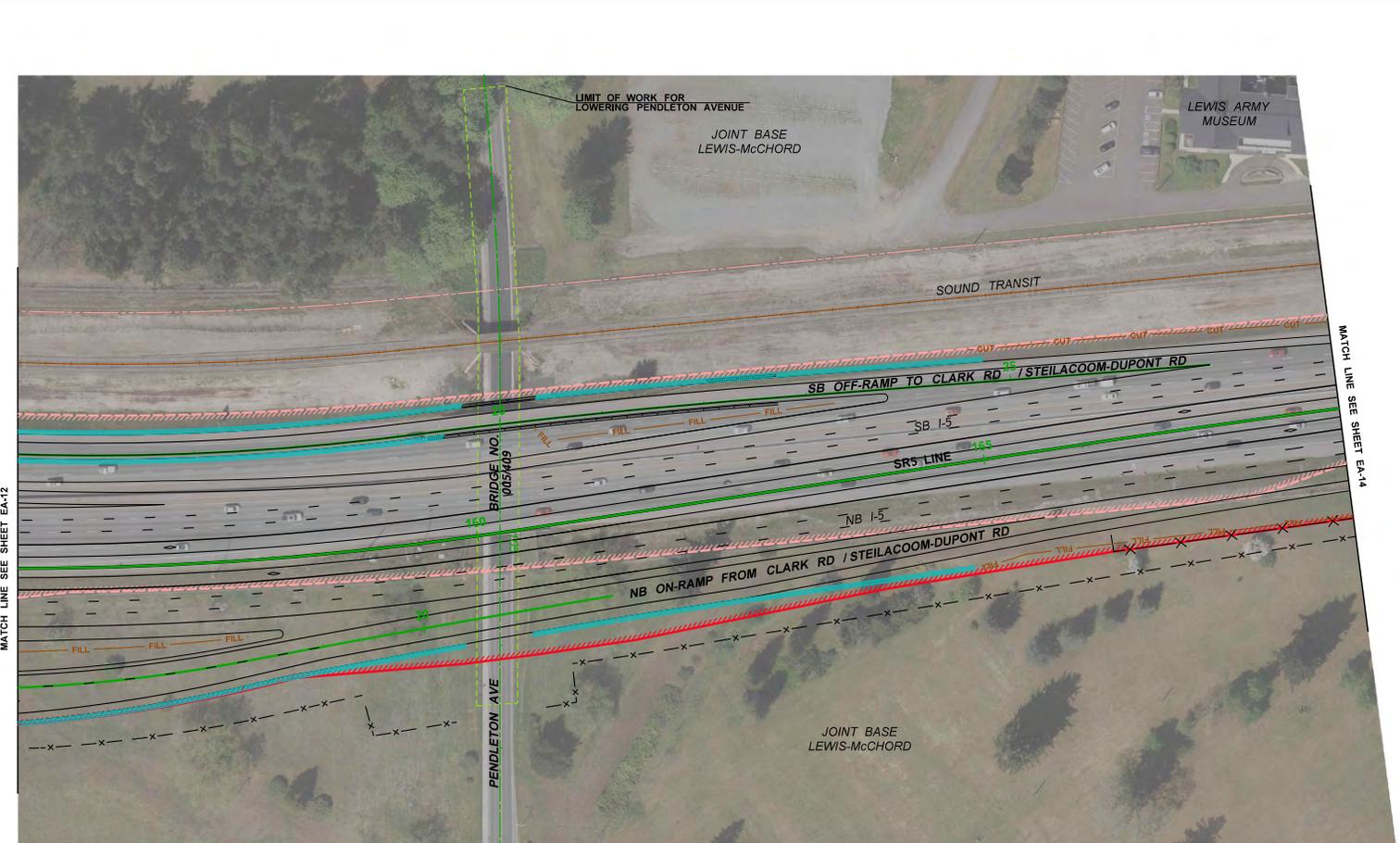
LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		PROPOSED CUT LIMIT
	PROPOSED RIGHT OF WAY		PROPOSED FILL LIMIT
	PROPERTY LINE		BRIDGE
	RETAINING WALL		NOISE WALL
	HOV LANE SYMBOL		

  
 Washington State  
 Department of Transportation  
**Parametrix**

**I-5**  
**MOUNTS TO STEILACOOM-DUPONT RD**  
**CORRIDOR IMPROVEMENTS**  
 BUILD ALTERNATIVES EXHIBITS

**EA-12**  
 SHEET  
 12  
 OF  
 34  
 SHEETS

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LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT
	PROPERTY LINE		FILL
			PROPOSED FILL LIMIT
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
Department of Transportation  
**Parametrix**

I-5  
MOUNTS TO STEILACOOM-DUPONT RD  
CORRIDOR IMPROVEMENTS

BUILD ALTERNATIVES EXHIBITS

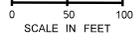
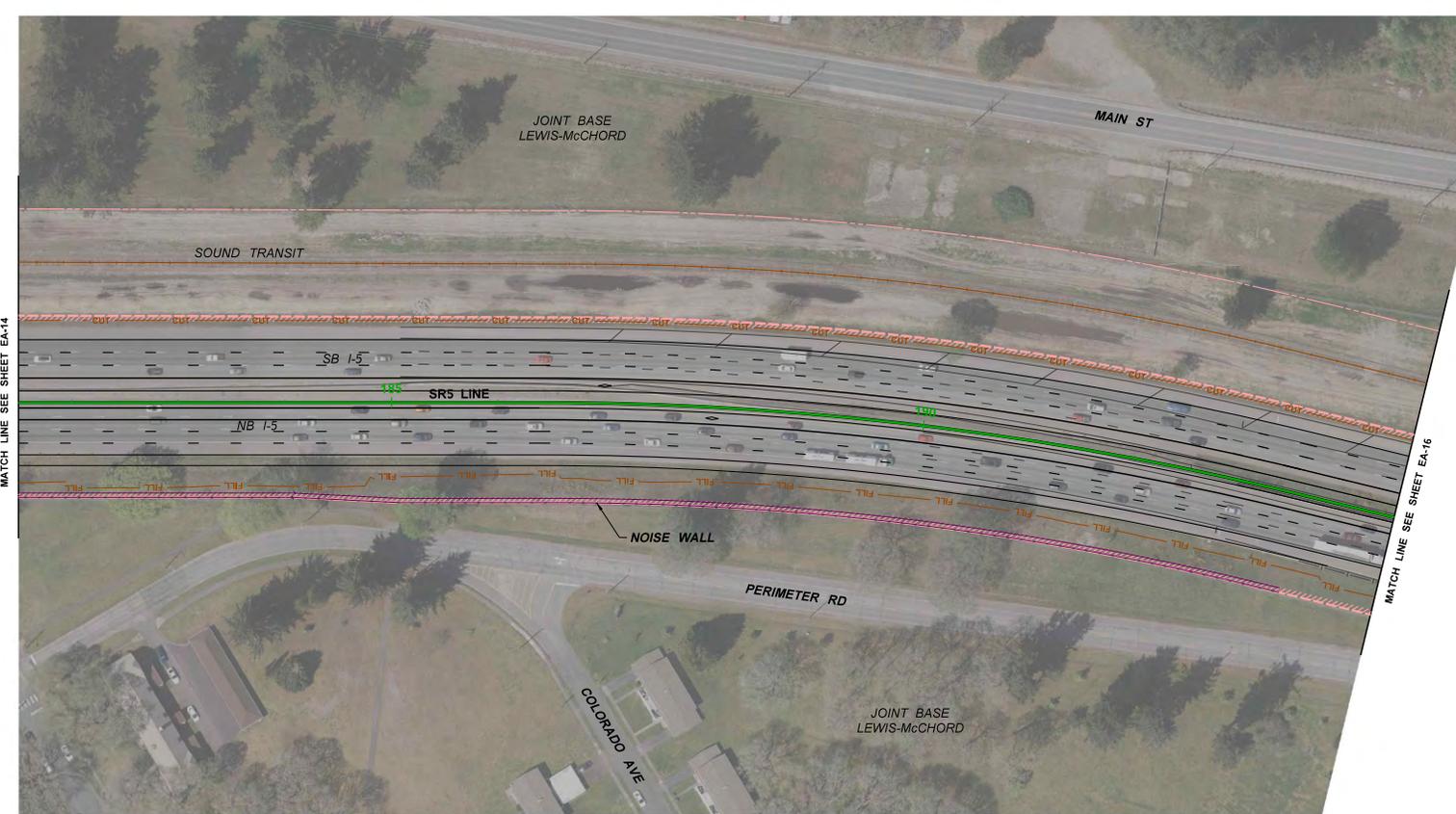
EA-13

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LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	<b>I-5</b> <b>MOUNTS TO STEILACOOM-DUPONT RD</b> <b>CORRIDOR IMPROVEMENTS</b>	<b>EA-14</b>  <small>SHEET 14 OF 34 SHEETS</small>
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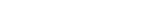
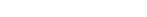
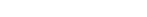


MATCH LINE SEE SHEET EA-14

MATCH LINE SEE SHEET EA-16

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**LEGEND**

 EXISTING RIGHT OF WAY	 WETLAND BOUNDARY	 RETAINING WALL
 PROPOSED LIMITED ACCESS	 WETLAND BOUNDARY	 NOISE WALL
 PROPOSED RIGHT OF WAY	 WETLAND BOUNDARY	 HOV LANE SYMBOL
 PROPERTY LINE	 WETLAND BOUNDARY	
	 WETLAND BOUNDARY	 BRIDGE
	 WETLAND BOUNDARY	
	 WETLAND BOUNDARY	
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Washington State  
 Department of Transportation  
**Parametrix**

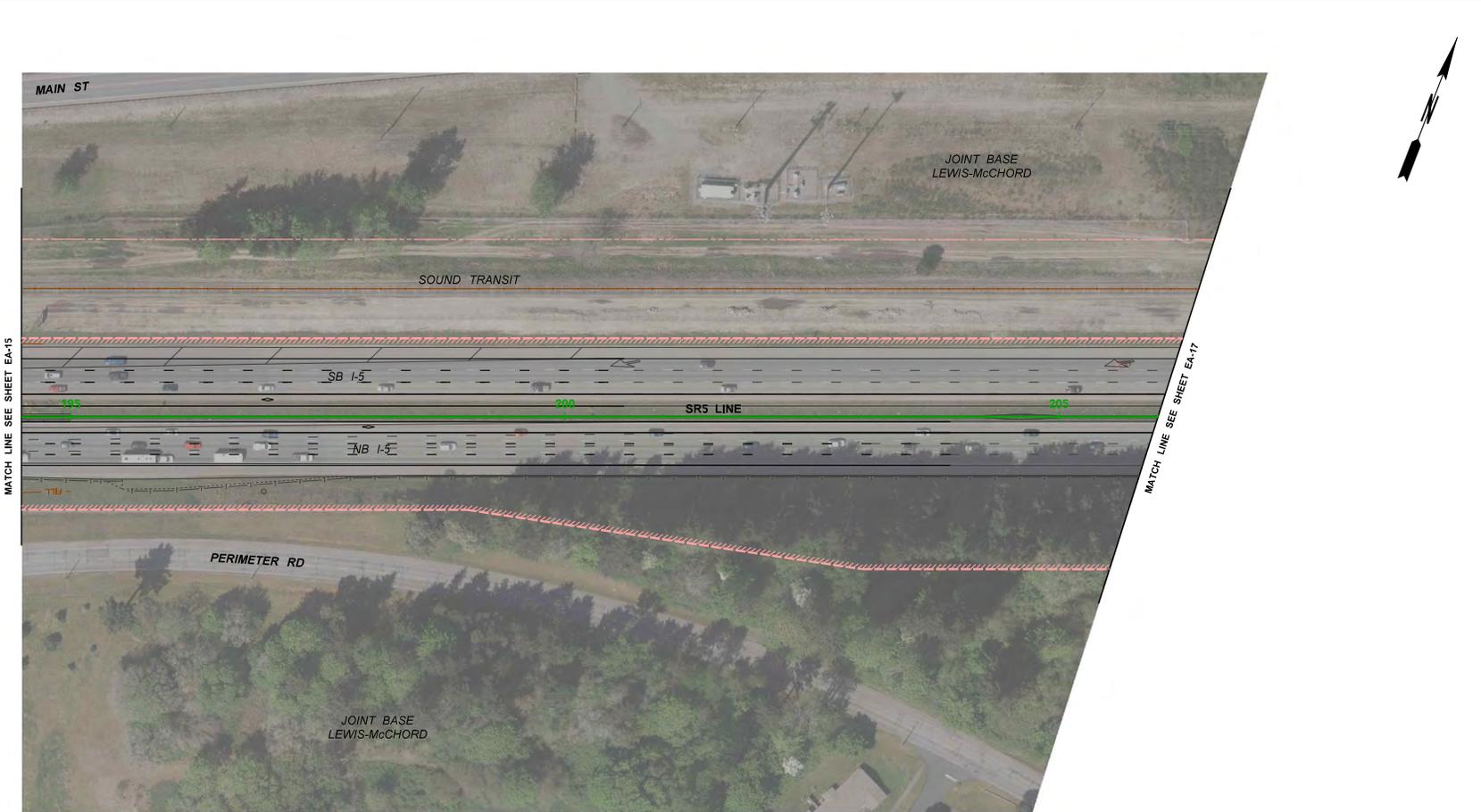
**I-5**  
**MOUNTS TO STEILACOOM-DUPONT RD**  
**CORRIDOR IMPROVEMENTS**

**BUILD ALTERNATIVES EXHIBITS**

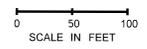
**EA-15**

SHEET  
 15  
 OF  
 34  
 SHEETS

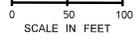
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NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-16
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> W/B</li> <li> WETLAND BOUNDARY</li> <li> CUT</li> <li> PROPOSED CUT LIMIT</li> <li> FILL</li> <li> PROPOSED FILL LIMIT</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> </ul>			SHEET 16 OF 34 SHEETS

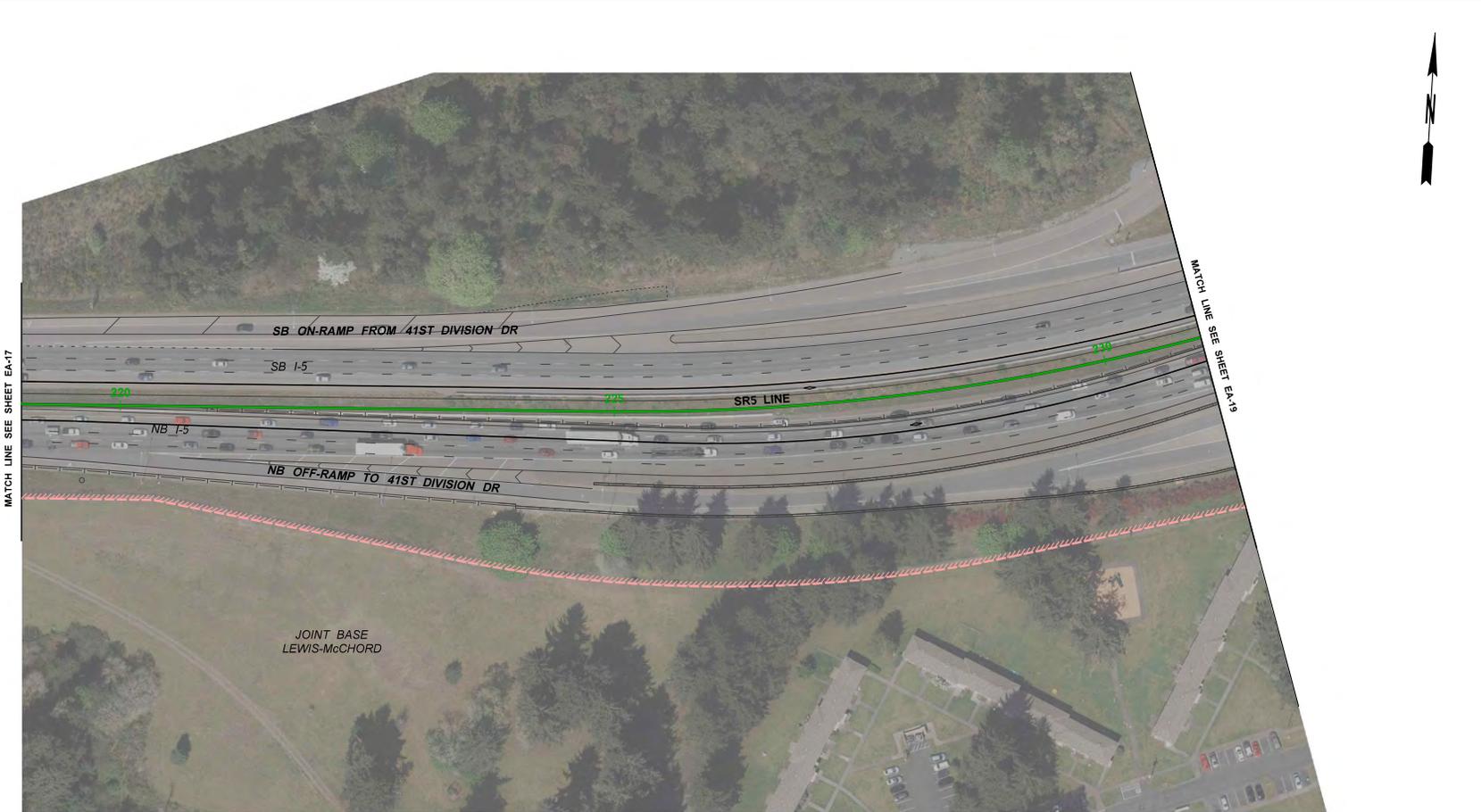


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**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO NOISE WALL  
 CONSTRUCTION, STRIPING AND SIGNING IMPROVEMENTS.  
 NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-17
EXISTING RIGHT OF WAY PROPOSED LIMITED ACCESS PROPOSED RIGHT OF WAY PROPERTY LINE	WETLAND BOUNDARY CUT FILL BRIDGE	RETAINING WALL NOISE WALL HOV LANE SYMBOL			SHEET 17 OF 34 SHEETS

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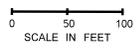
**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT
	PROPERTY LINE		PROPOSED FILL LIMIT
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

**I-5**  
**MOUNTS TO STEILACOOM-DUPONT RD**  
**CORRIDOR IMPROVEMENTS**  
 BUILD ALTERNATIVES EXHIBITS

**EA-18**  
 SHEET  
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 OF  
 34  
 SHEETS



NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT
	PROPERTY LINE		PROPOSED FILL LIMIT
			FILL
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

I-5  
 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS

BUILD ALTERNATIVES EXHIBITS

EA-19

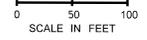
SHEET  
 19  
 OF  
 34  
 SHEETS

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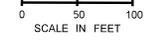
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NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND  
 SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE  
 CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-20
EXISTING RIGHT OF WAY PROPOSED LIMITED ACCESS PROPOSED RIGHT OF WAY PROPERTY LINE	WETLAND BOUNDARY CUT PROPOSED CUT LIMIT FILL PROPOSED FILL LIMIT BRIDGE	RETAINING WALL NOISE WALL HOV LANE SYMBOL			SHEET 20 OF 34 SHEETS



NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND  
 SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE  
 CONSTRUCTED.

LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		FILL
	PROPERTY LINE		PROPOSED CUT LIMIT
			PROPOSED FILL LIMIT
			BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

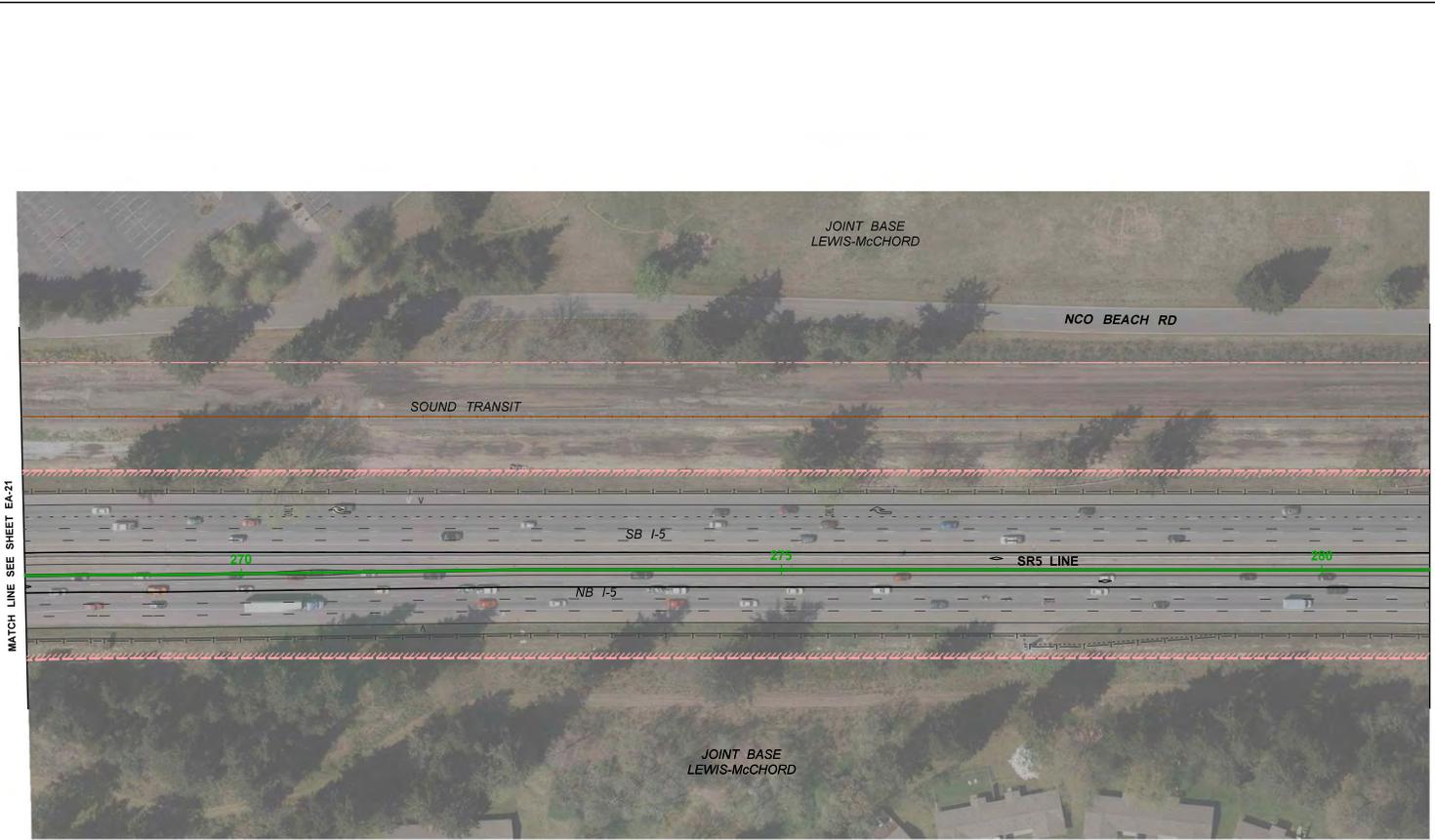
I-5  
 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS

BUILD ALTERNATIVES EXHIBITS

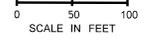
EA-21
SHEET 21 OF 34 SHEETS

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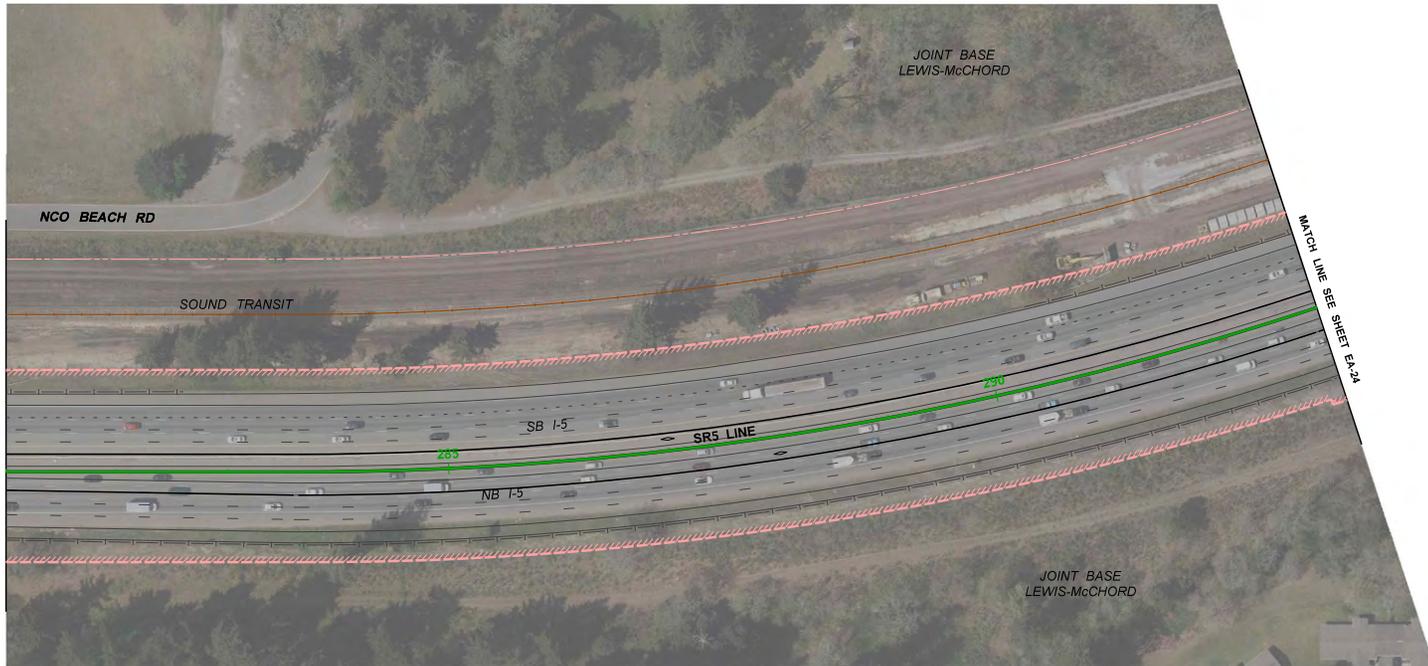
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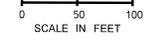
**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	<b>I-5</b> <b>MOUNTS TO STEILACOOM-DUPONT RD</b> <b>CORRIDOR IMPROVEMENTS</b>	EA-22
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> WETLAND BOUNDARY</li> <li> PROPOSED CUT LIMIT</li> <li> PROPOSED FILL LIMIT</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> </ul>			



NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND  
 SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE  
 CONSTRUCTED.



LEGEND

	EXISTING RIGHT OF WAY		WETLAND BOUNDARY		RETAINING WALL
	PROPOSED LIMITED ACCESS		CUT		NOISE WALL
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT		PROPOSED FILL LIMIT
	PROPERTY LINE		FILL		BRIDGE
			PROPOSED FILL LIMIT		HOV LANE SYMBOL



Washington State  
 Department of Transportation  
**Parametrix**

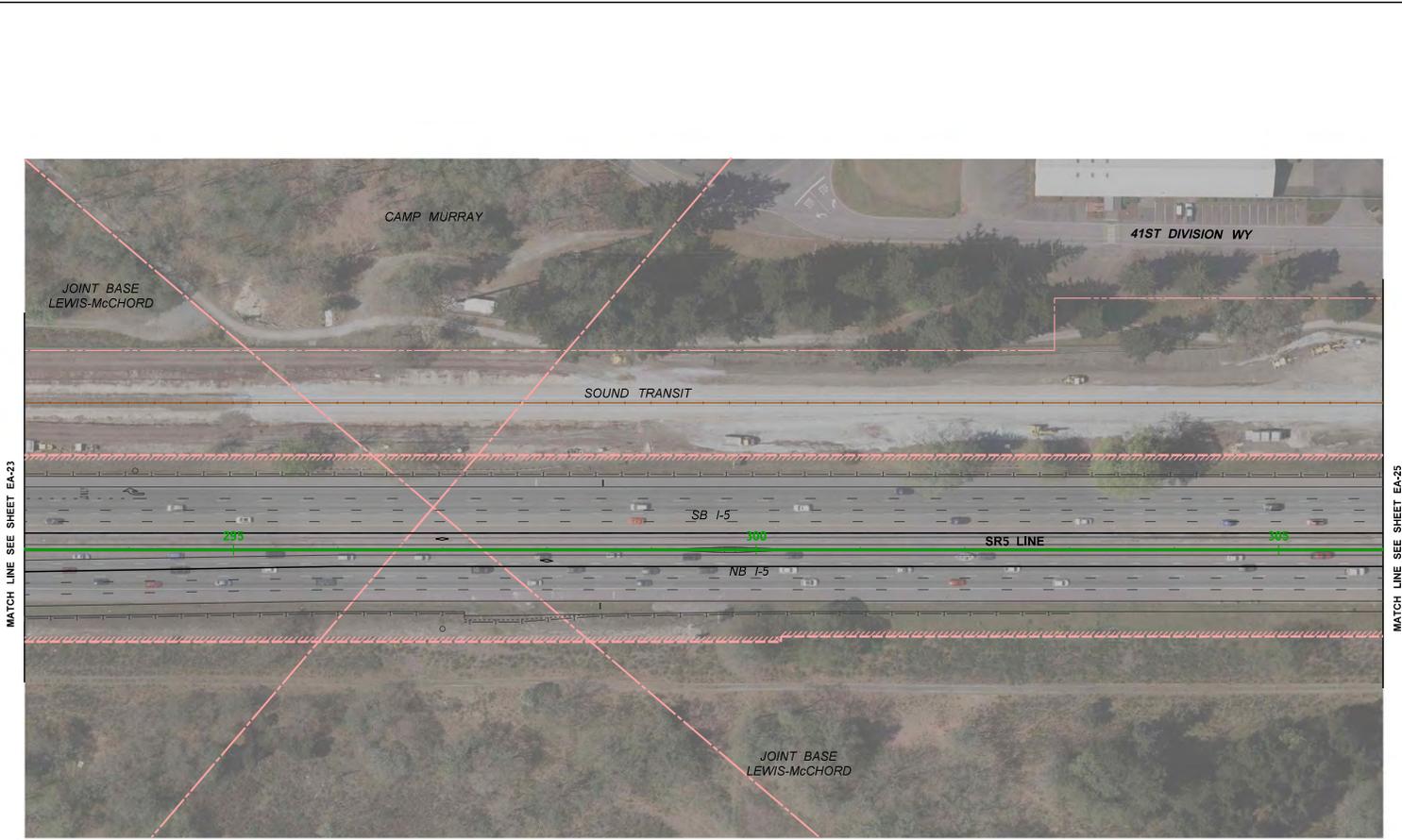
I-5  
 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS  
 BUILD ALTERNATIVES EXHIBITS

EA-23

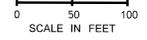
SHEET  
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 SHEETS

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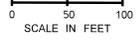
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**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-24
					SHEET 24 OF 34 SHEETS
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY		RETAINING WALL
	PROPOSED LIMITED ACCESS		PROPOSED CUT LIMIT		NOISE WALL
	PROPOSED RIGHT OF WAY		PROPOSED FILL LIMIT		HOV LANE SYMBOL
	PROPERTY LINE		BRIDGE		



NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND  
 SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE  
 CONSTRUCTED.

LEGEND

EXISTING RIGHT OF WAY	WETLAND BOUNDARY	RETAINING WALL
PROPOSED LIMITED ACCESS	CUT	NOISE WALL
PROPOSED RIGHT OF WAY	PROPOSED CUT LIMIT	BRIDGE
PROPERTY LINE	FILL	PROPOSED FILL LIMIT
	BRIDGE	HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

I-5  
 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS

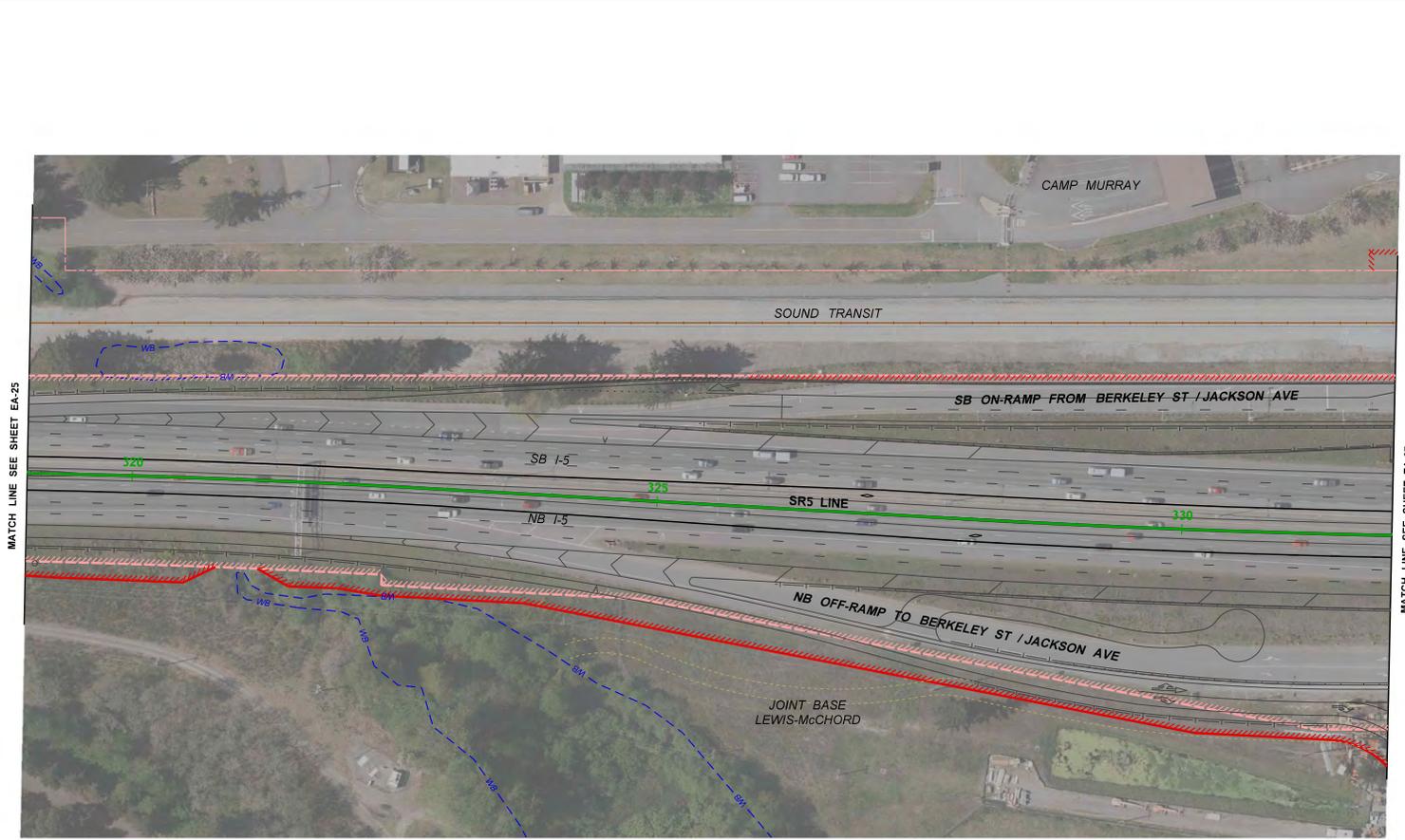
BUILD ALTERNATIVES EXHIBITS

EA-25

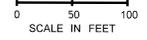
SHEET  
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 OF  
 34  
 SHEETS

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**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

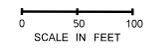
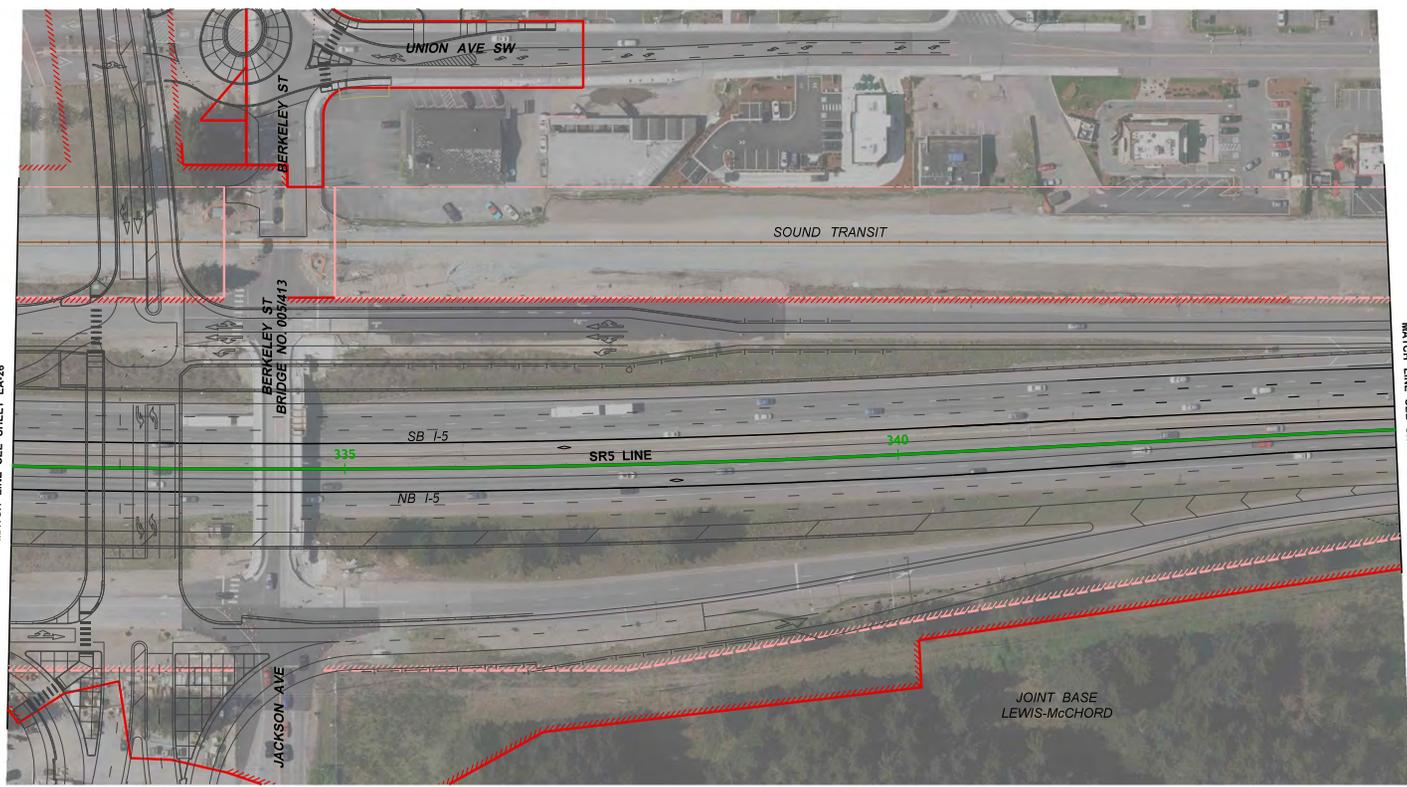


LEGEND			
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY
	PROPOSED LIMITED ACCESS		CUT
	PROPOSED RIGHT OF WAY		FILL
	PROPERTY LINE		BRIDGE
			RETAINING WALL
			NOISE WALL
			HOV LANE SYMBOL

Washington State  
 Department of Transportation  
**Parametrix**

**I-5**  
**MOUNTS TO STEILACOOM-DUPONT RD**  
**CORRIDOR IMPROVEMENTS**  
 BUILD ALTERNATIVES EXHIBITS

**EA-26**  
 SHEET  
 26  
 OF  
 34  
 SHEETS

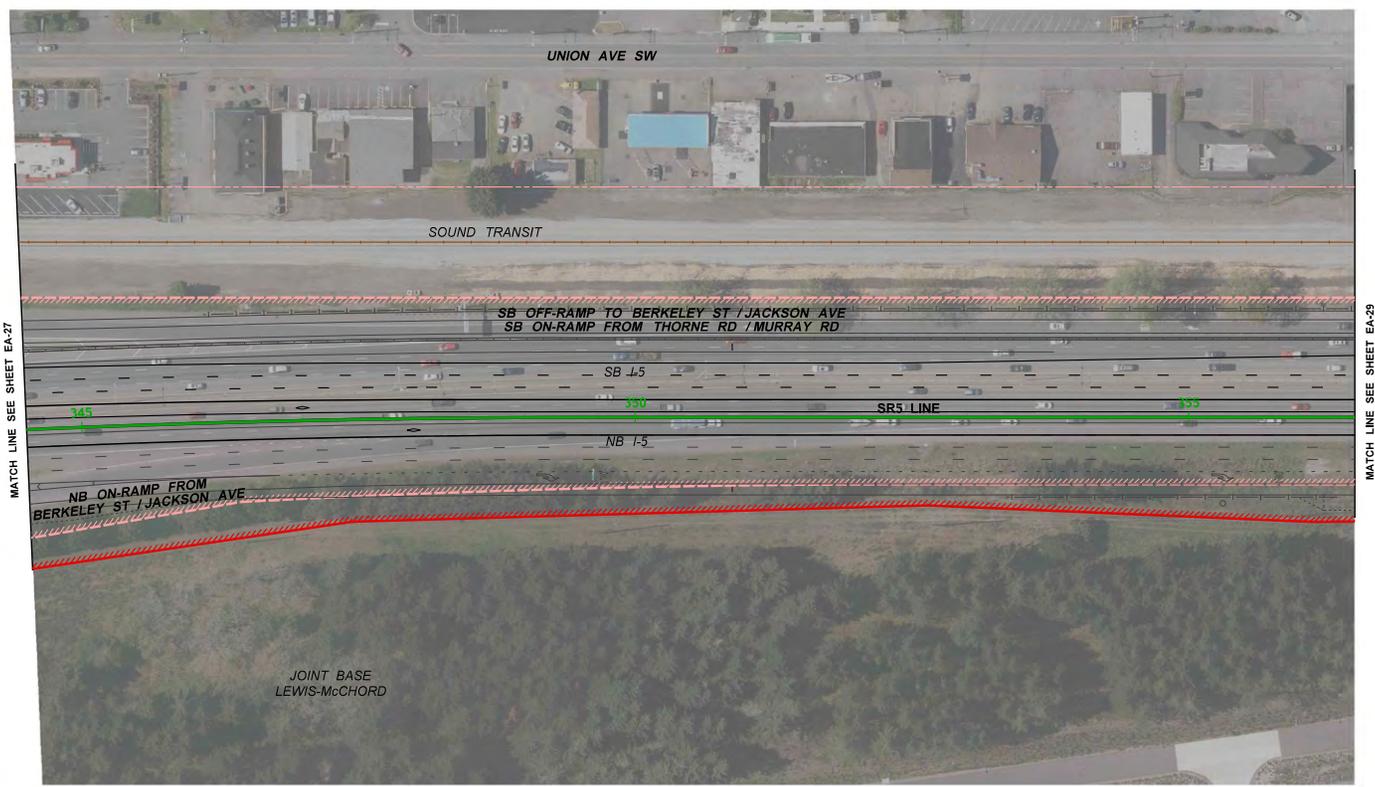


NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

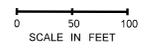
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<p><b>LEGEND</b></p> <p>  EXISTING RIGHT OF WAY   PROPOSED LIMITED ACCESS   PROPOSED RIGHT OF WAY   PROPERTY LINE                 </p>			<p>  W/B WETLAND BOUNDARY   CUT PROPOSED CUT LIMIT   FILL PROPOSED FILL LIMIT   BRIDGE                 </p>			<p>  RETAINING WALL   NOISE WALL   HOV LANE SYMBOL                 </p>			 Washington State Department of Transportation <b>Parametrix</b>	<p>I-5                  MOUNTS TO STEILACOOM-DUPONT RD                  CORRIDOR IMPROVEMENTS</p> <p>BUILD ALTERNATIVES EXHIBITS</p>	EA-27 SHEET 27 OF 34 SHEETS

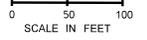
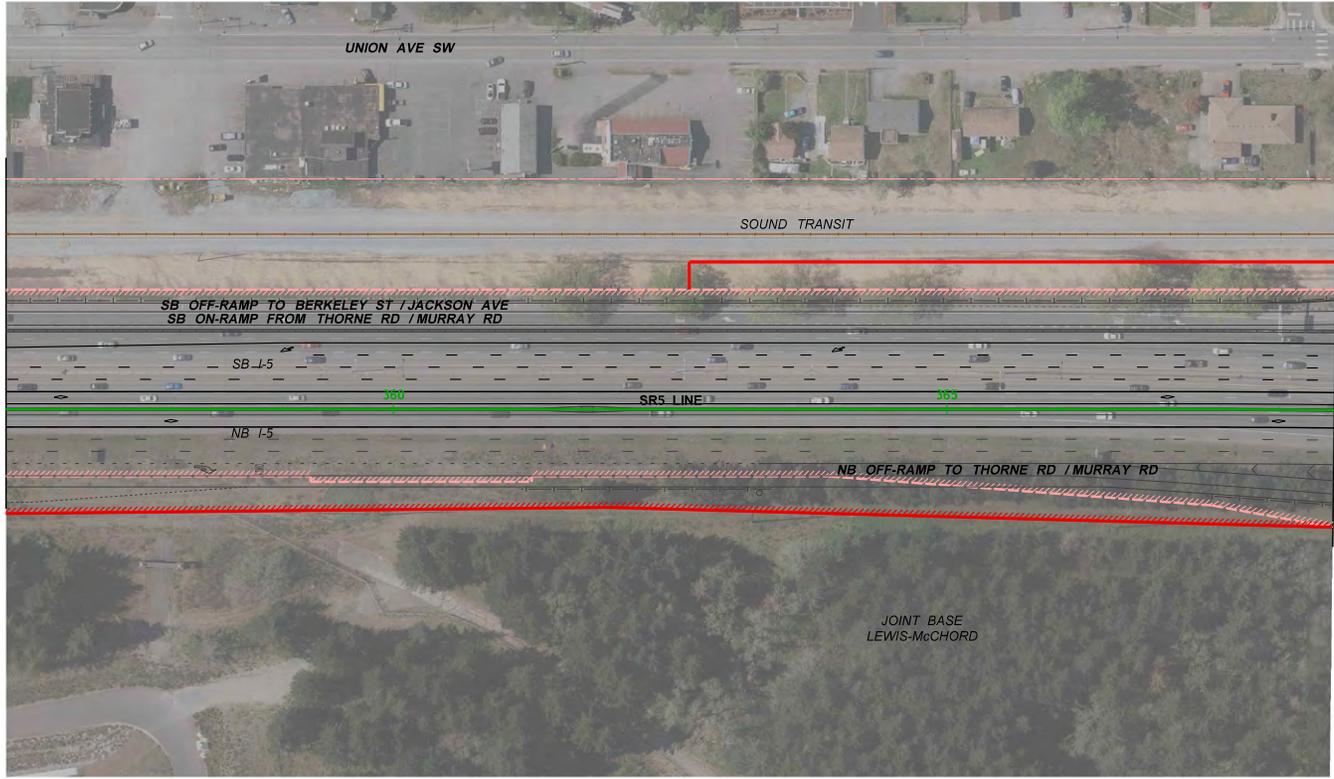
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**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-28
<ul style="list-style-type: none"> <li> EXISTING RIGHT OF WAY</li> <li> PROPOSED LIMITED ACCESS</li> <li> PROPOSED RIGHT OF WAY</li> <li> PROPERTY LINE</li> </ul>	<ul style="list-style-type: none"> <li> WETLAND BOUNDARY</li> <li> CUT</li> <li> FILL</li> <li> BRIDGE</li> </ul>	<ul style="list-style-type: none"> <li> RETAINING WALL</li> <li> NOISE WALL</li> <li> HOV LANE SYMBOL</li> </ul>			



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 SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE  
 CONSTRUCTED.

**LEGEND**

	EXISTING RIGHT OF WAY		WETLAND BOUNDARY		RETAINING WALL
	PROPOSED LIMITED ACCESS		PROPOSED CUT LIMIT		NOISE WALL
	PROPOSED RIGHT OF WAY		PROPOSED FILL LIMIT		HOV LANE SYMBOL
	PROPERTY LINE		BRIDGE		

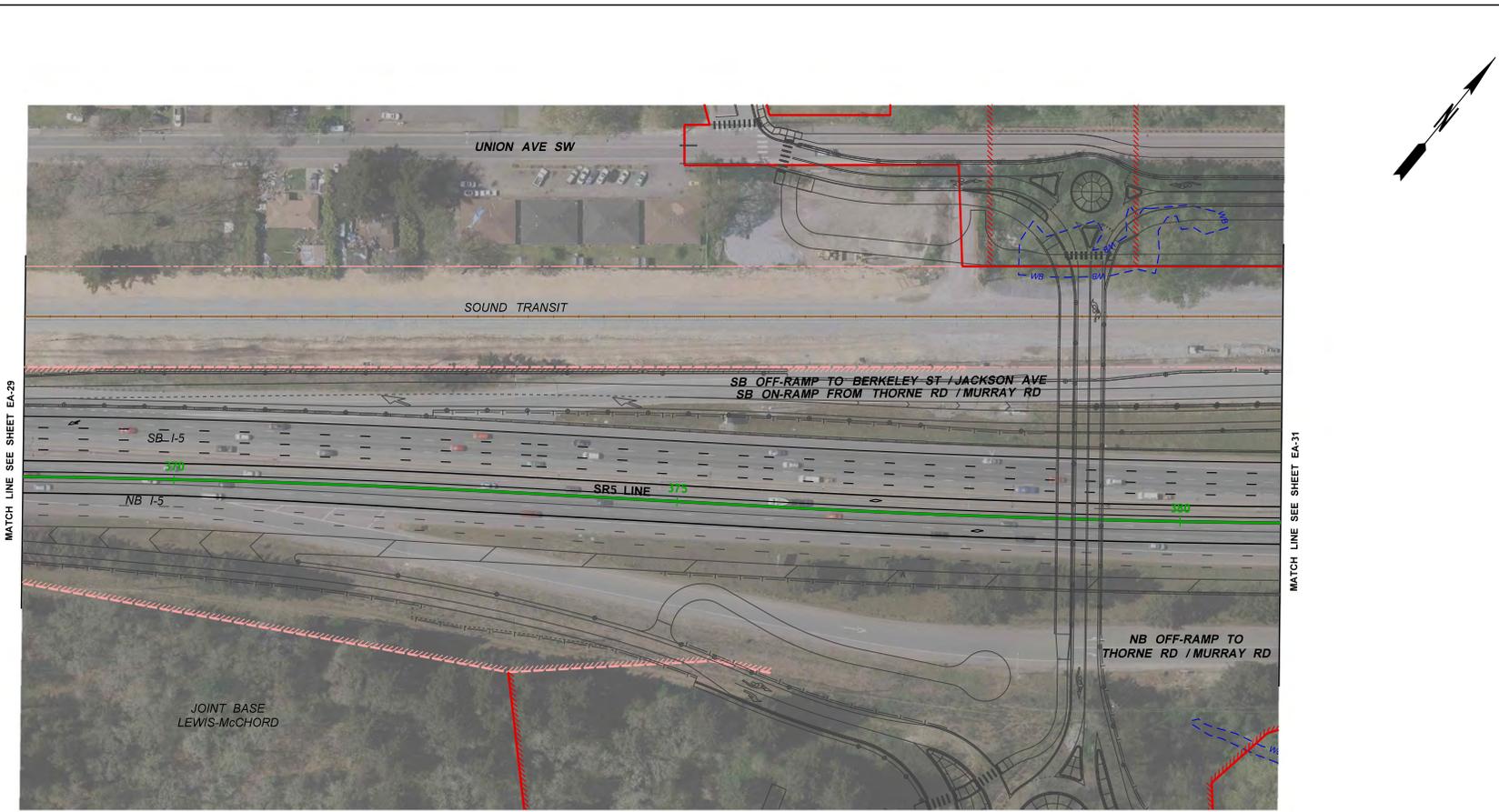
Washington State  
 Department of Transportation  
**Parametrix**

I-5  
 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS  
 BUILD ALTERNATIVES EXHIBITS

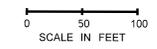
EA-29  
 SHEET  
 29  
 OF  
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 SHEETS

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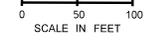
**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.



LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	<b>I-5</b> <b>MOUNTS TO STEILACOOM-DUPONT RD</b> <b>CORRIDOR IMPROVEMENTS</b>	SHEET <b>30</b> OF <b>34</b> SHEETS
EXISTING RIGHT OF WAY PROPOSED LIMITED ACCESS PROPOSED RIGHT OF WAY PROPERTY LINE	WETLAND BOUNDARY CUT FILL BRIDGE	RETAINING WALL NOISE WALL HOV LANE SYMBOL			



**NOTE:**  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.



**LEGEND**

	EXISTING RIGHT OF WAY		WETLAND BOUNDARY		RETAINING WALL
	PROPOSED LIMITED ACCESS		CUT		NOISE WALL
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT		HOV LANE SYMBOL
	PROPERTY LINE		PROPOSED FILL LIMIT		BRIDGE



Washington State  
 Department of Transportation  
**Parametrix**

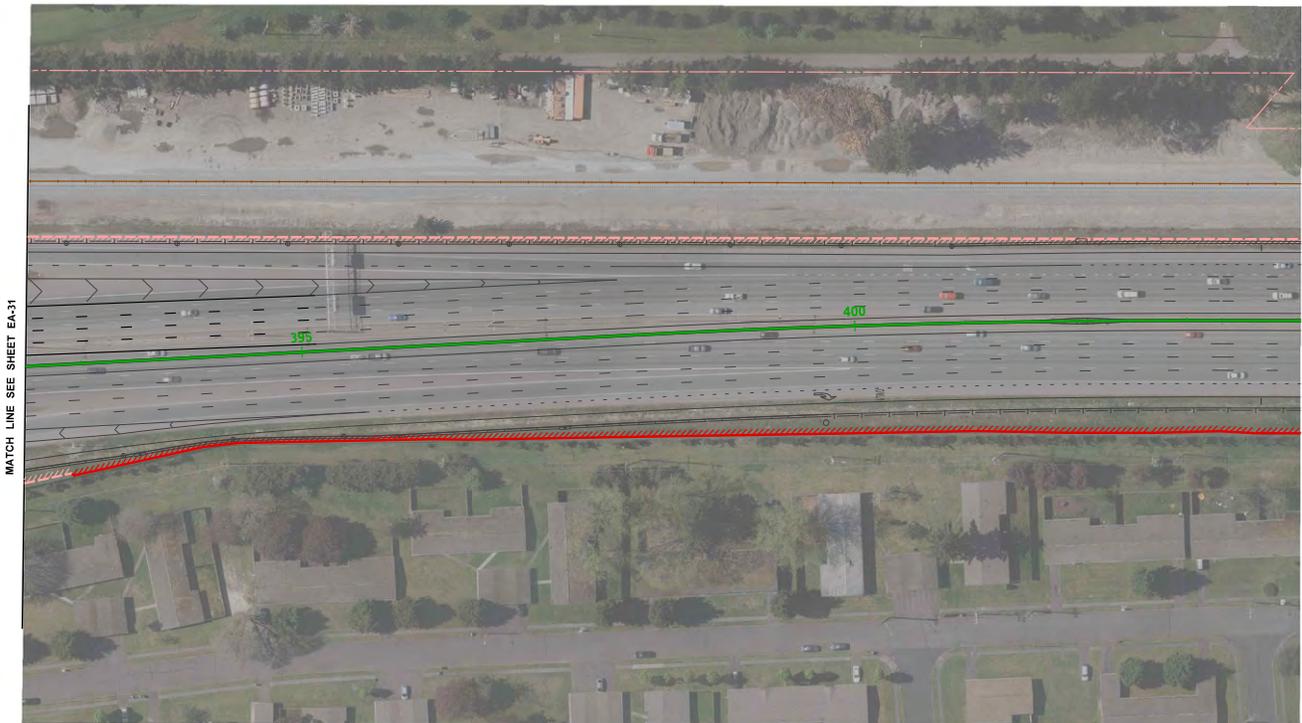
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 MOUNTS TO STEILACOOM-DUPONT RD  
 CORRIDOR IMPROVEMENTS

BUILD ALTERNATIVES EXHIBITS

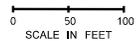
EA-31

SHEET  
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 OF  
 34  
 SHEETS

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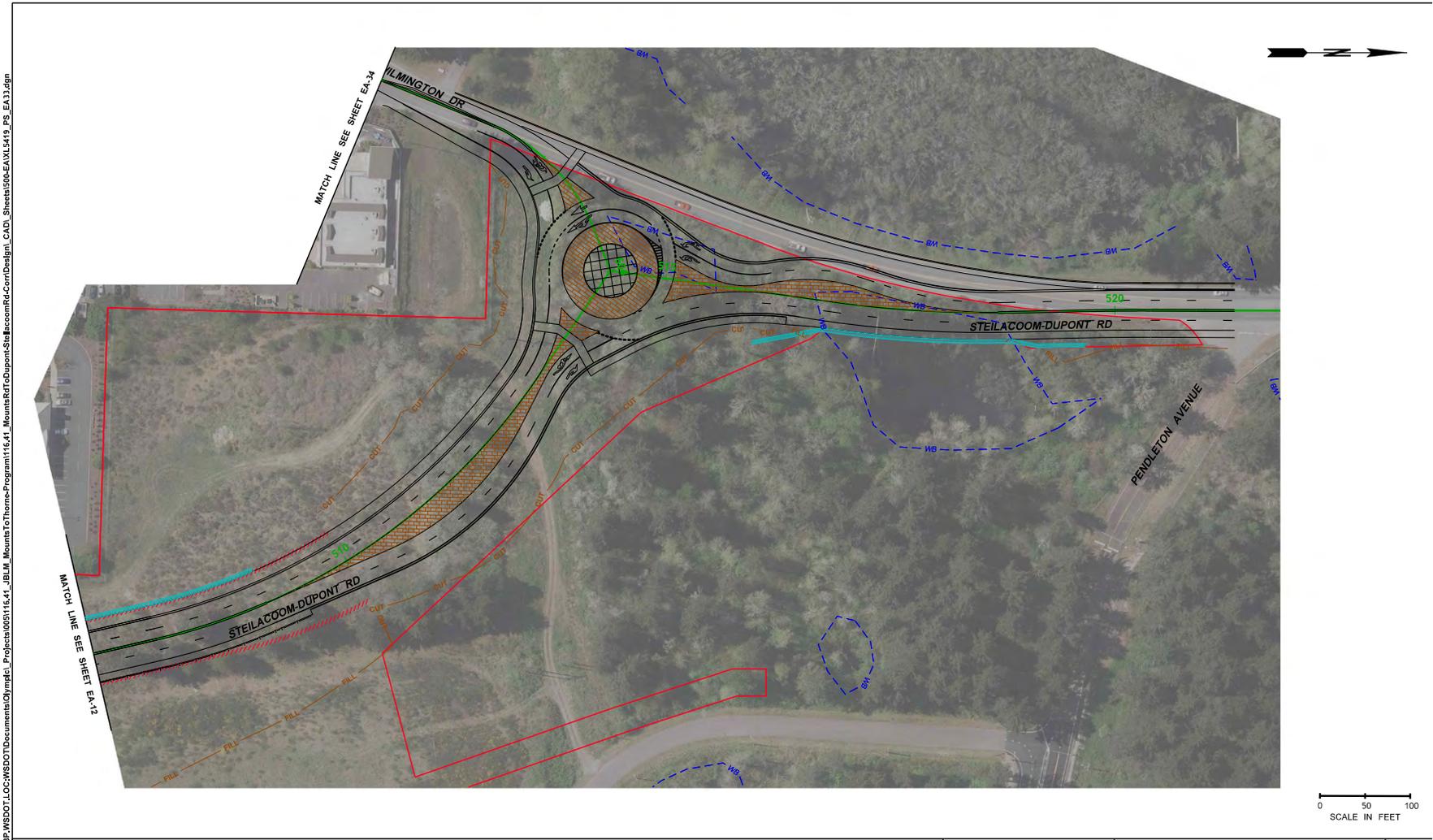


MATCH LINE SEE SHEET EA-31



NOTE:  
 PROPOSED WORK ON THIS SHEET IS LIMITED TO STRIPING AND SIGNING IMPROVEMENTS. NO NEW ROADWAY SURFACE WOULD BE CONSTRUCTED.

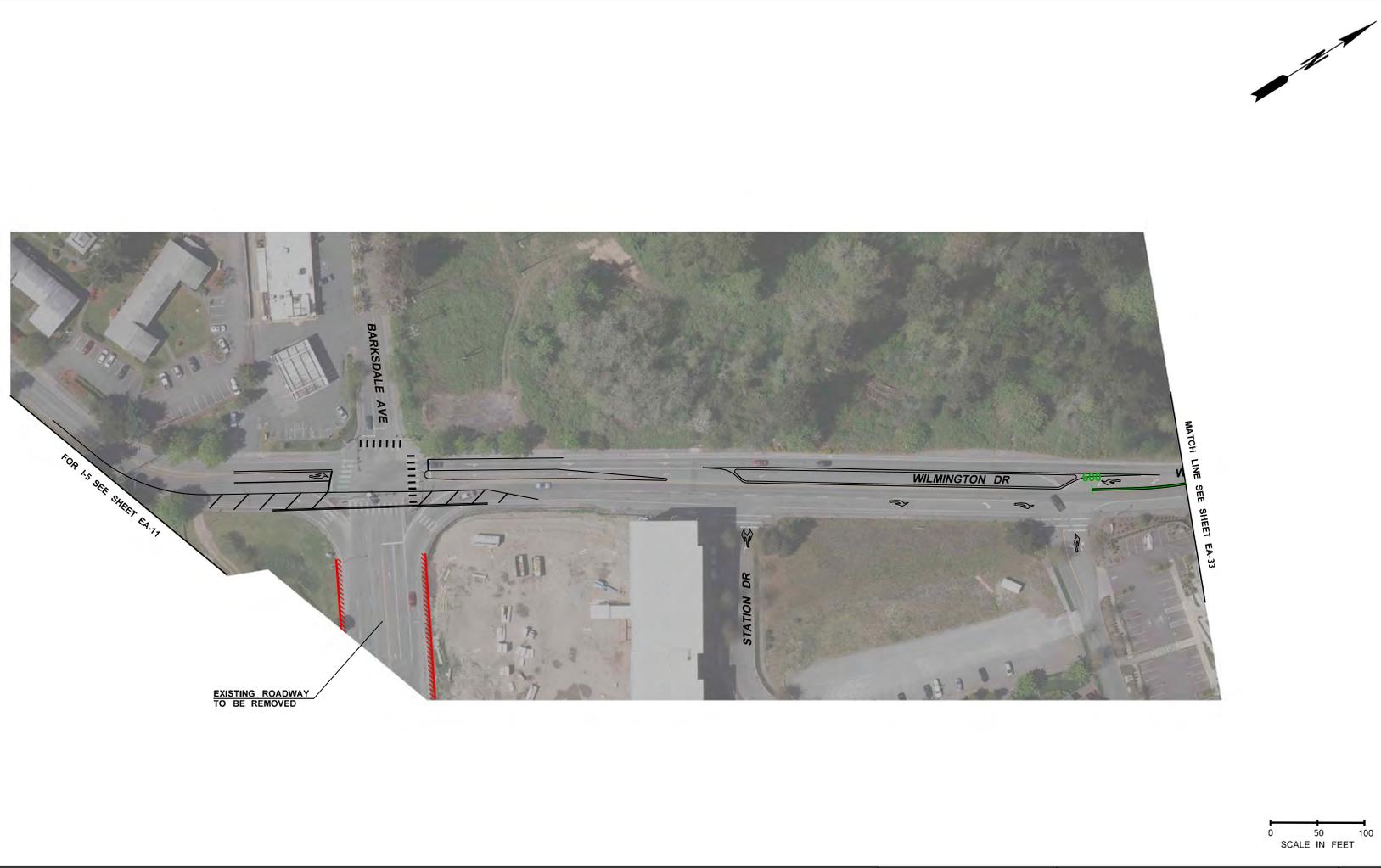
LEGEND				 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-32
	EXISTING RIGHT OF WAY		WETLAND BOUNDARY			
	PROPOSED LIMITED ACCESS		CUT		RETAINING WALL	
	PROPOSED RIGHT OF WAY		PROPOSED CUT LIMIT		NOISE WALL	
	PROPERTY LINE		PROPOSED FILL LIMIT		HOV LANE SYMBOL	
			BRIDGE			



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<p><b>LEGEND</b></p>		RETAINING WALL NOISE WALL HOV LANE SYMBOL	Washington State Department of Transportation <b>Parametrix</b>	<p><b>I-5</b> <b>MOUNTS TO STEILACOOM-DUPONT RD</b> <b>CORRIDOR IMPROVEMENTS</b></p> <p><b>BUILD ALTERNATIVES EXHIBITS</b></p>	<p><b>EA-33</b></p> <p>SHEET 33 OF 34 SHEETS</p>
EXISTING RIGHT OF WAY PROPOSED LIMITED ACCESS PROPOSED RIGHT OF WAY PROPERTY LINE	WETLAND BOUNDARY PROPOSED CUT LIMIT PROPOSED FILL LIMIT BRIDGE				

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LEGEND			 Washington State Department of Transportation <b>Parametrix</b>	I-5 MOUNTS TO STEILACOOM-DUPONT RD CORRIDOR IMPROVEMENTS BUILD ALTERNATIVES EXHIBITS	EA-34 SHEET 34 OF 34 SHEETS
EXISTING RIGHT OF WAY PROPOSED LIMITED ACCESS PROPOSED RIGHT OF WAY PROPERTY LINE	W/B WETLAND BOUNDARY - CUT CUT PROPOSED CUT LIMIT - FILL FILL PROPOSED FILL LIMIT BRIDGE	RETAINING WALL NOISE WALL HOV LANE SYMBOL			



Washington State  
Department of Transportation



U.S. Department of Transportation  
Federal Highway  
Administration