

I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2)



Corridor Program
Congestion Relief & Bus Rapid Transit Projects

ENVIRONMENTAL ASSESSMENT AND DRAFT SECTION 4(f) EVALUATION

March 2008



I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2)

King County, Washington

Environmental Assessment and Draft Section 4(f) Evaluation

Submitted pursuant to Section 42 USC 4332(2)(c) and Section 49 USC 303 and 23 CFR Part 771

By the U.S. Department of Transportation, Federal Highway Administration, Washington Division

3/28/08

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In compliance with the National Environmental Policy Act, this Environmental Assessment describes the environmental effects of adding lanes in both the northbound and southbound directions of I-405 from the interchange with I-5 east to the I-405 interchange with SR 169; reconstructing the SR 181 interchange, reconstructing the SR 167 interchange including a split-diamond interchange at Lind Avenue and Talbot Road; adding an auxiliary lane to northbound SR 167; and replacing access to Renton Hill over I-405.

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A public hearing on this Environmental Assessment will be held on April 22, 2008 at Renton Technical College from 4:00 p.m. to 7:00 p.m.



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TABLE OF CONTENTS

Acronyms and Abbreviations	ix
Glossary of Terms	xi
CHAPTER 1 Executive Summary	1-1
Where is the Tukwila to Renton Project located?	1-1
What is the Tukwila to Renton Project?	1-1
Why is WSDOT proposing to build this project?	1-2
When will construction begin and how long will it take?.....	1-2
How will the project affect the environment?.....	1-2
What is the purpose of this Environmental Assessment?	1-6
How is this document organized?	1-7
CHAPTER 2 Need for the Project	2-1
Why do we need the Tukwila to Renton Project?	2-1
How does the I-405 Corridor Program relate to the Tukwila to Renton Project?	2-2
What led WSDOT to propose the Tukwila to Renton Project?.....	2-2
What would happen if the Tukwila to Renton Project is not built?.....	2-3
What other improvements are being built on I-405 and connecting highways?	2-3
CHAPTER 3 Developing the Alternatives	3-1
What actions did WSDOT take prior to proposing the Tukwila to Renton Project?.....	3-1
How did WSDOT identify the improvements included in the Tukwila to Renton Project?....	3-2
What alternatives are studied in this Environmental Assessment?.....	3-2
What environmental issues influenced project design?	3-4
How has the public been involved?	3-7
What public outreach is planned for the Tukwila to Renton Project?.....	3-8
What special efforts did WSDOT make to reach minority, low-income, and non-English speaking individuals?	3-9
How has WSDOT involved government agencies?	3-9
How has WSDOT involved tribal governments?	3-11
CHAPTER 4 Description of the Proposed Project	4-1
What is the intent of the Tukwila to Renton Project?.....	4-1

What are the details of the Tukwila to Renton Project?.....	4-1
What benefits will this project provide?	4-23
How will this project incorporate community design preferences?.....	4-24
How will stormwater be managed?	4-25
How will the project be constructed and implemented?.....	4-26
What is the construction schedule?	4-27
CHAPTER 5 Effects of the Project	5-1
How did WSDOT evaluate effects on the environment?	5-2
How did WSDOT use environmental information to improve this project?	5-2
Did some environmental topics show only negligible effects?	5-2
What federal, state, and local laws and regulations govern the project?.....	5-5
CHAPTER 5.1 Traffic and Transportation	5-11
How did WSDOT evaluate traffic and transportation data for this project?.....	5-11
What is traffic like now along I-405 and what will it be like in the future?.....	5-12
How will the completed project affect traffic on I-405?.....	5-13
How will the completed project affect local arterials and streets?.....	5-14
How will the completed project affect freight movement?.....	5-14
How will the completed project affect safety?	5-14
How will the completed project affect transit and HOVs?	5-15
How will the completed project affect bicycle and pedestrian facilities?	5-16
How will travel be affected during construction?.....	5-16
What would traffic be like if WSDOT did not build the project?.....	5-17
CHAPTER 5.2 Noise	5-19
How did WSDOT evaluate noise levels for this project?	5-19
How noisy is the study area?.....	5-20
How will construction activities affect noise levels?.....	5-20
How will noise levels change after the project is completed?	5-20
What would future noise levels be like if WSDOT did not build this project?	5-23
CHAPTER 5.3 Communities, Businesses, and Public Services.....	5-25
What economic and social data did WSDOT evaluate for this project?.....	5-25
Who lives and works in the study area?.....	5-26

What communities, businesses, and services are located in the study area?5-26

Will any properties be acquired?5-27

Will any public services be displaced?.....5-37

How will construction activities affect communities, businesses, and services?.....5-38

How will the completed project affect communities, businesses, and services?5-38

How will the project affect minority and low-income populations?.....5-38

What would happen to these communities, businesses, and services if
WSDOT did not build this project?5-38

CHAPTER 5.4 Recreational and Cultural Resources 5-39

How did WSDOT identify and evaluate recreational and cultural resources
in the study area?5-39

What is Section 4(f) and what constitutes a use of a Section 4(f) resource?.....5-40

What is a Section 6(f) resource?.....5-42

What is a Recreation and Conservation Funding Board investment property?5-42

What recreational resources are located in the study area?.....5-43

What historic and cultural resources are located in the study area?5-45

How will construction activities affect recreational and cultural resources?.....5-46

How will the completed project affect the recreational and cultural resources?.....5-50

What would happen to the recreational and cultural resources if WSDOT
did not build this project?5-50

CHAPTER 5.5 Visual Quality..... 5-51

How did WSDOT evaluate visual resources for this project?5-51

What views can people currently see in the study area?.....5-51

What project features will have noticeable effects on visual quality?5-52

How will the completed project affect what people see?5-53

What would happen to visual resources if WSDOT did not build this project?.....5-56

CHAPTER 5.6 Water Resources..... 5-57

How did WSDOT evaluate water resources for this project?5-57

What water resources are found in the study area?.....5-59

How will construction activities affect water resources?5-63

How will the completed project affect water resources?.....5-65

What would happen to water resources if WSDOT did not build this project?	5-68
CHAPTER 5.7 Ecosystems	5-71
How did WSDOT identify and evaluate ecosystems in the study area?	5-71
What ecosystems are located in the study area?.....	5-73
How will project construction temporarily affect ecosystems?.....	5-83
How will the completed project permanently affect ecosystems in the study area?	5-86
How will project operation affect ecosystems in the study area?	5-90
What would happen to the ecosystems if WSDOT did not build this project?.....	5-90
CHAPTER 5.8 Design Options	5-93
What design options are proposed for this project?	5-93
What effects would each of the two design options have?	5-93
How will WSDOT compensate for any adverse effects?	5-96
What is the preferred design option?.....	5-96
CHAPTER 5.9 Cumulative Effects	5-99
What are cumulative effects and why do we study them?	5-99
How does this cumulative effects analysis relate to the analysis in the I-405 Corridor Program Final EIS?	5-100
What time and geographic boundaries did WSDOT use for this analysis?	5-100
How did WSDOT identify other projects to include in this analysis?.....	5-101
What is the history of the environmental resources WSDOT evaluated for this analysis? ..	5-102
How will construction of this project contribute to cumulative effects?	5-106
How will the completed project contribute to cumulative effects?	5-108
What would happen if WSDOT did not build this project?	5-109
CHAPTER 6 Measures to Avoid or Minimize Effects	6-1
What measures will be taken to avoid or minimize effects?.....	6-1
CHAPTER 7 List of Preparers.....	7-1
CHAPTER 8 References	8-1
GIS sources.....	8-1
Text references and verbal communications.....	8-3

EXHIBITS

Exhibit 1-1: Project Vicinity Map	1-1
Exhibit 2-1: I-405 Corridor	2-2
Exhibit 4-1: Project Features, Sheet 1	4-2
Exhibit 4-2: Project Features, Sheet 2	4-4
Exhibit 4-3: SR 181 Interchange Improvements	4-5
Exhibit 4-4: Project Features, Sheet 3	4-6
Exhibit 4-5: Project Features, Sheet 4	4-8
Exhibit 4-6: Project Features, Sheet 5	4-10
Exhibit 4-7: Project Features, Sheet 6	4-12
Exhibit 4-8: Freeway to Freeway Ramps in Reconstructed I-405/SR 167 Interchange	4-13
Exhibit 4-9: Rendering of I-405/SR 167 Interchange Improvements	4-14
Exhibit 4-10: Split-Diamond Interchange at Lind Avenue and Talbot Road	4-15
Exhibit 4-11: Project Features, Sheet 7	4-16
Exhibit 4-12: Project Features, Sheet 8	4-18
Exhibit 4-13: Mill Avenue Design Option for Local Access to Bronson Way	4-20
Exhibit 4-14: Main Avenue Design Option for Local Access to Bronson Way	4-21
Exhibit 4-15: New Local Access for Renton Hill	4-22
Exhibit 5-1: Regulatory Framework	5-6
Exhibit 5-2: Vehicles and Persons Traveling Through the I-405/SR 167 Interchange During the Busiest 10 Hours	5-13
Exhibit 5-3: Location of Noise Barrier 8	5-21
Exhibit 5-4: Location of Noise Barrier 10	5-22
Exhibit 5-5: Noise Barrier East 5 Modification	5-23
Exhibit 5-6: Tukwila and Renton Neighborhoods in the Study Area	5-27
Exhibit 5-7: Property Acquisitions that Require Relocation	5-28
Exhibit 5-8: Property Acquisitions, Sheet 1	5-29
Exhibit 5-9: Property Acquisitions, Sheet 2	5-30
Exhibit 5-10: Property Acquisitions, Sheet 3	5-31
Exhibit 5-11: Property Acquisitions, Sheet 4	5-32

Exhibit 5-12: Property Acquisitions, Sheet 5	5-33
Exhibit 5-13: Property Acquisitions, Sheet 6	5-34
Exhibit 5-14: Property Acquisitions, Sheet 7	5-35
Exhibit 5-15: Property Acquisitions, Sheet 8	5-36
Exhibit 5-16: Parking Loss.....	5-37
Exhibit 5-17: Section 6(f) Resources and RCFB Investment Properties	5-42
Exhibit 5-18: Park, Trail, and Recreation Areas Compared Against Section 4(f) Criteria.....	5-43
Exhibit 5-19: Potential Section 4(f) Resources Identified in the Study Area	5-44
Exhibit 5-20: Inset, Potential Section 4(f) Resources Identified in the Study Area.....	5-45
Exhibit 5-21: Historic Properties Compared Against Section 4(f) Criteria.....	5-45
Exhibit 5-22: Impact Area at Duwamish-Green River Trail Trailhead	5-47
Exhibit 5-23: Tukwila to Renton Project Topographic Viewshed	5-52
Exhibit 5-24: Summary of Potential Visual Quality Effects.....	5-54
Exhibit 5-25: Viewpoint Locations	5-55
Exhibit 5-26: Visual Change of Southbound I-405 from a Driver’s Perspective (Viewpoint F1).....	5-56
Exhibit 5-27: Visual Change of Southbound SR 167 from a Pedestrian’s Perspective (Viewpoint T8).....	5-56
Exhibit 5-28: Water Resources in the Study Area	5-60
Exhibit 5-29: Floodplains in the Study Area.....	5-62
Exhibit 5-30: The Delta Aquifer, a Part of the Cedar Valley Aquifer.....	5-63
Exhibit 5-31: Flow Control Facilities Proposed for the Tukwila to Renton Project	5-66
Exhibit 5-32: Floodplain Fill Volumes for each Subbasin.....	5-67
Exhibit 5-33: The Aquifer Protection Zones for the Delta Aquifer.....	5-69
Exhibit 5-34: Tukwila to Renton Project Wetlands Sheet 1	5-74
Exhibit 5-35: Tukwila to Renton Project Wetlands Sheet 2	5-75
Exhibit 5-36: Tukwila to Renton Project Wetlands Sheet 3	5-76
Exhibit 5-37: Fish Bearing Culverts owned by WSDOT and Associated with In-water Work	5-78
Exhibit 5-38: Anadromous Fish Species Known or Presumed to be in the Study Area.....	5-79
Exhibit 5-39: Resident Fish Species Known or Presumed to be in the Study Area.....	5-80
Exhibit 5-40: Baseline Land Cover In the Study Area.....	5-82

Exhibit 5-41: Summary of Temporary Wetland Effects5-84
Exhibit 5-42: Summary of Temporary Aquatic Resource Effects5-85
Exhibit 5-43: Potential Temporary Land Cover Loss In the Study Area5-86
Exhibit 5-44: Summary of Permanent Wetland Effects.....5-87
Exhibit 5-45: Summary of Permanent Aquatic Resource Effects.....5-89
Exhibit 5-46: Potential Permanent Land Cover Loss In the Study Area5-89
Exhibit 5-48: Comparison of Effects between the Mill Avenue and
Main Avenue Design Options.....5-94
Exhibit 5-47: Main Avenue Design Option Property Acquisitions.....5-93
Exhibit 5-49: Greenhouse Gas Emissions for 1990 and 20055-103

APPENDICES

Note: Appendices E through S are separate documents available on the CD that comes with this document.

APPENDIX A Project Benefits

APPENDIX B Agency and Tribal Correspondence

APPENDIX C Section 106 Programmatic Agreement

APPENDIX D SR 515 (Talbot Road) Interchange Project

APPENDIX E Air Quality Discipline Report

APPENDIX F Cultural, Historic, and Archaeological Technical Memorandum

APPENDIX G Cumulative Effects Analysis Technical Memorandum

APPENDIX H Economics Technical Memorandum

APPENDIX I Ecosystems Discipline Report

APPENDIX J Environmental Justice Discipline Report

APPENDIX K Geology and Soils Technical Memorandum

APPENDIX L Hazardous Materials Technical Memorandum

APPENDIX M Land Use Discipline Report

APPENDIX N Noise Discipline Report

APPENDIX O Draft Section 4(f) Evaluation

APPENDIX P Social, Public Services, and Utilities Technical Memorandum

APPENDIX Q Transportation Discipline Report

APPENDIX R Visual Quality Technical Memorandum

APPENDIX S Water Resources Discipline Report

CHAPTER 1 EXECUTIVE SUMMARY

Where is the Tukwila to Renton Project located?

The I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2), referred to as the Tukwila to Renton Project, is in the Puget Sound region of Washington State on the south end of the Interstate 405 (I-405) corridor between I-5 and State Route 169 (SR 169), see Exhibit 1-1. This section of I-405 passes through the cities of Tukwila and Renton. This project extends approximately four and one-half miles along I-405, from I-5 to SR 169, and approximately two miles along SR 167, from I-405 to SW 43rd Street.

What is the Tukwila to Renton Project?

The Tukwila to Renton Project is the second phase of the I-405 Corridor Program for this portion of I-405. The first phase is improvements built for the Renton Nickel Improvement Project. The Tukwila to Renton Project will:

- Add capacity to both I-405 and SR 167.
- Reconstruct bridges over the Green River and Cedar River and add one new bridge over the Green River.
- Improve the SR 181 and SR 169 interchanges.
- Reconstruct the SR 167 interchange consisting of a new general-purpose direct-connector ramp from southbound I-405 to southbound SR 167, HOV direct-connector ramps from northbound SR 167 to northbound I-405 and from southbound I-405 to southbound SR 167, and a split-diamond interchange at Lind Avenue and Talbot Road with connecting frontage roads.
- Reconstruct the two local street accesses to Renton Hill.

This Environmental Assessment (EA) also considers two potential design options for rerouting traffic from the Houser Way bridge, which will be removed, to the Bronson Way bridge. One option routes traffic one-way northbound on Mill Avenue S and one-way southbound on Main Avenue S. The other option routes traffic in both directions on Main Avenue.

This EA considers the baseline conditions (preconstruction) to be 2014. At that point, all the improvements proposed for the



Exhibit 1-1: Vicinity Map

Renton Nickel Improvement Project are assumed to have been completed.

Why is WSDOT proposing to build this project?

The Washington State Department of Transportation (WSDOT) is proposing to construct the Tukwila to Renton Project, to relieve congestion. Relieving congestion will benefit the public by:

- Lowering the number of accidents thus improving safety.
- Increasing overall speeds through this section of freeway.
- Improving response times of emergency service vehicles using I-405.
- Improving access to and from I-405 and local circulation.

When will construction begin and how long will it take?

Construction of the entire Tukwila to Renton Project is expected to occur in intervals over several years as funding becomes available. For this reason, construction activity will not be constant for the entire study area and the duration of construction will vary depending on the improvement.

The first element WSDOT plans to construct is the SR 515 Interchange Project. WSDOT has obtained funding for this portion through the 2005 Transportation Partnership Account. This Tukwila to Renton Project element will construct a half-diamond interchange on I-405 at Talbot Road (SR 515). The remaining elements of the Tukwila to Renton Project are unfunded at this time. For more information on this funded element see Appendix D.

How will the project affect the environment?

The I-405 Team studied this project with a focus on 15 environmental topics. The findings from these studies are summarized below:

Air Quality. The Tukwila to Renton Project will not negatively affect regional air quality and will be in compliance with National Ambient Air Quality Standards and Mobile Source Air Toxic requirements. Dust and odors may be

present during construction, but these effects will be minor and temporary.

Cultural Resources. The Tukwila to Renton Project will not affect any archaeological or historic properties that are eligible or potentially eligible for the National Register of Historic Places (NRHP).

No new archaeological sites were found in areas that were tested. Full testing for archaeological resources will be completed under the Section 106 Programmatic Agreement¹ (Appendix C) once project funding is available and before construction begins.

WSDOT will follow an inadvertent discovery plan in case archaeological resources are discovered during excavation.

Cumulative Effects. No negative long-term cumulative effects are expected as a result of this project and others in the nearby area. Some minor temporary effects are expected for air quality, water resources, and aquatic resources during construction but mitigation measures used on all the evaluated projects will keep these effects to a minimum.

Economics. The Tukwila to Renton Project will not negatively affect the local or regional economy. The cities of Tukwila and Renton are expected to benefit from tax revenue generated by the construction of this project, and local businesses will benefit from faster freight movement. The project construction could also create approximately 10,000 direct and 6,400 indirect full-time jobs.

Ecosystems. The Tukwila to Renton Project was designed to avoid effects to ecosystems to the greatest extent practicable. In all cases where direct temporary or permanent effects on ecosystems are unavoidable, mitigation will be implemented in accordance with applicable local, state, and federal regulations to compensate for affected resources. Wetland effects are anticipated to be mitigated by debiting from the Springbrook Creek Wetland and Habitat Mitigation Bank. A portion of the stream and river mitigation for the Tukwila to Renton Project will be implemented through the Panther

¹ *The Programmatic Agreement is currently in draft form and is being circulated for signatures. The final signed agreement will be included in the Finding of No Significant Impact.*

Creek Watershed Rehabilitation Plan. In addition, other mitigation activities are anticipated to compensate for project effects that will occur in the Green River and Cedar River basins. This additional mitigation will be further developed in these areas once funding for future project phases has been identified.

The I-405 Team will conduct further evaluation of the seven fish passage barrier culverts within the study area. Retrofit or replacement of these barriers will be determined during the project's permitting phase.

Environmental Justice. The Tukwila to Renton Project will not have disproportionately high or adverse effects on minority or low-income people. Project effects, both positive and negative, will be experienced proportionately by both the general public and minority and low-income populations.

Geology and Soils. The project will have no adverse effect on geology or soils in the study area. The presence of some potential hazards, such as erosion, coal mine subsidence, and seismic hazards, will be prominent considerations during design and construction. Once construction is complete and the highway is in use, the project will have no further effect on geology and soils.

Hazardous Materials. Because WSDOT will comply with all applicable environmental rules and regulations, the I-405 Corridor Programmatic Commitments, and Record-of-Decision (ROD) during construction of the project, effects from hazardous materials are expected to be few, if any. However, despite measures to manage risks associated with hazardous materials, accidents could occur or unknown contaminants could be encountered. These materials could result in short-term contamination effects to the environment before clean up can begin. If unknown contaminated sites are discovered, they will be managed so that construction activities comply with state and federal environmental regulations.

Land Use. This project will not negatively affect land use patterns. The land to be acquired by the project represents a small fraction of Tukwila's and Renton's housing and commercial capacity and therefore is considered to be a negligible change in land use.

The project is not expected to have a substantial effect on either Tukwila's or Renton's policies, plans, and regulations.

The improvements anticipated in the Build Alternative support the design, land use, growth, transportation, and capital facilities policies of both jurisdictions.

Noise. The project will increase noise levels throughout the study area, primarily affecting residences in the Renton Hill and Talbot Hill neighborhoods. Fourteen noise barriers were evaluated for the project. Two of these barriers were found to be both reasonable and feasible for construction under the FHWA and WSDOT criteria for noise abatement. With these two noise barriers in place, noise effects from this project are greatly diminished though not entirely eliminated.

Draft Section 4(f) Evaluation. The Tukwila to Renton Project will not adversely affect any historic properties or recreational resources. Within the study area, 19 parks and 2 historic buildings are protected Section 4(f) resources. Of these, two are also Section 6(f) resources. The Tukwila to Renton Project will have direct uses at 5 of the 21 Section 4(f) resources in the study area. These effects will change some of the resource features but will not permanently interfere with the activities or purposes of the resources. All temporarily occupied trails and parks will be restored following construction.

Social Elements, Public Services, and Utilities. The acquisition of 16 commercial and 25 residential properties required by this project will affect some individuals. WSDOT will provide relocation assistance to residents and businesses in compliance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended. In general, however, the project is not expected to affect community cohesion and will maintain or enhance livability for communities within the study area.

Public services will benefit from this project because response times for emergency services are expected to improve.

This project is not considered to negatively affect utilities. This is because even though the project overlaps with the current location of most utilities in the study area, WSDOT will work with the utility owners to either relocate the utilities or protect them in place where avoidance is not feasible through project design.

Transportation. This project will add capacity, increase travel speed an average of 20 miles per hour, and improve

operations on I-405. The reduced congestion is also expected to improve safety.

Visual Quality. The visual quality analysis shows that this project will moderately reduce the visual quality of the project area. Most of the visual effects vary depending upon the extent of development, the people exposed to the view, and the sensitivity of those people to a given viewpoint. With the project in place, 11 viewpoints show a decrease in visual quality and 1 viewpoint shows an increase in visual quality.

Water Resources. The Tukwila to Renton Project is expected to benefit water resources. This project will provide flow control and water quality treatment for more impervious areas than under existing conditions. Peak and base flow rates to streams and rivers will not be altered by the project. This additional treatment will have a beneficial effect on both surface water flow and water quality.

The project will not affect local floodplains because WSDOT will provide mitigation for any fill placed within the 100-year floodplain.

This project is not expected to affect the Cedar Valley Aquifer and its subunit, the Delta Aquifer, which is designated as a sole source aquifer requiring extra protection. Potential groundwater effects to aquifers, such as contamination from spills and reduced well capacity are expected to be avoided during construction by implementing the mitigation measures described in Chapter 6 of this EA.

What is the purpose of this Environmental Assessment?

The purpose of this EA is to provide information to the public about environmental effects anticipated from the Tukwila to Renton Project. This EA compares two alternatives: the Tukwila to Renton Project as the Build Alternative and a No Build Alternative. This document fulfills WSDOT's obligation under the National Environmental Policy Act to disclose project effects and mitigation. Following the public comment period, FHWA will publish a Finding of No Significant Impact (FONSI) document. Upon final approval, the project will move into the construction phase. Construction of the entire Tukwila to Renton Project is expected to be spread over several years as funding becomes available. The first element

of the Tukwila to Renton Project that is proposed for construction is the SR 515 Interchange Project. This portion is funded through the 2005 Transportation Partnership Account (TPA). This project element will construct a half-diamond interchange on I-405 at Talbot Road (SR 515). Construction of this element is scheduled to begin in autumn of 2008. The remaining elements of the Tukwila to Renton Project are unfunded at this time.

How is this document organized?

Chapters 2 and 3 of this EA explain why this project is needed and provide a background into the alternatives developed as part of the I-405 Corridor Program. Chapter 4 provides a detailed description of what this project will build. Chapter 5 discusses the affected environment and the potential effects by individual topics. Chapter 6 presents the proposals for avoiding or minimizing effects identified in Chapter 5.

The appendices provide a summary of project benefits, a list of commitments for project mitigation, a discussion on construction staging, and all of the technical documents that contributed information to this EA.

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CHAPTER 2 NEED FOR THE PROJECT

Why do we need the Tukwila to Renton Project?

Traffic congestion on I-405 between I-5 and SR 169 is high, averaging 146,000 vehicles daily. Southbound I-405 carries the highest volumes in the study area between SR 167 and SR 169. However, the northbound lanes have slower travel speeds that drop down to an average of 20 to 35 mph during the morning commute.

Safety is also a concern because accidents are more frequent within the study area than along the rest of the I-405 corridor. WSDOT has identified nine high accident locations in the study area:

- The on-ramp to northbound I-405 from Tukwila Parkway
- The off-ramp from northbound I-405 to Interurban Avenue (SR 181)
- The off-ramp from southbound I-405 to Interurban Avenue (SR 181)
- The stretch of Interurban Avenue (SR 181) between Fort Dent Way and S 156th Street
- The northbound I-405 lane that directs traffic onto southbound SR 167
- The interchange-ramp from southbound I-405 to southbound SR 167
- The interchange-ramp from southbound I-405 to northbound SR 167 (Rainer Avenue S)
- The interchange-ramp from northbound SR 167 to northbound I-405
- The off-ramp from northbound I-405 to southbound SR 169

The safety concerns at these locations are all related to congestion and the roadway configuration.



Peak hours represent the most congested conditions.

How does the I-405 Corridor Program relate to the Tukwila to Renton Project?

In 2002, WSDOT completed an environmental impact statement (EIS) that reviewed a range of alternatives for improving I-405 on a corridor-wide basis. As a result, WSDOT selected an alternative that is now known as the I-405 Corridor Program.

WSDOT created the I-405 Corridor Program as a comprehensive strategy to reduce congestion and improve mobility throughout the I-405 corridor. The corridor begins at the I-405/I-5 interchange in the city of Tukwila and extends northward 30 miles to the I-405/I-5 interchange in the city of Lynnwood. The program’s purpose is to provide an efficient, integrated, and multimodal system of transportation solutions that:

- Maintains or enhances livable communities within the corridor.
- Maintains or improves air quality, protects or enhances fish-bearing streams, and promotes regional environmental values such as continued integrity of the natural environment.
- Supports a vigorous state and regional economy by responding to existing and future travel needs.
- Accommodates planned regional growth.

As part of the I-405 Corridor Program, the Tukwila to Renton Project proposes a focused strategy to improve I-405 between I-5 in Tukwila and SR 169 in Renton. Exhibit 2-1 shows the entire I-405 corridor including the area covered by this project.

What led WSDOT to propose the Tukwila to Renton Project?

The Tukwila to Renton Project was proposed as part of a corridor-wide plan that will reduce congestion on I-405. Transportation is vital to the health of the region’s economy and affects everyone’s quality of life. I-405 plays a vital role in the movement of people and goods through the Puget Sound region. As the population and employment of the Puget Sound region increases, it is important to continually improve our transportation system.



Exhibit 2-1: I-405 Corridor

What would happen if the Tukwila to Renton Project is not built?

Traffic in the region is predicted to continue to increase in the future. Without the Tukwila to Renton Project, I-405 capacity will become increasingly inadequate to meet the traffic demand. With more people using the freeway, the morning and evening commutes will become slower for even longer portions of the day, and the frequency of accidents will continue to be high. High levels of congestion also slow freight movement, which increases shipping costs and creates a burden on the economy.

In addition, other project benefits of the Tukwila to Renton Project will not be realized if the project is not built. These other benefits include improved stormwater treatment from retrofit of existing pavement and bringing several older I-405 bridges up to current earthquake safety standards.

What other improvements are being built on I-405 and connecting highways?

The Tukwila to Renton Project is one of several I-405 projects. Other projects along the I-405 corridor and connecting highways include:

- High-Occupancy Toll (HOT) Lanes Pilot Project on SR 167 (under construction)
- SR 167 HOV Stage 3 Project (under construction)
- Renton Nickel Improvement Project (under construction)
- Renton to Bellevue Project (proposed)
- 112th Avenue to I-90 Widening Project (under construction)
- Bellevue Nickel Improvement Project (under construction)
- NE 8th Street to SR 520 Braided Crossing (proposed)
- Kirkland Nickel Project (completed)
- SR 520 to I-5 Widening Project (proposed)

In addition to improvements along I-405 and SR 167, WSDOT has planned projects on SR 520, I-90, and SR 522 as recorded in WSDOT's 2004 Highway System Plan. This plan forecasts transportation needs for the next 20 years. The Metropolitan

Transportation Plan for the central Puget Sound region, Destination 2030, revised in 2003, defines the region's action plan for the next 30 years.

The I-405 Corridor EIS also identified possibilities to better manage the corridor through tolling. WSDOT could achieve this through the use of express toll lanes so that HOVs and transit could use the lane for free and other vehicles would pay a toll to use the lane. Express toll lanes could be created through the conversion of the HOV lane and the possible conversion one of the new lanes proposed by this project. The footprint identified in this document would not preclude implementation of express toll lanes. The freeway system would, however, operate differently if express toll lanes are used. If express toll lanes are to be implemented in the future, additional operational analysis and any necessary environmental documentation would be prepared. An operational change from HOV lanes to express toll lanes on I-405 between I-5 and SR 169 would be a future decision.

CHAPTER 3 DEVELOPING THE ALTERNATIVES

What actions did WSDOT take prior to proposing the Tukwila to Renton Project?

WSDOT analyzed several alternatives for improving the movement of people and freight along I-405. These alternatives are presented in the I-405 Corridor Program EIS along with mitigation measures proposed for the corridor.

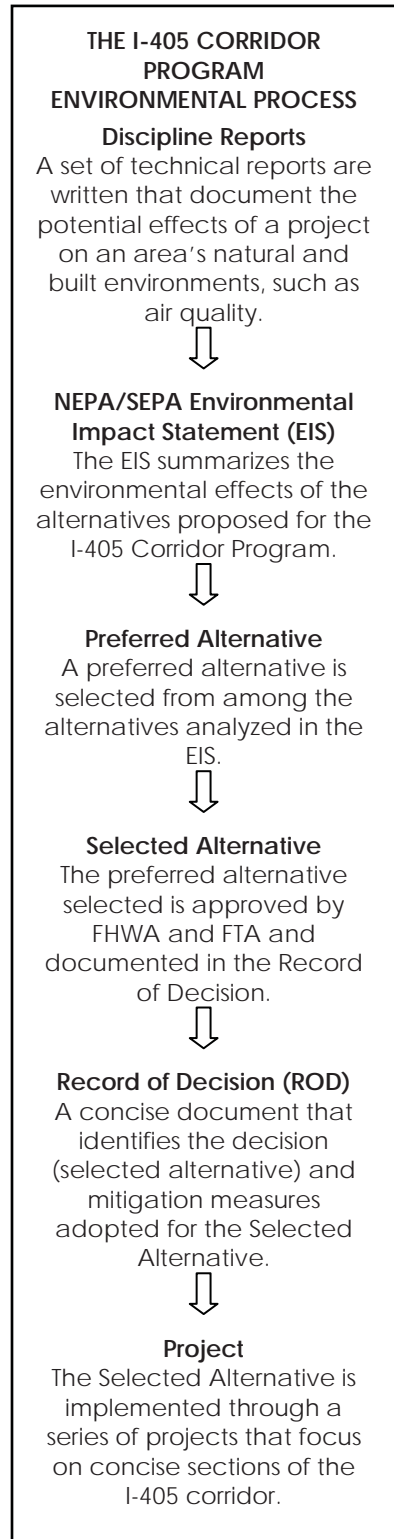
In the EIS, decision-makers considered various travel modes for making potential improvements. The modes evaluated included single-occupant vehicles, carpools, transit, and rail alternatives. The EIS also considered general locations for improvements and how combinations of improvements could work together as a comprehensive system. The I-405 Corridor Program Environmental Process, shown at the right, outlines the overall process.

Once WSDOT completed the Draft EIS, a Preferred Alternative was recommended and analyzed in the Final EIS. The Preferred Alternative combined highway, transit, local arterial, and other improvements within the 30-mile stretch of the I-405 corridor and immediate vicinity.

The Preferred Alternative was modified somewhat to become the Selected Alternative stated in the Record of Decision (ROD). The ROD identifies the basis for advancing the Selected Alternative, and it explains the adopted means to avoid, minimize, and compensate for environmental effects.

In both the EIS and the ROD, WSDOT specified that the improvements cited in the Selected Alternative would be examined further prior to implementation to determine the best combinations for phased construction. WSDOT continues to examine these recommendations within the constraints of the available budget while maintaining good engineering design.

It is expected to take 20 or more years to implement the Selected Alternative for the entire I-405 Corridor Program. Projects have been prioritized to address the most congested areas first.



How did WSDOT identify the improvements included in the Tukwila to Renton Project?

Using the Selected Alternative as the master plan, WSDOT developed plans for congestion relief roadway improvements. WSDOT determined that these improvements needed to be phased to address the highest priority trouble spots and to take advantage of available funding. The first phase was initially funded by the “Nickel” transportation tax passed in 2003 and the Transportation Partnership Account tax passed in 2005. The Phase 1 project for I-405 between I-5 and SR 169 was the Renton Nickel Improvement Project.

With the Phase 1 determined, WSDOT began to define Phase 2, the Tukwila to Renton Project. The project has been designed with these priorities in mind:

- Improve the worst congestion choke points along I-405.
- Improve safety.
- Increase travel speeds in Tukwila and Renton during peak commuter hours.
- Facilitate freight movement.
- Implement meaningful environmental improvements.

To accomplish these priorities, the Tukwila to Renton Project will reconstruct bridges within this section; improve the SR 181 and SR 169 interchanges; add freeway capacity; redirect traffic in the SR 167 interchange by constructing a split-diamond interchange at Lind Avenue and Talbot Road and adding direct-connector ramps between I-405 and SR 167.

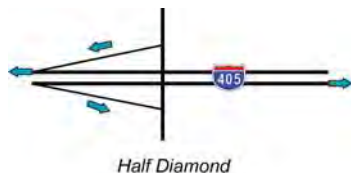
What is a split-diamond interchange?

This interchange type consists of two half-diamond interchanges at arterials. These are connected by two, one-way frontage roads. Traffic enters and exits the freeway at the two arterials, creating an elongated diamond configuration as shown.



What is a half-diamond interchange?

It is an interchange where traffic exits or enters the freeway in one direction. This creates a triangular or half-diamond configuration as shown.



What alternatives are studied in this Environmental Assessment?

This EA evaluates a Build Alternative and a No Build Alternative:

- **A Build Alternative**, which will:
 - Reconstruct the SR 181 interchange by constructing a new on-ramp and a new off-ramp to SR 181 and extending Tukwila Parkway as a new bridge across the Green River to connect with SR 181.
 - Remove the Tukwila Parkway to northbound I-405 on-ramp.

- Construct one additional lane in both directions on I-405 from SR 181 through SR 167.
- Reconstruct five bridges over the Green River.
- Construct an auxiliary lane on northbound SR 167 from S 43rd Street to I-405.
- Construct general-purpose direct-connector ramps from I-405 to southbound SR 167.
- Construct HOV direct-connector ramps from southbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405.
- Construct a new split-diamond interchange at Lind Avenue and Talbot Road, and build a southbound and a northbound frontage road connecting Lind Avenue and Talbot Road.
- Construct two additional general-purpose lanes in both directions on I-405 from SR 167 through SR 169.
- Reconstruct the two local street accesses to Renton Hill.
- Relocate the Burlington Northern Santa Fe (BNSF) Railroad Bridge over the Cedar River north of its current alignment and reconstruct three bridges over the Cedar River.
- Close Houser Way where it crosses the Cedar River and remove this bridge. Traffic will be rerouted from the north via Bronson Way, which will be striped to accommodate the new traffic pattern.

Chapter 4 describes the Build Alternative in detail.

- **A No Build Alternative**, which will not make the transportation improvements listed above.

The No Build Alternative assumes that only the improvements associated with the Renton Nickel Improvement Project are constructed. Only routine activities such as road maintenance, repair, and safety improvements would be expected to take place between 2014 and 2030. This alternative does not include improvements that would increase roadway capacity or reduce congestion beyond baseline conditions. For these reasons, it does not satisfy the project's purpose to reduce

What are baseline conditions for this project?

Baseline conditions describe the site conditions just before construction of the project begins. This can include the build condition of earlier phased projects that are already approved and funded and expected to be complete before the next project begins. Baseline provides an important point of comparison for understanding the effects of the proposed Build Alternative.

For the Tukwila to Renton Project, the baseline condition assumes that the Renton Nickel Improvement Project has been completed.

congestion on I-405 between I-5 in Tukwila and SR 169 in Renton.

The No Build Alternative has been evaluated in this EA as a comparison for the effects associated with the Build Alternative.

What environmental issues influenced project design?

WSDOT has actively pursued ways to protect and preserve the important natural resources in this area and to preserve the integrity of the area's neighborhoods. This intent has influenced the project design in several ways:

What is liquefaction?

Liquefaction usually occurs in saturated, loose, granular soil such as sand, silty sand, and sandy silt. During a strong earthquake, these soils lose their grain-to-grain contact and essentially become a slurry with characteristics like quicksand.

- **Soil conditions:** Some soils in the study area are more susceptible to liquefaction during an earthquake, which influences how bridges are designed.
- **Streams:** I-405 and SR 167 cross several streams and rivers or are adjacent to them. To protect these resources, design solutions such as retaining walls were considered and bridges were designed to span streams and rivers where possible.
- **Wetlands:** This resource occurs adjacent to I-405 and SR 167 in several areas. To avoid or minimize effects as much as possible, design solutions such as ramps built as bridges and retaining walls were incorporated where feasible. WSDOT also used an innovative design for the SR 167 interchange with stacked ramps to reduce the roadway footprint and its effect on wetlands.
- **Cedar Valley Aquifer and public water wells:** This is a sole-source aquifer and the City of Renton's wells in this area provide most of the City's drinking water. Design solutions were evaluated that would allow the wells to remain in place and would not disturb the aquifer. These solutions include using spread-footing foundations, where feasible, that do not penetrate the aquifer on all bridge modifications over the Cedar River and maintaining spill containment ponds to capture accidental chemical spills from the highway.
- **Historic sites:** Several historic sites are in the area. Some of the sites are listed as Washington State Historic Properties and two, the James Nelsen House and the

Renton History Museum, are also eligible for listing in the NRHP. The design considered alignment adjustments and the use of retaining walls to minimize effects to protected properties.

- Neighborhoods and businesses: Several neighborhoods and businesses border the freeway. The design considered how to shift the roadway alignment and use retaining walls to have the least effect possible on neighborhoods and businesses.
- Water wells and parks: WSDOT and the City of Renton formed the Wells & Parks Task Force in an effort to address the freeway design constraints within the area of the Cedar River Park, Liberty Park, and the City's Narco property and the City's drinking water supply system. This task force met and developed design solutions for the off-ramp from northbound I-405 to SR 169 that minimized the effects on Cedar River Park and also avoided effects to the City's wells that are adjacent to I-405.

Because the I-405 Team planned for these issues, WSDOT has avoided or minimized potential negative project effects by incorporating specific design features. These features are described below from west to east (northbound) along the study area.

I-405, I-5 to SR 167

To minimize effects to Gilliam Creek between I-405 and Tukwila Parkway southwest of 66th Avenue S, the project incorporated retaining walls. These walls will be along I-405, 66th Avenue S, and Tukwila Parkway.

To extend Tukwila Parkway to SR 181, a new bridge will be built over the Green River. To minimize effects to the Green River and its floodplain, WSDOT selected a bridge structure that will span the river and will have its abutments outside the 100-year floodplain.

To minimize and avoid effects to the environmental resources east of the Green River resulting from extending Tukwila Parkway and constructing the new on-ramp to northbound I-405, other features have been incorporated into the project design. Portions of the new on-ramp for Tukwila Parkway will be built as a bridge structure rather than on fill. This will occur where the new roadway crosses over the Nelson Side

Channel and over the northbound I-405 off-ramp to SR 181. This design minimizes the project's effects on the Nelson Side Channel, which is considered a high quality wetland. Additional design features that minimize encroachment on this wetland are retaining walls that will be used along the extension of Tukwila Parkway east of the Green River to SR 181 and along the northbound I-405 to SR 181 off-ramp. Another benefit of using retaining walls for Tukwila Parkway east of the river is that the project will avoid the need to move or demolish the barn on the James Nelsen House property; the house is eligible for the NRHP.

To minimize effects on SW Grady Way and the businesses north of I-405, the majority of the widening was done to the south. This avoided having to move Grady Way and has the least effect on the businesses in that area.

SR 167, I-405 to SW 43rd Street

WSDOT incorporated several design features to widen SR 167 and add direct-connector ramps between I-405 and SR 167 that minimized effects on the wetlands and businesses along SR 167. First, the team designed "stacked" freeway ramps to minimize the width required for the interchange. Second, widening at the interchange and south to SW 27th Street occurs as far west as possible to minimize effects to the Panther Creek wetlands while limiting how much area would need to be acquired from businesses to the west of SR 167. Third, retaining walls will be used along SR 167 and East Valley Road to minimize wetland and stream effects.

I-405, SR 167 to SR 169

WSDOT plans to use retaining walls in areas adjacent to both Thunder Hills Creek and Rolling Hills Creek to minimize effects to both streams.

Design in this area also accommodated the needs of businesses, the City of Renton, and residents. To minimize effects to Renton Village, I-405 will be widened to the south. WSDOT also avoided effects to City Hall by moving the widening to the east. Within the area of the Renton Hill Neighborhood, widening will occur to the north and west to minimize effects to this area, which is already restricted by the "S" curves. Also, in this area, WSDOT has designed the widening of the southbound I-405 mainline to be cantilevered

over Main Avenue and to be built above a section of Renton Avenue to avoid the need to encroach on the neighborhood. Local road improvements for access to Renton Hill will include a “stacked design” to minimize effects and to maintain two local accesses to the Renton Hill Neighborhood.

To protect the City of Renton’s public water well system on the east side of I-405 near SR 169, WSDOT’s design shifts the widened freeway to the west. WSDOT also designed the northbound I-405 off-ramp to SR 169 as a bridge structure to maintain access between the Cedar River Park and the well buildings located east of I-405. The City of Renton’s Tri-Park Master Plan developed for this area accommodates this design.

WSDOT incorporated measures to minimize effects to the Cedar River due to reconstructing three bridges and relocating the BNSF Bridge. Piers will be placed outside of the ordinary high water mark (OHWM) to avoid effects to fish habitat and spread-footing foundations are intended to be used to avoid penetrating the Cedar Valley Aquifer. The existing Houser Way bridge will be permanently removed.

How has the public been involved?

In accordance with the I-405 Public Involvement Plan, WSDOT has involved the public in the I-405 Corridor Program that led up to the Tukwila to Renton Project through a wide range of activities such as:

- Inviting citizens to participate in the project scoping and development process.
- Conducting public open houses, producing newsletters, and giving presentations at neighborhood meetings.
- Providing other outreach efforts such as establishing Executive, Steering, and Advisory committees and holding meetings.
- Providing project information in multiple languages and in easily accessible locations such as public libraries.

Several committees have also provided dialogue and coordination for the project as part of the I-405 Corridor Program agency and public involvement process. These groups include:

How have we communicated with the public?

Speaker’s Bureau – I-405 Team personnel made formal presentations to community organizations.

Environmental Outreach – Field studies put WSDOT in touch with residents living in the area. For example, WSDOT contacted agencies who provide services to low-income and minority populations to discuss the project and how it could affect their services.

Public Events – WSDOT has provided booths at community events and held open houses to have direct dialog with citizens.

Project Website – WSDOT provided the I-405 Project Website at www.wsdot.wa.gov/projects/i-405, as a resource for the public. WSDOT updates the site regularly.

Newsletters/Project Updates – Newsletter mailings and email updates offered an ideal opportunity to inform the public of project progress.

Postcard – Mailings offered an opportunity to comment on the project and to request WSDOT’s participation at organization meetings. We distributed individual postcards to libraries, multifamily apartment/condominium associations, and special housing establishments.

- The I-405 Executive Committee was comprised of executives from FHWA, FTA, WSDOT, King County, and Sound Transit, as well as members from the Washington State Transportation Commission and elected officials from cities along the I-405 corridor.
- A Renton Advisory Committee and Tukwila Advisory Committee were effective in reaching area neighborhoods by engaging the community in the visual appearance of highway improvements. These committees were made up of citizens, business people, elected officials, partnering agencies, WSDOT, and city staff.
- The I-405 Steering Committee was responsible for providing technical and policy guidance. The committee consists of senior staff from the local, regional, state, and federal agencies having jurisdiction within the study area. The Steering Committee provides valuable feedback on technical feasibility, environmental acceptability, costs, and performance.



Viewing information at a public scoping meeting

What public outreach is planned for the Tukwila to Renton Project?

WSDOT held a public scoping meeting on May 23, 2006. Attendees were invited to submit written and/or verbal comments to WSDOT during a public comment period.

Following these meetings, WSDOT compiled the comments into the scoping report. The comments addressed topics such as noise, stormwater management, and effects on property. Many people asked about traffic and transportation as it related to the purpose and the need for this project.

On March 20, 2007, we held an access hearing relating to the proposed SR 515 half-diamond interchange. The hearing was for owners abutting SR 515 where the access rights are proposed to change. Notices went out to all property owners whose property will be affected by the funded SR 515 Interchange Project; notices were also published in the Seattle Times and Seattle Post-Intelligencer.

An open house on October 4, 2007 presented the discipline report analysis findings to the public and provided an opportunity for people to learn more about the project's potential effects. In winter 2008, a public hearing and meeting will be held to discuss this EA. This meeting will occur during



A Tukwila to Renton Project public open house

the comment period following the EA publication. During the comment period, the public is encouraged to submit formal comments on the project and its effects.

What special efforts did WSDOT make to reach minority, low-income, and non-English speaking individuals?

WSDOT has used the public outreach program to ensure that minority, low-income, and non-English speaking individuals have opportunities to stay informed about the project and provide their input. To achieve this, services that are used by these groups have been contacted at each stage and have been provided with information to hand out to their clients.

Notices of meetings, documents available for review, and comment periods have all been published in a variety of local journals in various languages:

- *Russian World* (Russian)
- *El Mundo* (Spanish)
- *Chinese Post* (Chinese)
- *Phuong Dong Times* (Vietnamese)
- *The Skanner* (English)
- *Renton Reporter* (English)
- *King County Journal* (English)

The I-405 Corridor Program's public involvement process has been inclusive of all members of the public. All meetings for the project conformed to Americans with Disabilities Act requirements, and we provided materials in formats accessible by everyone. All public meetings and hearings were accessible by public transit and clear directions for how to access the appropriate bus lines were made available.

How has WSDOT involved government agencies?

Government agencies have played major roles in developing the Tukwila to Renton Project. WSDOT has involved these agencies through regular meetings and other means to address issues on an as-needed basis. Examples include:

- Congressional and legislative briefings in late June and early July 2004. These briefings were conducted to inform Washington State legislators within the I-405 corridor study area and U.S. Congress members from the Washington State delegation.
- Briefings and site visits with resource agencies to review existing sight conditions. An interdisciplinary team performed several days of field observations as part of the environmental data collection for this and other projects.
- Sessions to review stormwater management strategies with the Federal Aviation Administration (FAA) and the City of Renton's airport manager to address wildlife hazards to air safety.
- Monthly coordination and strategy meetings with City of Tukwila staff. Project development was also presented to Tukwila City Council for concurrence on major project design decisions.
- Regular coordination meetings with City of Renton staff including monthly coordination and strategy meetings with department management leaders; task force meetings to address drinking water wells, parks, traffic, emergency response, utilities, business and residential issues; and executive level meetings with city administrators. Presentations on project development were also given to City Council for concurrence on major project design decisions.
- Scoping meetings with agencies to discuss traffic, air, noise, endangered species, water, wetlands, and mitigation strategies.
- Discussions with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on issues related to the Endangered Species Act.
- Consultation with EPA regarding the sole source aquifer and discussion about potential effects and the mitigation that would be needed for any effects.
- Meetings and field visits with the Department of Archaeological and Historic Preservation to resolve questions and issues regarding cultural and historic resources.

What is project scoping?

A scoping meeting is designed to:

- Inform the public and agencies of proposed actions and alternatives.
- Serve as a forum to gather comments and help identify potential environmental impacts.
- Ensure that the environmental documents consider reasonable alternatives.
- Help identify issues or concerns to promote a focus on items important to the local community and to agencies.

- Discussions with the Washington State Recreation and Conservation Office for investigation and determination of Section 4(f) resources and similar discussions with the National Park Service to identify Section 6(f) resources.

How has WSDOT involved tribal governments?

Tribal governments help WSDOT to identify social, cultural, environmental, and other issues of concern to tribal members. WSDOT commits itself to respectful, effective consultation and communication with tribal governments in recognition that project activities may affect their rights and interests. WSDOT Executive Order E1025.00 on Tribal Consultation (February 19, 2003) established this commitment to an effective working relationship with tribal governments.

WSDOT initiated consultation with the Muckleshoot Tribe, the Snoqualmie Tribe, and the Confederated Tribes and Bands of the Yakama Nation on November 8, 2006 for the Tukwila to Renton Project. In addition, WSDOT has coordinated with the Duwamish Tribe.

In January 2007, WSDOT initiated consultation and coordination with the tribes for developing the I-405 Programmatic Agreement. This agreement is included in Appendix C.

To date, tribal representatives have participated by meeting with WSDOT to discuss issues of interest such as investigations of cultural resources and analyses of effects on fish and fish habitat. In particular, WSDOT met with the Muckleshoot Tribe on September 19, 2007 to review issues related to natural resources. This consultation and coordination helps to involve tribal governments in the environmental analysis. Appendix B contains letters relating to this coordination.

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CHAPTER 4 DESCRIPTION OF THE PROPOSED PROJECT

What is the intent of the Tukwila to Renton Project?

WSDOT is proposing to construct the I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2), referred to as the Tukwila to Renton Project, to relieve congestion. Relieving congestion will benefit the public by:

- Lowering the number of accidents thus improving safety.
- Increasing overall speeds through this section of freeway.
- Improving response times for emergency service vehicles using I-405.
- Improving access to and from I-405 and local circulation.

The Tukwila to Renton Project extends approximately four miles along I-405, from I-5 to SR 169, and approximately two miles along SR 167, from I-405 to SW 43rd Street. The project adds capacity to both I-405 and SR 167; improves the SR 181 and SR 169 interchanges; reconstructs the SR 167 interchange consisting of a split-diamond interchange at Lind Avenue and Talbot Road with connecting frontage roads, general-purpose direct-connector ramp from I-405 to SR 167 southbound, and high-occupancy vehicle (HOV) direct-connector ramps from SR 167 northbound to I-405 northbound and from I-405 southbound to SR 167 southbound. These improvements are detailed in the following section.

What are the details of the Tukwila to Renton Project?

The Tukwila to Renton Project improvements are described from west to east (northbound) along the study area on the following pages. These improvements are also illustrated on Exhibits 4-1 through 4-15.

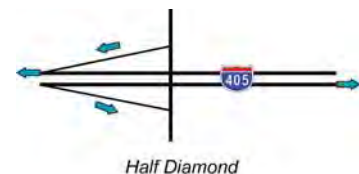
What is a split-diamond interchange?

This interchange type consists of two half-diamond interchanges at arterials. These are connected by two, one-way frontage roads. Traffic enters and exits the freeway at the two arterials, creating an elongated diamond configuration as shown.



What is a half-diamond interchange?

It is an interchange where traffic exits or enters the freeway in one direction. This creates a triangular or half-diamond configuration as shown.



I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

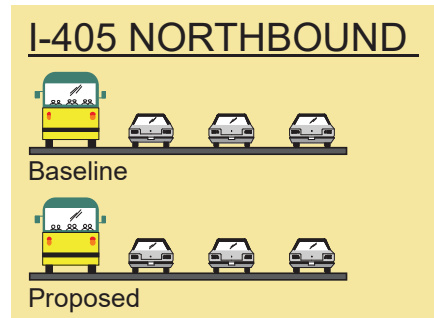
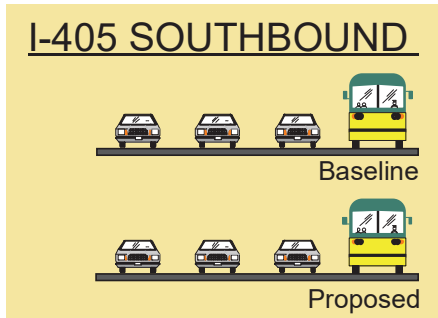
Exhibit 4-1: Project Features, Sheet 1



I-405 from I-5 to SR 181

For this portion of the project, WSDOT will:

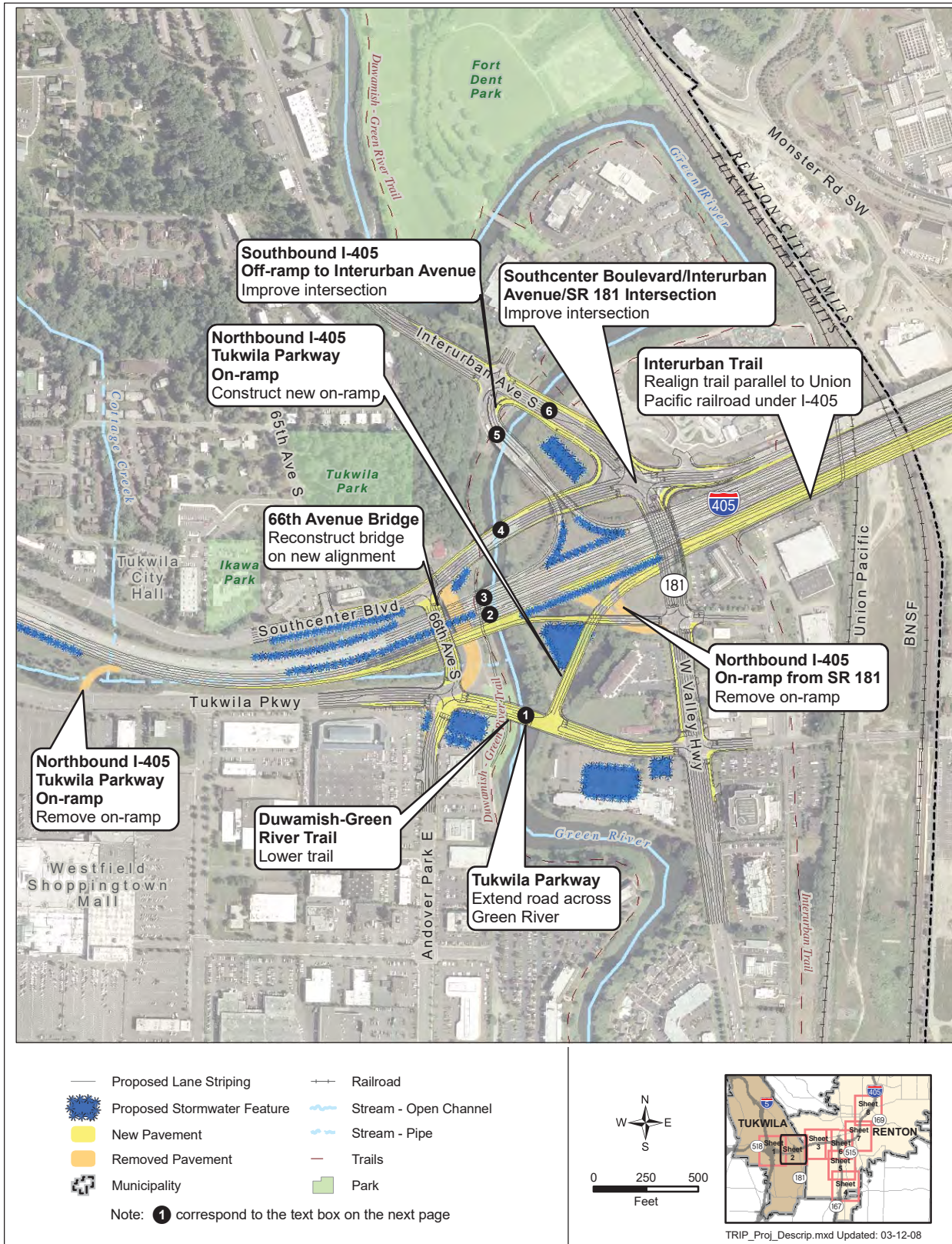
- Remove the existing northbound I-405 Tukwila Parkway on-ramp. See Exhibits 4-2 and 4-3 for where the project will provide a new on-ramp.
- Realign I-405 mainline slightly to the south beginning just west of the existing northbound I-405 Tukwila Parkway on-ramp to the SR 181 interchange as shown in Exhibits 4-1 and 4-2.



The project will not change capacity along this section

I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

Exhibit 4-2: Project Features, Sheet 2



I-405 at SR 181 Interchange

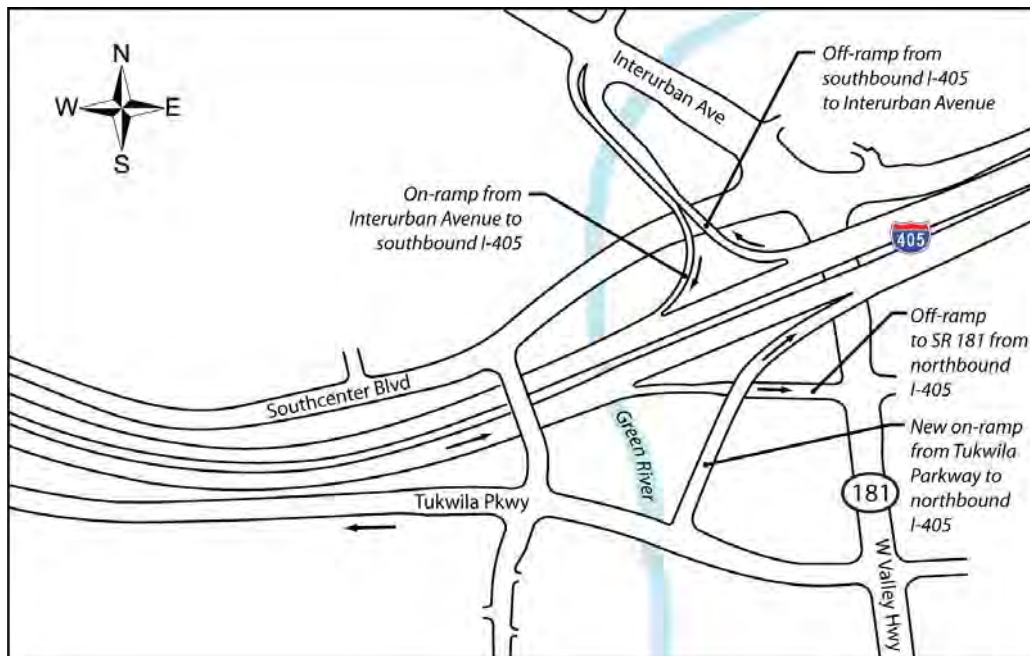
WSDOT designed the improvements in Exhibits 4-2 and 4-3 to improve freeway and local travel in this area. WSDOT will:

- Improve the SR 181 interchange:
 - Remove the existing SR 181 on-ramp to northbound I-405.
 - Extend Tukwila Parkway from the intersection with 66th Avenue east over the Green River to SR 181.
 - Construct new northbound I-405 on-ramp from Tukwila Parkway just east of the new crossing over the Green River (replaces the two existing on-ramps).
 - Reconstruct the 66th Avenue S bridge over I-405 on a new alignment to the west and reconstruct the intersections with Southcenter Boulevard and Tukwila Parkway.
 - Reconstruct the off-ramp from northbound I-405 to SR 181.
 - Improve local arterials within the interchange area such as Southcenter Boulevard and Interurban Avenue.
- Reconstruct five bridges and build one new bridge over the Green River.
- Lower the Duwamish-Green River Trail.
- Reconstruct the I-405 structures over SR 181.
- Realign the Interurban Trail.

What bridge construction will occur over the Green River?

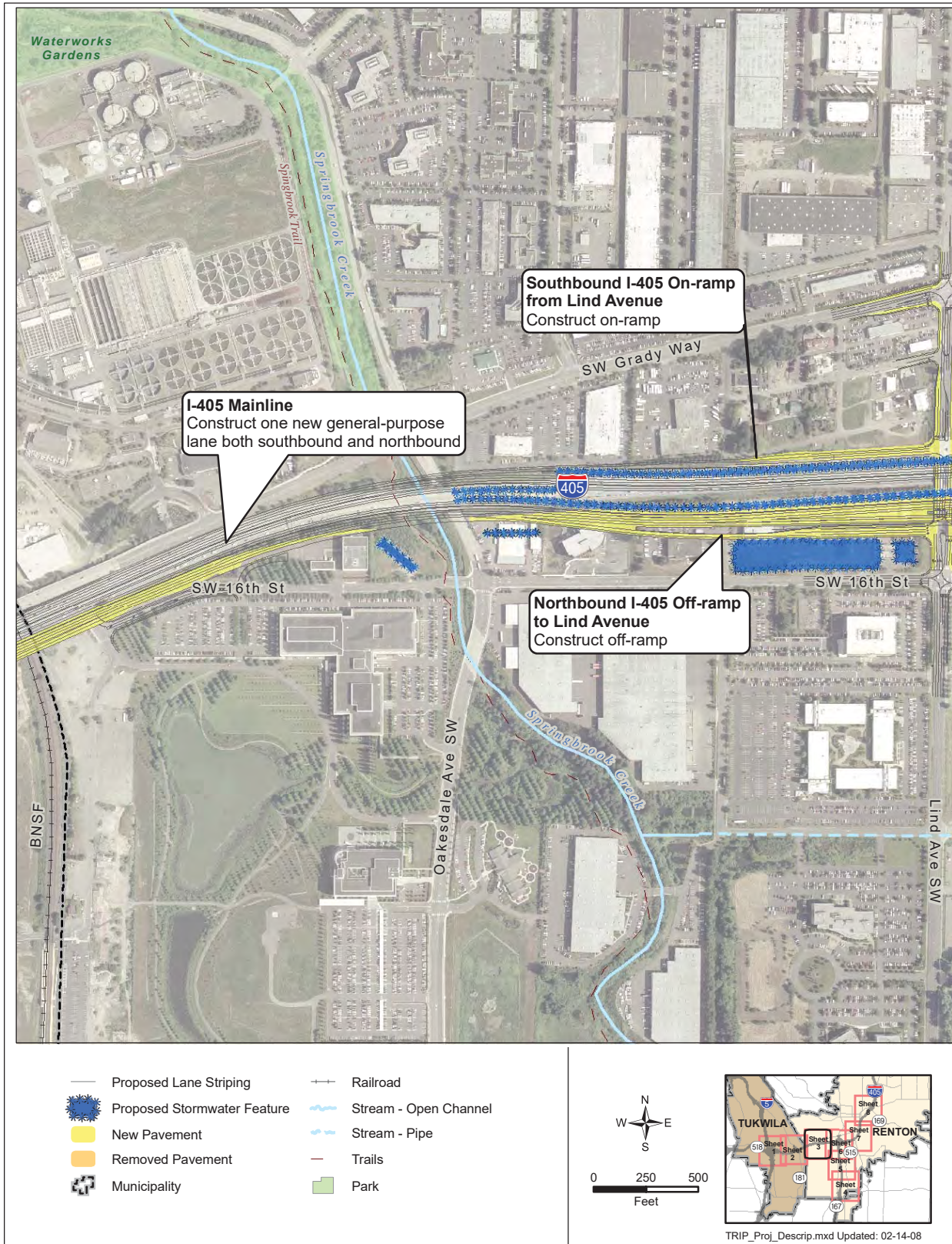
- ① Tukwila Parkway Bridge (new)
 - ② Northbound I-405 Bridge
 - ③ Southbound I-405 Bridge
 - ④ Southcenter Boulevard Bridge
 - ⑤ Off-Ramp Bridge from southbound I-405.
 - ⑥ Interurban Avenue Bridge
- See Exhibit 4-2 for the bridge locations.

Exhibit 4-3: SR 181 Interchange Improvements



I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

Exhibit 4-4: Project Features, Sheet 3



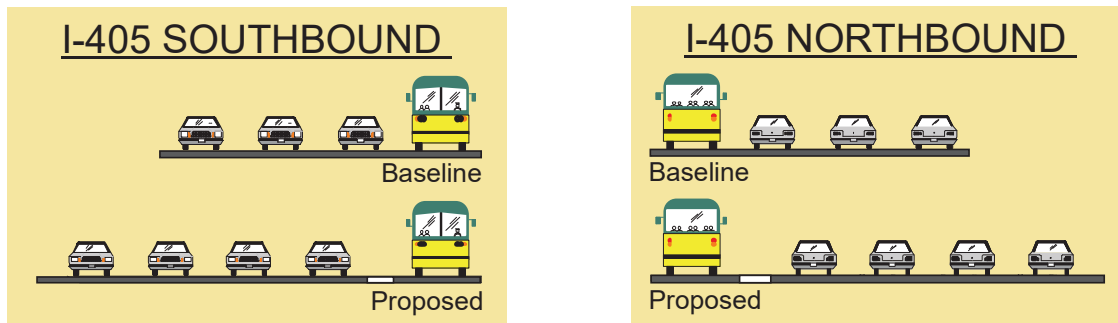
I-405 from East of SR 181 to SR 167 Interchange

From the SR 181 interchange east, WSDOT will realign I-405 to the south. This will:

- Provide a smooth transition onto the new Springbrook Creek/Oakesdale Avenue bridge that was constructed under the Renton Nickel Improvement Project.
- Minimize effects on SW Grady Way and businesses north of I-405.

In addition to realigning I-405, WSDOT will:

- Construct one additional general-purpose lane in both directions on I-405 from SR 181 through SR 167.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along I-405.

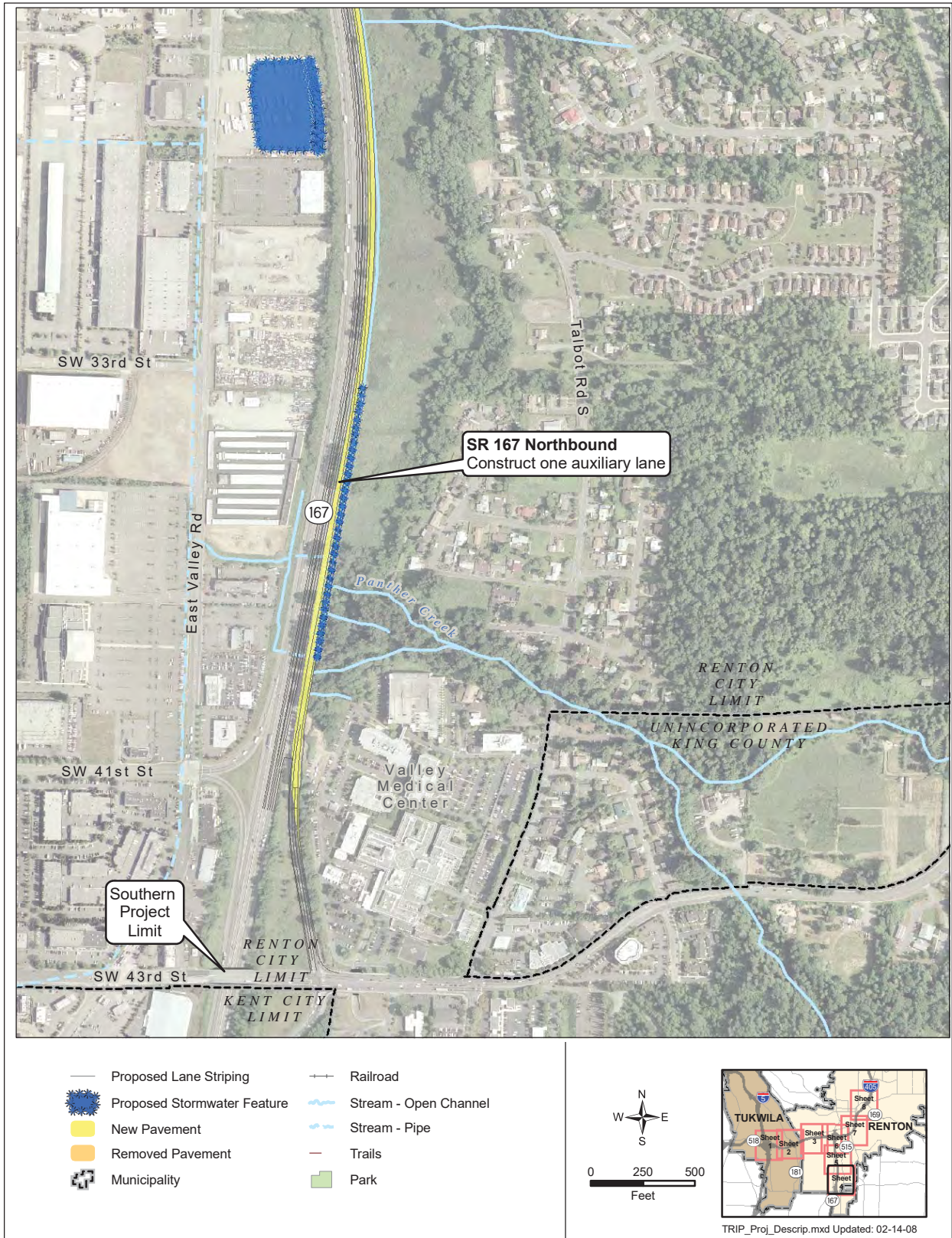


Project improvements will add capacity to I-405 for both southbound and northbound traffic and will provide a buffer between the HOV lane and the general-purpose lanes

- Stripe the bridges over Springbrook Creek/Oakesdale Avenue to provide five lanes in both directions.
- Reconstruct I-405 structures over the Burlington Northern Santa Fe (BNSF) and Union Pacific railroads.
- Construct a half-diamond interchange at Lind Avenue (see sidebar on page 4-1).

I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

Exhibit 4-5: Project Features, Sheet 4

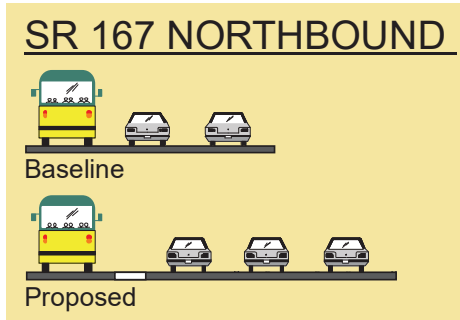


SR 167 from SW 43rd Street On-ramp North to SW 27th Street

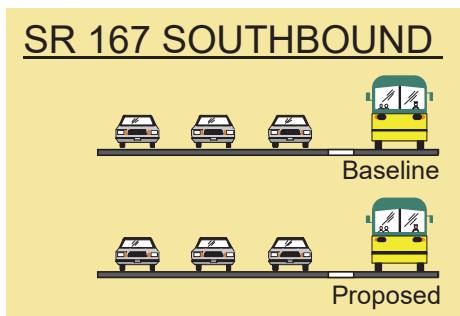
In this area, WSDOT will:

- Construct an auxiliary lane on northbound SR 167 from SW 43rd Street to SW 27th Street.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along northbound SR 167.

As shown on Exhibit 4-5, the new northbound lane will be added north of the SW 43rd Street on-ramp. This will improve the ability of traffic to merge onto SR 167 and increase capacity along this stretch. To minimize effects on the streams and wetlands along SR 167, WSDOT has used retaining walls instead of fill slopes.



Project improvements will add capacity to northbound SR 167 and will provide a buffer between the HOV lane and the general-purpose lanes



The project will not change capacity on the southbound lanes of SR 167

What is an auxiliary lane?

An auxiliary lane is a lane added between interchanges—from one on-ramp to the next off-ramp. It is dedicated to traffic entering and leaving the freeway and provides motorists with more time and extra room to accelerate or decelerate and merge when getting on and off the freeway.

The signs below show how an auxiliary lane changes how an on-ramp operates.



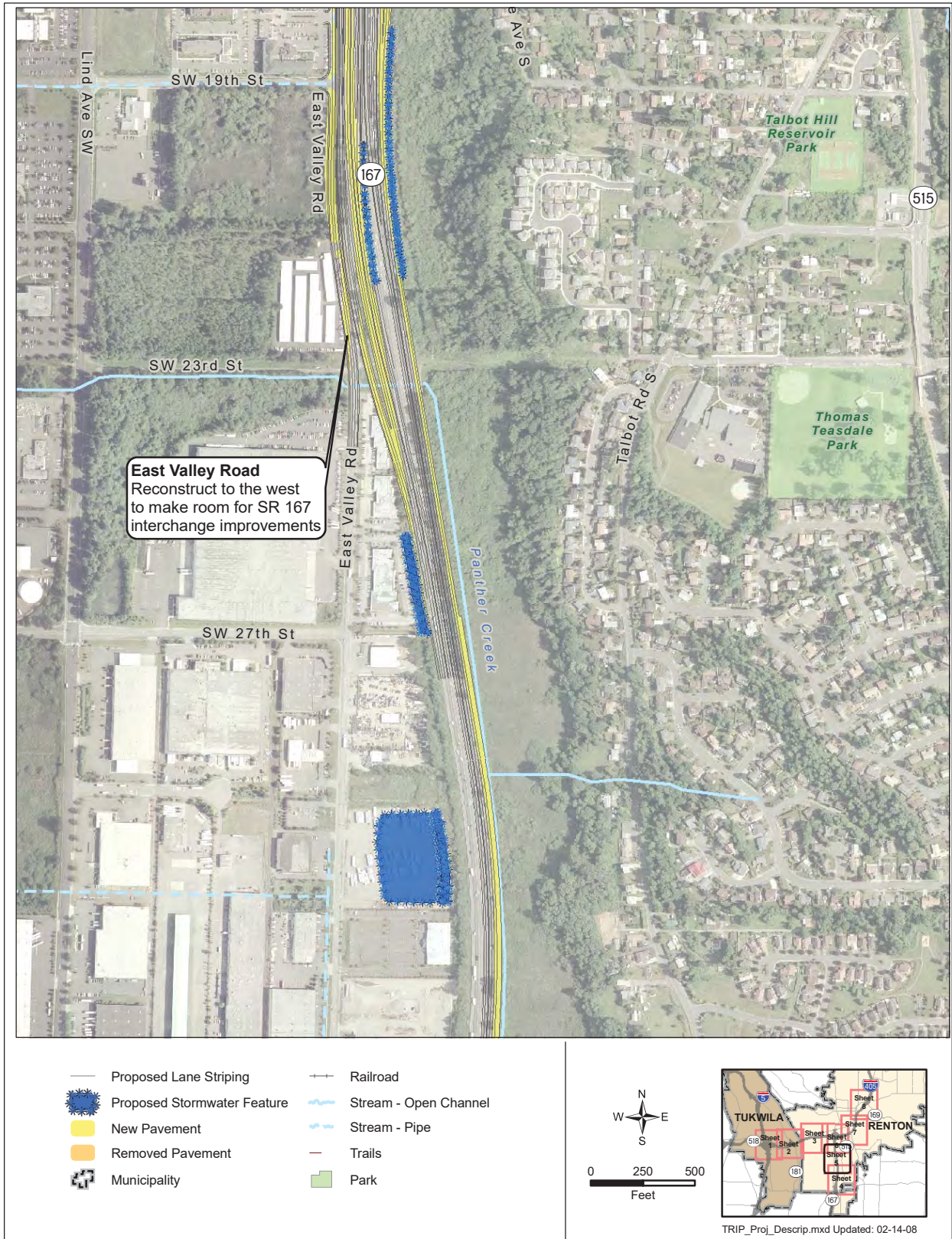
Existing



Proposed

I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

Exhibit 4-6: Project Features, Sheet 5

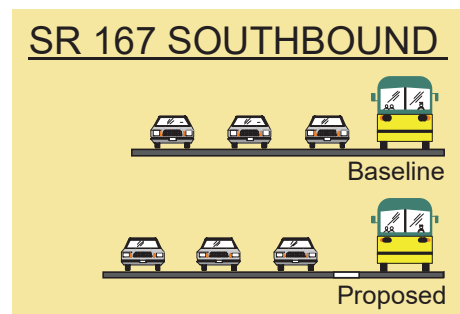
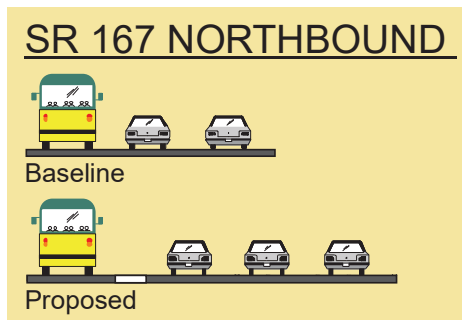


SR 167 from SW 27th Street to I-405

Along this section of SR 167, the project will:

- Reconstruct SR 167 between SW 27th Street and I-405 to accommodate the reconstructed SR 167 interchange as shown on Exhibits 4-7 to 4-9.
- Reconstruct East Valley Road to the west of its current alignment between SW 23rd Street and SW 16th Street to accommodate the reconstructed SR 167 interchange.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along SR 167.
- Construct an auxiliary lane on northbound SR 167 from SW 27th Street to I-405.

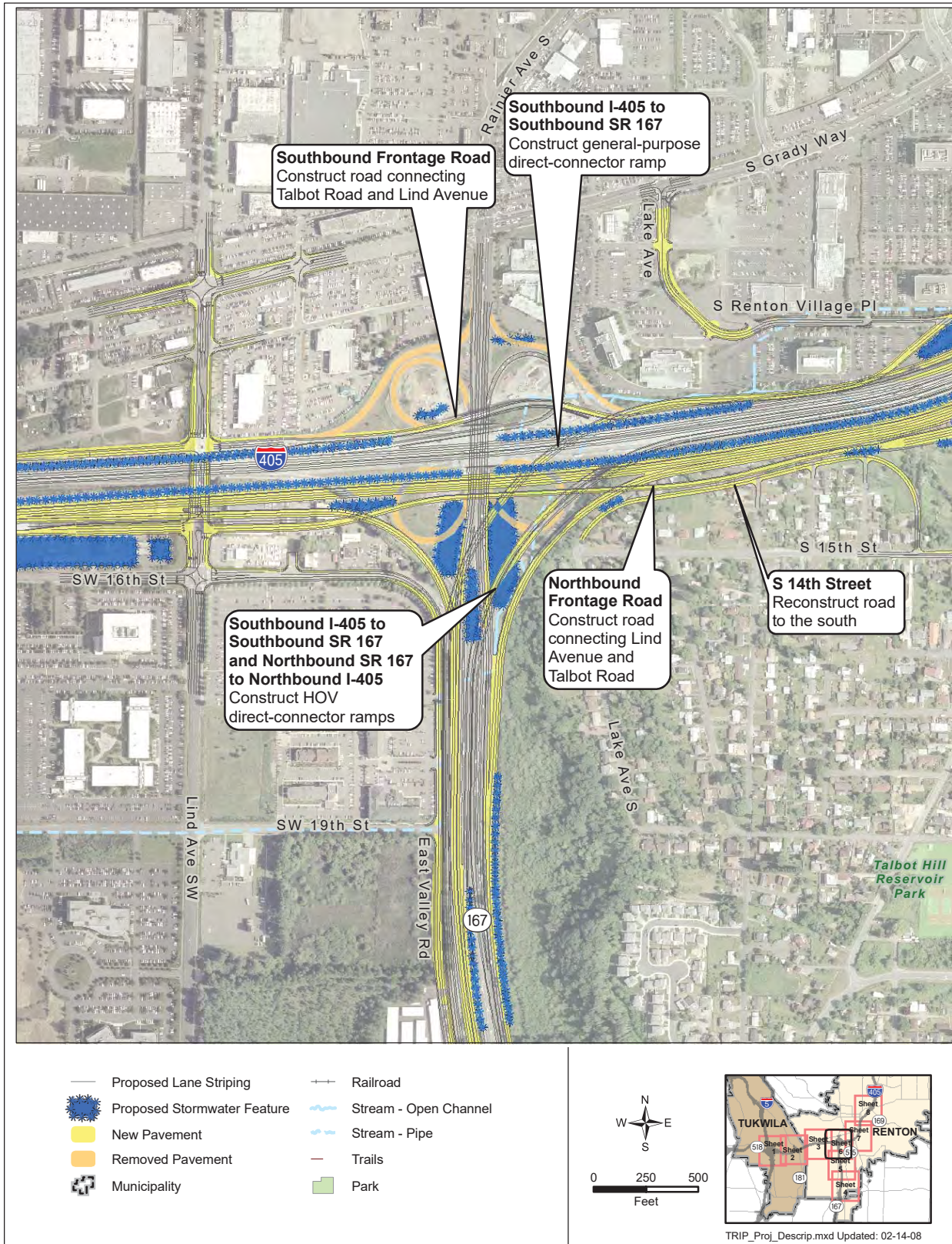
WSDOT has designed the improvements in this area to the west as much as possible to minimize effects on the Panther Creek wetlands while also limiting the effects on businesses west of SR 167. To further minimize the area needed to accommodate the improvements, the new southbound I-405 to southbound SR 167 direct-connector ramp will be built over local street and freeway improvements as shown on Exhibit 4-9. WSDOT also used design features such as retaining walls to minimize the area needed for improvements.



Project improvements will add capacity to northbound SR 167 and will provide a buffer between the HOV lane and the general-purpose lanes in both the northbound and southbound directions of SR 167

I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

Exhibit 4-7: Project Features, Sheet 6



I-405 Interchange with SR 167

Within the I-405/SR 167 interchange, the project will improve freeway to freeway access and local access.

Freeway to Freeway Access

To improve access, WSDOT will:

- Construct a general-purpose direct-connector ramp from southbound I-405 to southbound SR 167, replacing the existing loop ramp.
- Reconstruct exterior ramps from northbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405, replacing the existing ramps. This project will also add a general-purpose lane to both ramps.
- Construct HOV direct-connector ramps from southbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405.
- Maintain existing loop ramp from northbound SR 167 to southbound I-405.

Exhibit 4-8 focuses on the freeway to freeway interchange improvements and Exhibit 4-9 presents how these improvements will look.

Exhibit 4-8: Freeway to Freeway Ramps in Reconstructed I-405/SR 167 Interchange

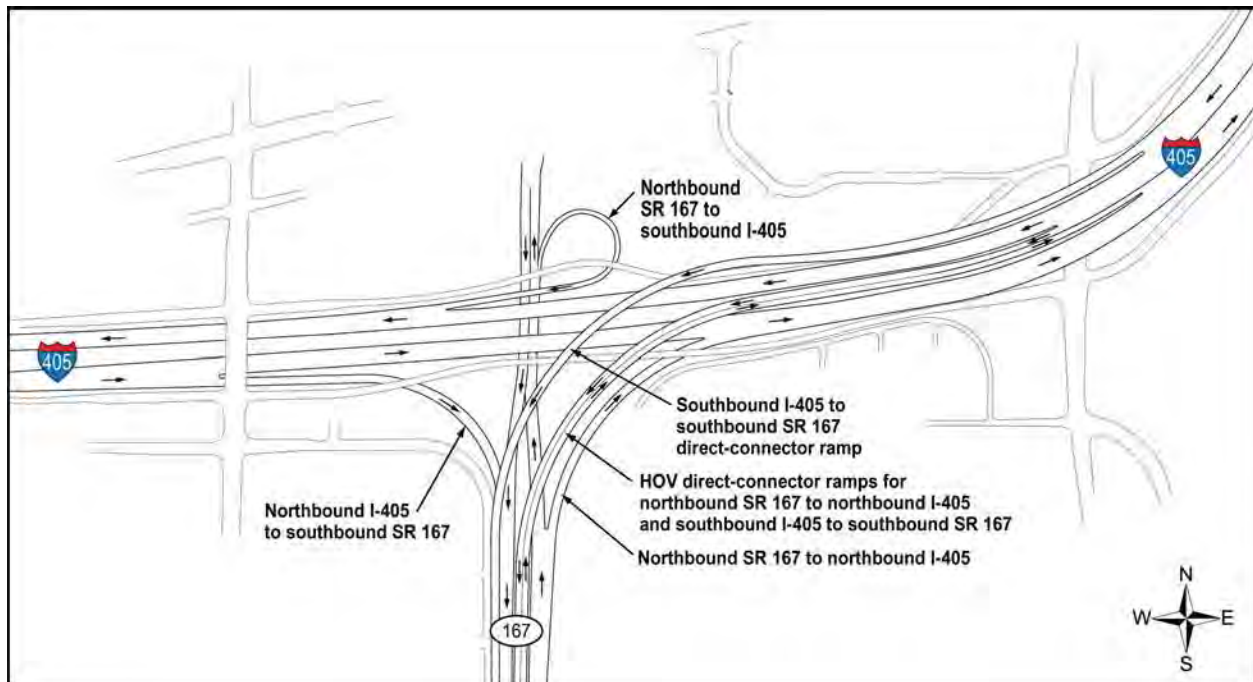


Exhibit 4-9: Rendering of I-405/SR 167 Interchange Improvements

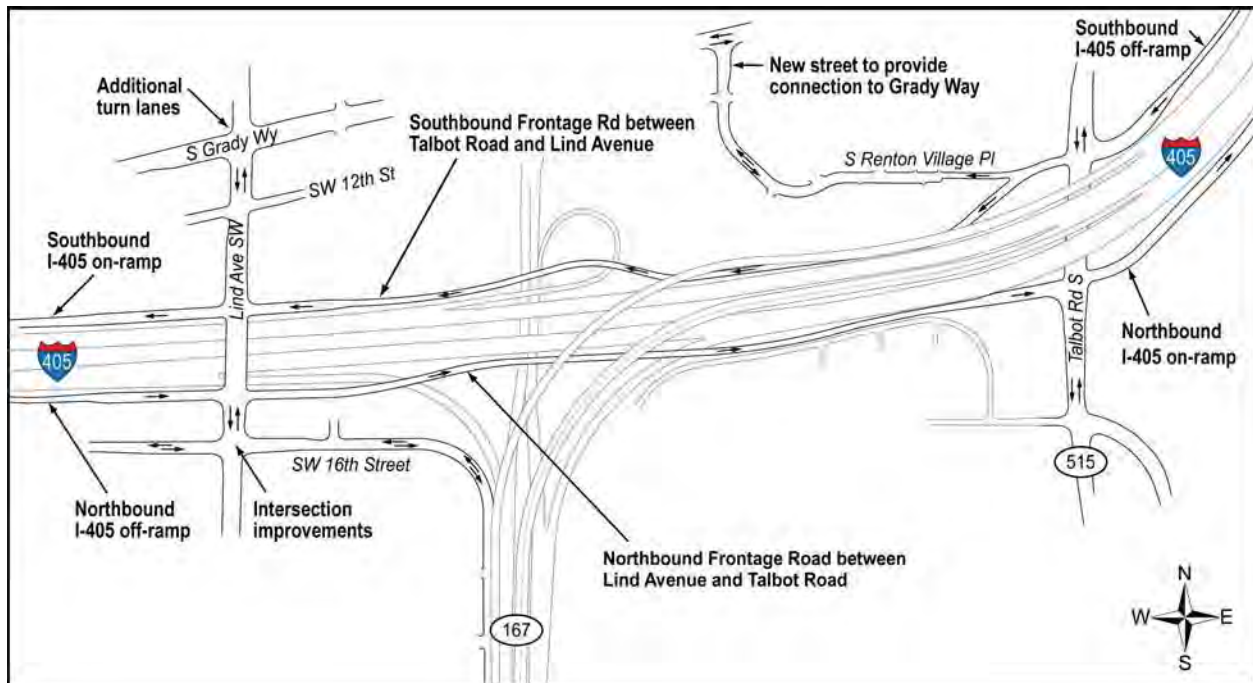


Local Access

WSDOT will improve local access at the SR 167 interchange. The improvements will:

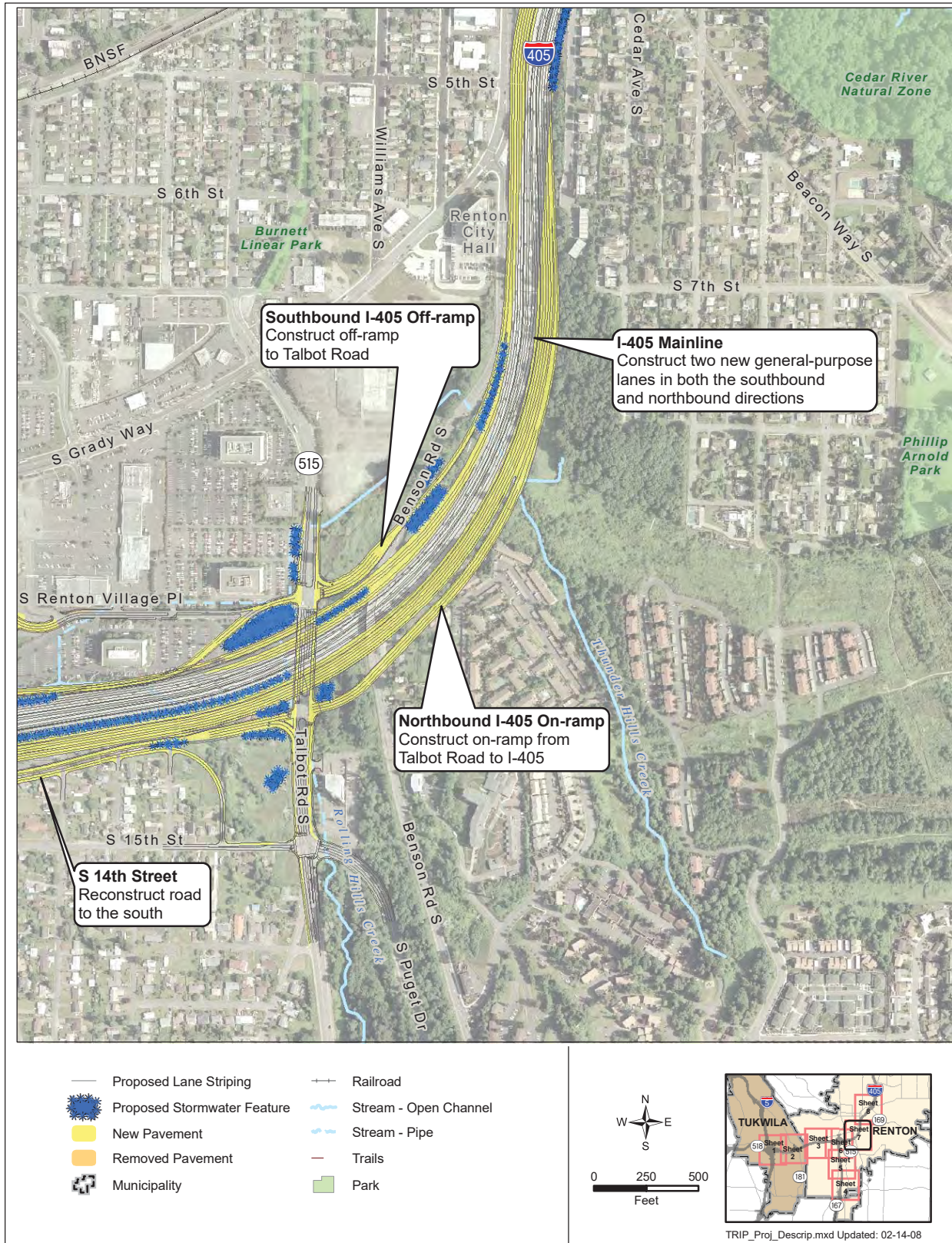
- Construct a split-diamond interchange at Lind Avenue and Talbot Road (SR 515). See Exhibits 4-10 and 4-11.
- Construct southbound and northbound frontage roads connecting Lind Avenue and Talbot Road. The southbound frontage road will reuse the existing I-405 to SR 167 southbound bridge.
- Reconstruct the Lind Avenue bridge over I-405.
- Reconstruct the I-405 structures over Talbot Road.
- Improve local street intersections.
- Provide new connection to Grady Way from S Renton Village Place.

Exhibit 4-10: Split-Diamond Interchange at Lind Avenue and Talbot Road



I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
 ENVIRONMENTAL ASSESSMENT

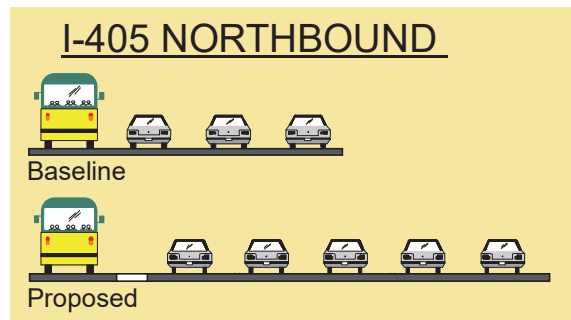
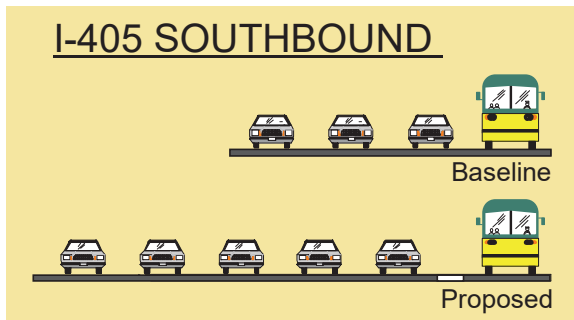
Exhibit 4-11: Project Features, Sheet 7



I-405 from East of SR 167 Interchange to North of S 5th Street

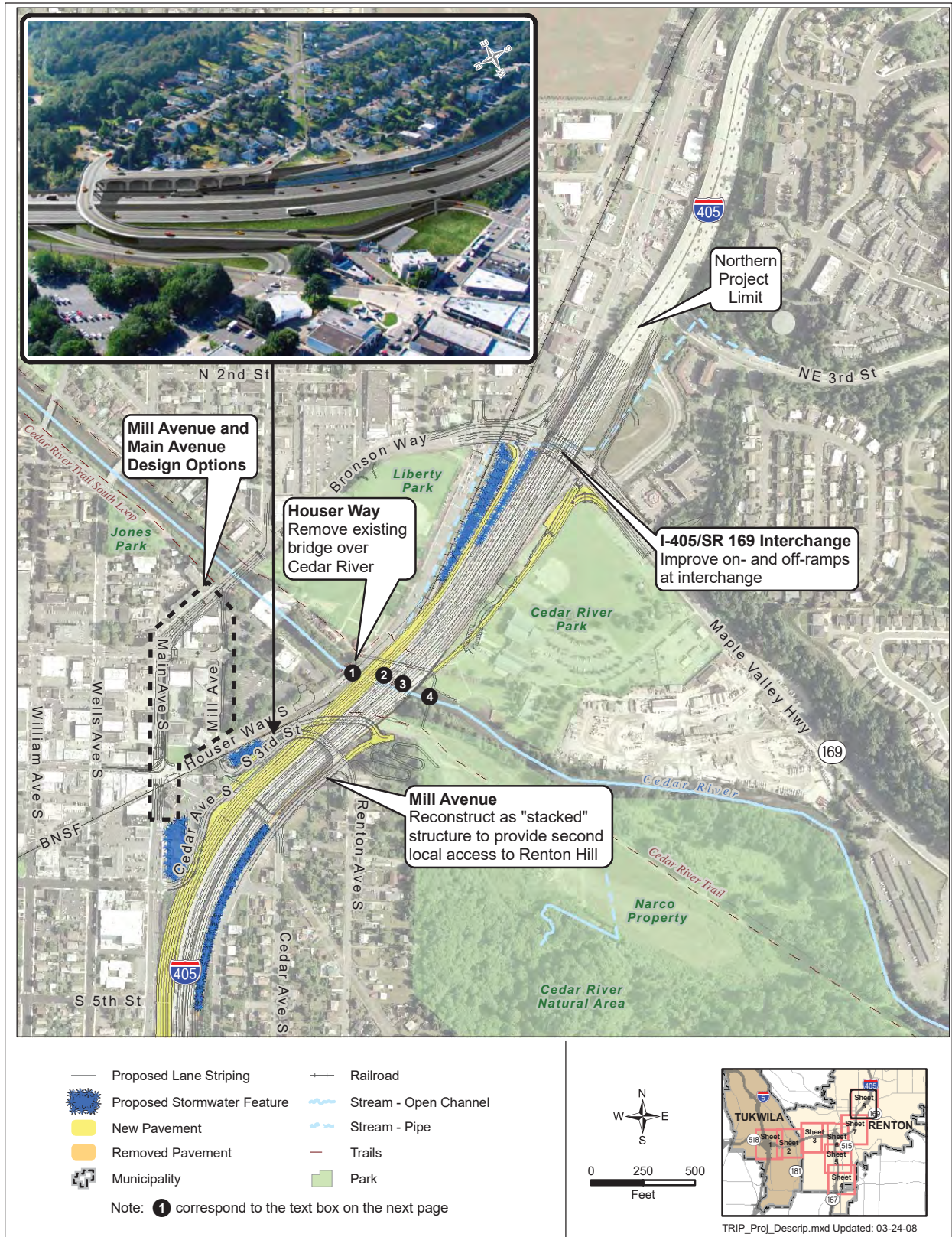
For the section of I-405 that extends from the SR 167 interchange past Renton City Hall as shown on Exhibit 4-11, WSDOT will:

- Construct two additional lanes in both directions on I-405 from SR 167 through SR 169.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along I-405.
- Construct a new half-diamond interchange at Talbot Road as shown on Exhibit 4-10.
- Reconstruct S 14th Street south of its existing location.



Project improvements will add capacity to I-405 for both southbound and northbound traffic and will provide a buffer between the HOV lane and the general-purpose lanes

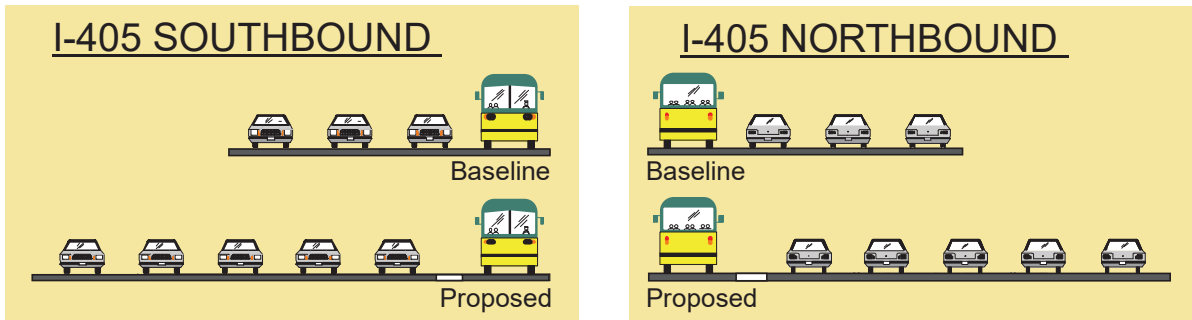
Exhibit 4-12: Project Features, Sheet 8



I-405 from S 5th Street to SR 169

This last portion of the Tukwila to Renton Project crosses the Cedar River to the SR 169 interchange. In this section, WSDOT will:

- Construct two additional lanes in both directions on I-405 from SR 167 through SR 169.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along I-405.



Project Improvements will add capacity to I-405 for both southbound and northbound traffic and will provide a buffer between the HOV lane and the general-purpose lanes

- Cantilever the I-405 structures over Main Avenue.
- Reconstruct three bridges over the Cedar River: southbound I-405, northbound I-405, and a pedestrian bridge.
- Relocate the Burlington Northern Santa Fe railroad bridge.
- Close Houser Way south of the Cedar River north to Bronson Way and remove the bridge over the Cedar River.
- Reroute northbound traffic to Bronson Way, which will be striped to accommodate the new traffic pattern.
- Reconstruct two local street accesses to Renton Hill.

What bridge construction will occur over the Cedar River?

- ❶ Burlington Northern Santa Fe Railroad Bridge
- ❷ Southbound I-405 Bridge
- ❸ Northbound I-405 Bridge
- ❹ Pedestrian Bridge

See Exhibit 4-12 for the bridge locations.

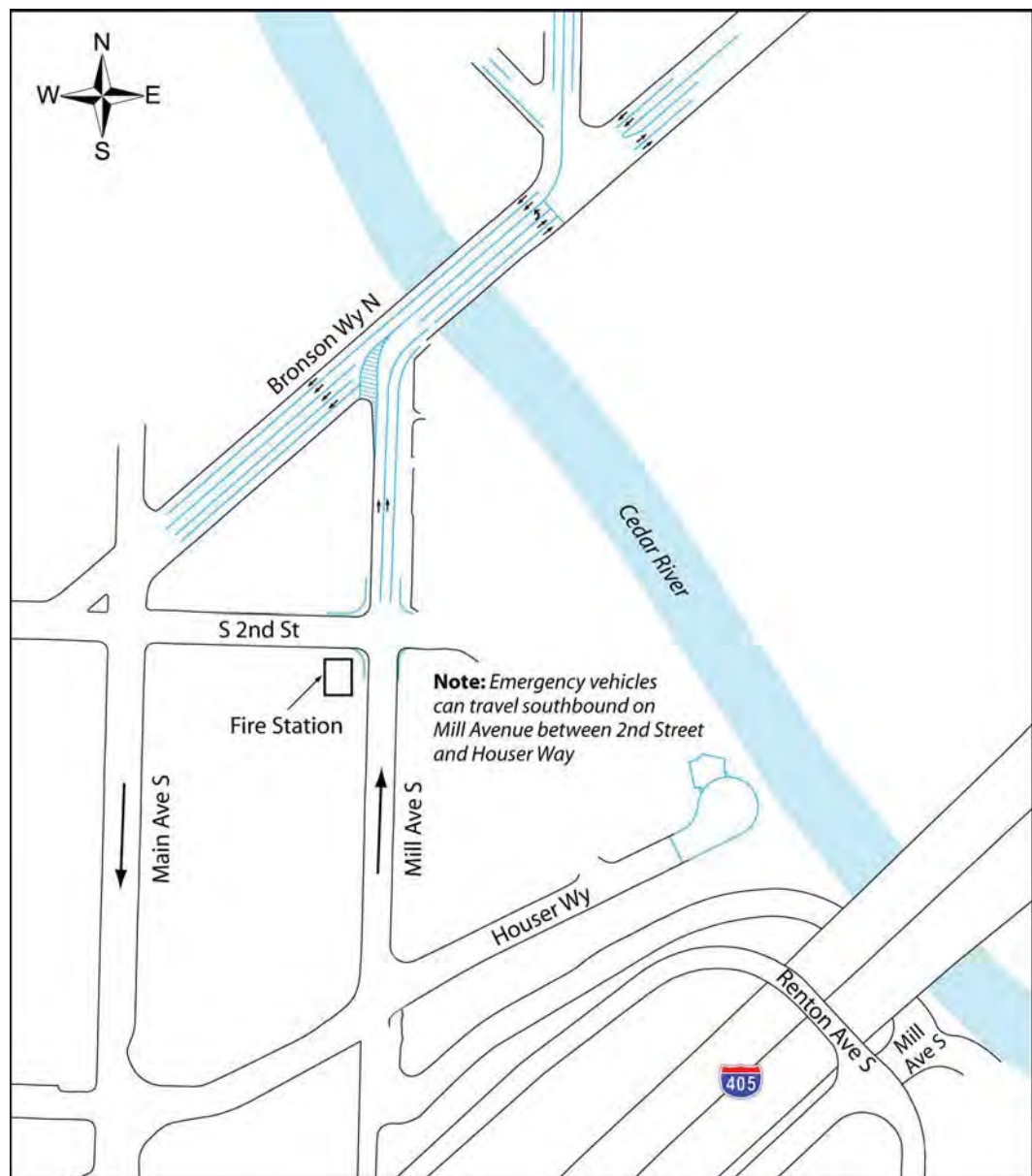
To accommodate the I-405 improvements, the Tukwila to Renton Project also required rerouting traffic from Houser Way and changing access to Renton Hill. These improvements are discussed on the following pages.

Mill Avenue and Main Avenue Design Options

To accommodate widening I-405 over the Cedar River, the Houser Way bridge will be closed. WSDOT worked closely with the City of Renton to develop the most acceptable and feasible solution for redirecting traffic coming from south of Houser Way. For northbound traffic within Renton south of the Cedar River, two design options are being considered:

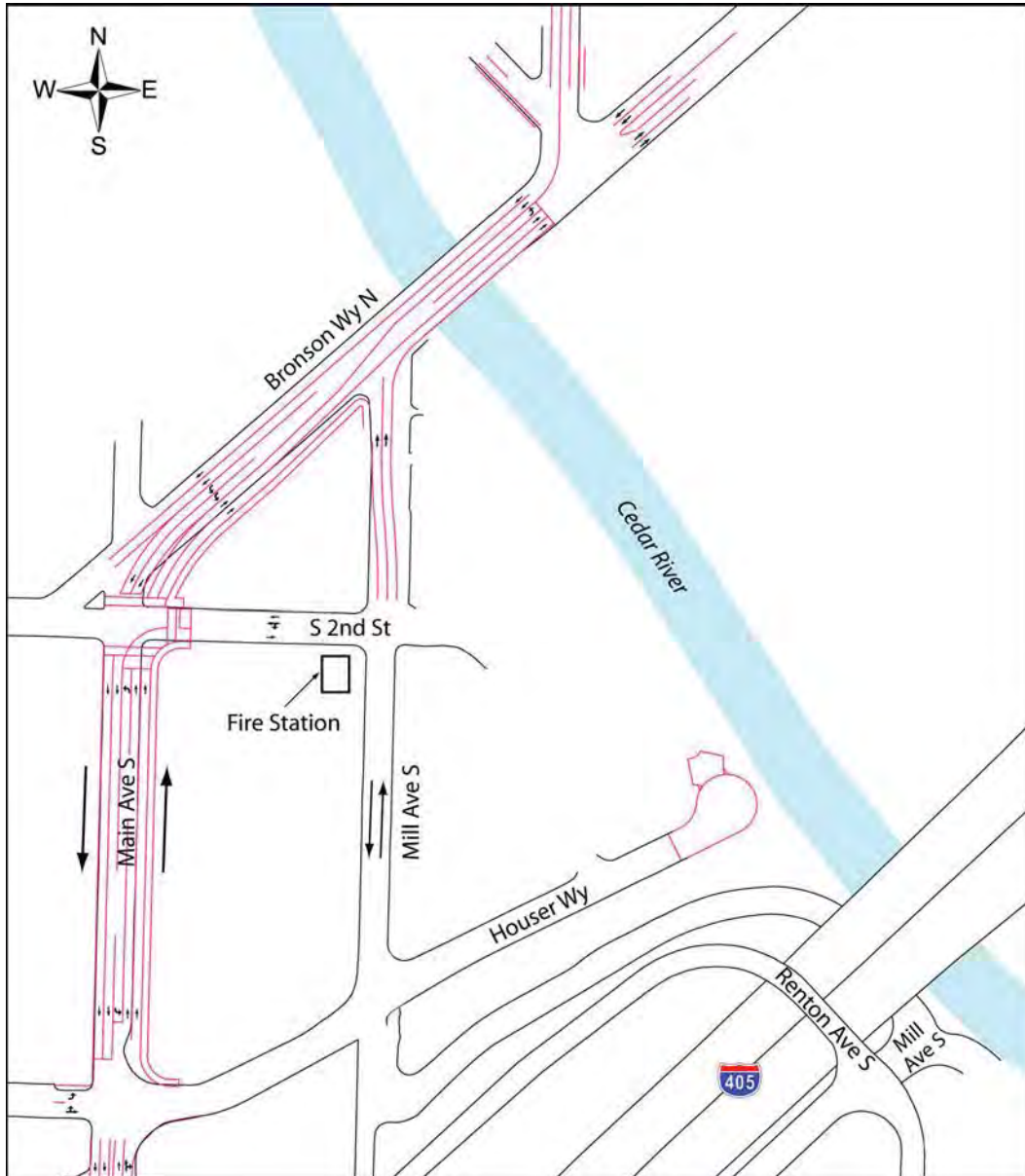
- The first option stripes Mill Avenue as a one-way street to provide two lanes northbound from the intersection of Houser Way and Mill Avenue to Bronson Way (see Exhibit 4-13).

Exhibit 4-13: Mill Avenue Design Option for Local Access to Bronson Way



- The second option leaves Mill Avenue as a two-way street up to the intersection with 2nd Street where it will be striped for one-way traffic northbound and reconfigures Main Avenue, a one-way street southbound, to provide two-way traffic. Main Avenue would be widened and striped for two-way traffic to provide access from the south to Bronson Way (see Exhibit 4-14).

Exhibit 4-14: Main Avenue Design Option for Local Access to Bronson Way

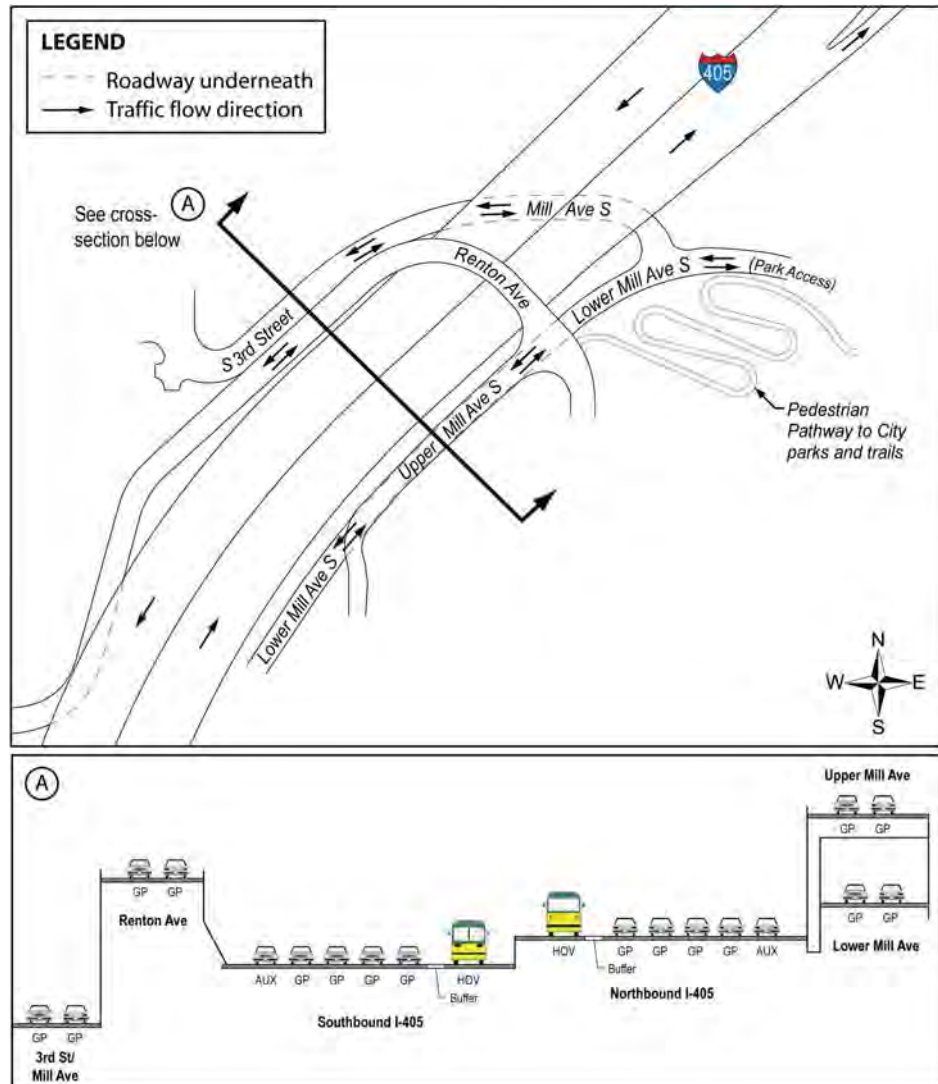


Changes to Renton Hill Access

As shown in the inset on Exhibit 4-12, the Renton Hill Access will be changed to accommodate the widening of I-405. These changes are detailed in Exhibit 4-15 below. WSDOT will:

- Reconstruct the Renton Avenue bridge over I-405 and realign the north end to intersect with Main Avenue rather than Houser Way as it currently does.
- Reconstruct Mill Avenue as a stacked structure that also provides access to Renton Hill.
- Remove the existing Cedar Avenue bridge.
- Construct a pedestrian pathway connecting residents on Renton Hill to the City's parks and trails.

Exhibit 4-15: New Local Access for Renton Hill



What benefits will this project provide?

The Tukwila to Renton Project will provide city-wide and regional benefits. These benefits include reduced congestion at the areas currently considered chokepoints in the study area, such as the I-405/SR 167 interchange; shorter periods of congestion during peak commuter travel hours; and improved freight movement. With the improvements in place, average freeway speeds will increase in 2014 by roughly 10 to 15 miles per hour over speeds without the project. The increase in speed and capacity will enhance the ability of emergency response teams to reach destinations via I-405 and SR 167. The new HOV direct-connector ramps within the I-405/SR 167 interchange will save travel time for transit and HOVs and improve the efficiency of the HOV lanes as those using the lanes will not be required to merge back into general-purpose traffic to travel between the two highways.

A major benefit will be the improvements in safety realized by this project. With the added capacity, congestion-related accidents will be reduced. The project also improves roadway geometrics and reduces the number of conflict points at the interchanges along this section of I-405. Since these improvements address many of the issues that currently result in accidents, it is expected that this section of freeway will no longer be considered a High Accident Corridor. The project will also improve safety by reducing the frequency and severity of accidents related to merging into the HOV lanes. This is accomplished by limiting access to the HOV lanes to defined merge points and adding a four-foot-wide striped buffer that separates the HOV lanes from the general-purpose lanes. In addition, with the HOV direct-connector ramps at the I-405/SR 167 interchange, HOV traffic will not have to cross general-purpose traffic to reach exits to travel between I-405 and SR 167.

An additional benefit will be an improvement in surface water management and water quality. Although the project will add impervious surfaces, the project will provide detention and water quality treatment for 154 acres, which is more than twice the impervious area added by this project. With these systems in place, flow rates in streams and rivers are expected to improve, benefiting overall surface water management and improving surface water quality.

What is a High Accident Corridor?

Based on historical accident records, this is an area where an above-average number of accidents occur.

The Tukwila to Renton Project will directly affect ecosystems. However, some of these effects are beneficial. The ecosystems will benefit from the stormwater treatment facilities and from the mitigation provided for affected areas. The proposed mitigation will improve the quality of the environment over present conditions.

The project will benefit the community by creating a new pedestrian facility that will run from the Renton Hill Neighborhood down to the Cedar River. The new facility will be east of I-405, across from the existing Freeway Park, and will improve access to the Tri-Park area for residents of the Renton Hill Neighborhood.

This project will also benefit the community by building two noise barriers along the I-405 corridor in Renton. One of these walls will be in front of the Berkshire Apartments and the other will be in front of the Renton Hill Neighborhood. These walls will reduce the level of freeway noise for the people living in these areas.

How will this project incorporate community design preferences?

WSDOT has worked with the affected cities within the I-405 corridor to develop visual guidelines, CSS, that establish the community design preferences used to design the project features. These guidelines have been incorporated into the Urban Design Criteria (UDC), adopted by WSDOT. The Tukwila to Renton Project is being planned, developed, and designed according to these guidelines. The UDC is the primary guideline followed to produce the intended form, function, and appearance of each I-405 feature and element. It integrates community values, urban design enhancements, and WSDOT standards for the I-405 Program. The I-405 Team will use the UDC as a guideline for preliminary engineering, landscaping, and aesthetic treatment of the highway corridor. For example, the theme trees designate by each city (Cedar for Renton and Hazelnut for Tukwila) will be used in the landscaping within these jurisdictions. These guidelines will be further developed into final engineering and project specific design criteria. The selected I-405 theme of “Culture, Nature, and Progress,” with nature being the dominant theme, will be carried into corridor-wide and local I-405 designs.

What is the Tri-Park area?

The Tri-Park area concept emerged as a result of planning between WSDOT and the City of Renton as a precursor to planning the I-405 improvements adjacent to the City of Renton water supply system (pumps, wells, and transmission facilities); and Liberty and Cedar River Parks, Cedar River Trail, and the Narco property. The concept integrates Liberty and Cedar River Parks and the Narco property into one large complex. This design scheme assumed redeveloping both existing parks, realigning the trail, developing the Narco site with sports fields, and acquiring an additional property to develop baseball fields.

How will stormwater be managed?

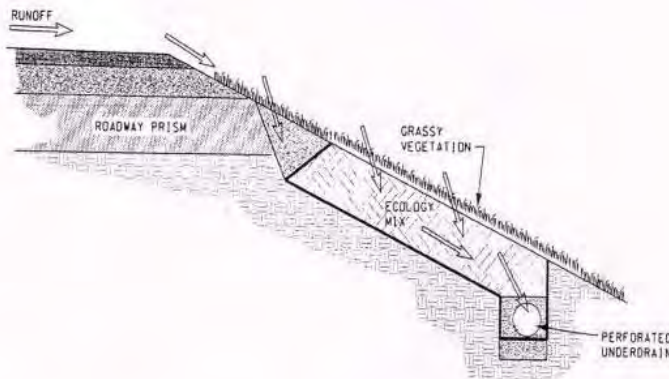
Stormwater from the project will be managed for both quality and peak flows using currently accepted BMPs. The I-405 Team has designed the stormwater management facilities to comply with the following guidelines and procedures:

- WSDOT Highway Runoff Manual (HRM) M 31-16
- WSDOT Hydraulics Manual M 23-03

Stormwater Treatment Facilities

The project will add approximately 58 acres of new impervious surface within the study area, most of which will be within the Springbrook Creek basin. This project will treat runoff from approximately 154 acres of impervious surface. Approximately 64 acres of this treated impervious surface will be provided by retrofit of existing untreated pavement.

The project will use BMPs that the HRM lists as enhanced treatment facilities. In most of the study area, ecology embankments will be used to capture runoff from the edge of the pavement and provide water quality treatment. Ecology embankments, as shown below, also serve to convey treated runoff to receiving waters or to flow control facilities as required. Exhibits 4-1, 4-2, 4-4, 4-5, 4-6, 4-7, 4-11, and 4-12 show where stormwater facilities will be built for this project.



Ecology Embankment Cross-section

Drainage Collection and Conveyance

Some changes to existing drainage will be necessary to provide flow control and water quality treatment to address

What are the guidelines for stormwater management facilities?

As a minimum, water quality treatment will be provided for an area equal to the new impervious surfaces created on the project. Impervious surfaces, such as pavement, are those that do not allow water to penetrate into the ground. Stormwater from new impervious surfaces or an equal area will be controlled in detention facilities. This process allows water to be held (detained) and thus released at rates that are equal to existing conditions.

the new impervious area added by the project and the existing retrofitted impervious area. However, existing storm drainage systems will be kept to the greatest extent possible and existing flow patterns will be maintained. Where roadway widening affects drainage ditches or culverts that convey water from adjacent properties, the project design will assure that existing conveyance capacities are maintained.

How will the project be constructed and implemented?

The Tukwila to Renton Project will use different methods to construct the various project elements. The main approaches to construction for this project are described below.

At-grade Construction

At-grade construction, which occurs on the same elevation as the existing lanes, will be staged to minimize traffic delays and detours. One method would shift lanes toward the median. WSDOT then would place a concrete barrier to provide a work zone outside of the roadway. A second method would build the entire new section, then shift traffic to the new portion and reconstruct the existing section. Staging allows construction to occur safely without closing lanes for the duration of construction.

Bridge Construction

Bridge construction will generally occur in multiple stages to minimize traffic delays and detours. The following describes a typical staging approach for bridge construction on I-405 that will be used where practicable. As the first step, traffic is shifted toward the I-405 median, and the existing lanes and shoulders are narrowed slightly. This approach allows widening of the existing structure or construction of the new bridge, depending on the design, to occur on the outside of the roadway. Next, traffic is shifted onto the new bridge area. If the bridge is being replaced rather than simply widened, the old structure is demolished after traffic is shifted to the new bridge.

Road Closures

Some road closures will be necessary to construct various improvements. WSDOT will notify local agencies, public services, utilities, and the general public prior to any

temporary road closures and will clearly mark detour routes. As much as possible, closures will be scheduled during times that will have the least impact on the traveling public.

Traffic Control

WSDOT will work with local agencies to develop detours as needed during construction. Prior to starting construction, WSDOT will develop a traffic control plan. The plan's primary objectives will be to provide a safe facility, to streamline the construction schedule, and to minimize reductions to existing traffic capacity. To lessen effects on traffic, the duration of activities will be minimized and reductions in capacity will be limited and will be targeted to a period when they will have the least effect.

What is the construction schedule?

Because the I-405 Corridor Program master plan configuration is very expensive, WSDOT will implement the improvements in phases as funding becomes available. The Tukwila to Renton Project represents Phase 2 for this section of I-405. This environmental assessment assumes a baseline condition where the Phase 1 improvements, Renton Nickel Improvement Project, have been completed prior to the start of Phase 2.

Construction of the entire Tukwila to Renton Project is expected to be spread over several years as funding becomes available. For this reason, construction activity will not be constant throughout the entire study area and the duration will vary depending on the improvement being constructed.

The first element of the Tukwila to Renton Project that is proposed for construction is the SR 515 Interchange Project. This portion is funded through the 2005 Transportation Partnership Account (TPA). This Tukwila to Renton project element will construct a half-diamond interchange on I-405 at Talbot Road (SR 515). Construction of this element is scheduled to begin in autumn of 2008. The remaining elements of the Tukwila to Renton Project are unfunded at this time.

To complete the master plan for I-405 from I-5 to SR 169, additional work will need to be accomplished in this area.

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CHAPTER 5 EFFECTS OF THE PROJECT

This chapter presents an analysis of the potential effects the Tukwila to Renton Project will have on people and the environment. To determine these effects, WSDOT initiated 15 different studies. The I-405 Team documented their detailed analyses in discipline reports and technical memoranda that illustrate how the project might affect the area.

For this project, WSDOT studied the environmental topics listed below:

- Air Quality
- Cultural Resources
- Cumulative Effects
- Economics
- Ecosystems
- Environmental Justice
- Geology and Soils
- Hazardous Materials
- Land Use
- Noise
- Section 4(f) Resources
- Social Elements, Public Services and Utilities
- Transportation
- Visual Quality
- Water Resources

These topics follow guidelines from the National Environmental Policy Act (NEPA) and provide information that satisfies numerous federal, state, and local regulations as listed in Exhibit 5-1 on page 5-6. The complete reports are provided in Appendices E through S on a compact disk included with this EA.

The study area for each topic varied, depending on the geographic extent of the potential effects being evaluated and the type of data needed for the analysis. For example, the analysis of recreation facilities required WSDOT to collect data on parks within one-quarter mile of the project improvements. To assess effects on economic characteristics, however, WSDOT used census information and the Puget Sound

What is a discipline report?

A discipline report focuses on an environmental topic (discipline) or concern, such as wildlife, noise, water quality, or other built or natural resource. It presents an analysis of the environment with respect to the discipline, describes how the project may affect the environment, and recommends how best to avoid or minimize adverse effects to the environment.

What is a technical memorandum?

A technical memorandum fulfills the same roll as a discipline report covering the same type of information but in a more succinct manner.

Regional Council's Transportation Analysis Zone data because these data include a wider geographic area around I-405.

How did WSDOT evaluate effects on the environment?

After modifying the design to minimize or avoid known potential effects, WSDOT compared the project design to the baseline conditions. This comparison enabled WSDOT to determine environmental, social, and economic changes that would result from constructing and operating the Tukwila to Renton Project. For example, engineers evaluated what could happen to water quality both during and after construction and economists examined the effects of traffic congestion on social and economic conditions.

What are best management practices?

Best management practices, commonly referred to as BMPs, are methods used to minimize or avoid environmental effects. The term 'BMP' is widely used to refer to a variety of common management techniques. These practices represent the most practical methods available and are continually being improved. BMPs are most commonly applied to minimize erosion during construction such as by using silt fences, to control and treat stormwater with BMPs like wetponds and other facilities, and to protect fish and streams during in-water work by limiting work periods to when the fewest fish, particularly salmonids, are expected to be present.

The analysis of project effects took into consideration standard construction practices that have been developed to avoid adverse effects. For example, exposure of bare ground during construction can increase erosion and wash soil into local streams. Because of this potential for adverse effects, WSDOT will use BMPs to control erosion and maintain water quality. These standard practices reduce adverse effects and are considered part of the project.

How did WSDOT use environmental information to improve this project?

After collecting the environmental baseline data, the I-405 Team met with the roadway design engineers to identify where project effects on the environment could be reduced. For example, to reduce effects on wetlands, WSDOT overlaid wetland locations on the preliminary design plans and adjusted the roadway alignment, reduced the number of roadside slopes by adding retaining walls, and adjusted the location of stormwater facilities. The I-405 Team visited the study area several times to determine ways to avoid or minimize effects to streams. They made similar efforts to avoid or reduce effects where possible to other elements.

Did some environmental topics show only negligible effects?

Sections 5.1 through 5.9 of this chapter summarize the project's effects as reported in the discipline reports and technical memoranda. Many of the project studies found that

the Tukwila to Renton Project will not cause any adverse effects. For this reason, these studies are not documented in detail in this chapter. The reports that found no adverse effects are summarized below:

- **Air Quality:** This project will not negatively affect regional air quality and will be in compliance with National Ambient Air Quality Standards and Mobile Source Air Toxics requirements. Dust and odors may be present during construction, but these effects will be minor and temporary. For more information, see Appendix E.
- **Economics:** The Tukwila to Renton Project will build approximately \$1.24 billion (2006 dollars) in roadway improvements. Of the total cost, roughly \$1.04 billion (2006) will be spent on construction. Based on current sales and use taxes, this will generate approximately \$8 million in additional sales tax revenue. Tukwila and Renton will share this sales tax revenue with roughly 25 percent for Tukwila and 75 percent for Renton. The project could create roughly 10,000 direct and 6,400 indirect full-time temporary jobs.

The project will acquire approximately 74 acres of land for right-of-way including 16 commercial parcels that will require relocation of businesses. Properties that will be partially or completely acquired by the project account for less than 0.3 percent of the total land area of Tukwila and Renton. The majority of these will be partial acquisitions that will still allow businesses to operate in their current locations. Therefore the effects from acquiring properties that generate tax revenue are expected to be minor on a city-wide scale. For more information, see Appendix H.

- **Environmental Justice:** The Tukwila to Renton Project will not have disproportionately high or adverse effects on minority and/or low-income people. Project construction will have minor short-term effects for all local people such as higher noise levels, more dust, decreased visual aesthetics, and increased traffic congestion that could affect people living in, working in, and traveling through the study area. Project operation will displace some residences and businesses, acquire a small portion of Cedar River Park, remove existing access to Liberty Park, displace Freeway Park, increase traffic noise in some areas, and change visual quality for some

residents. The project will benefit the area population by raising freeway travel speeds, decreasing congestion at most intersections, and improving safety. Both the positive and negative effects will be experienced equitably by minority and low-income populations as well as across the larger population in general. For more information, see Appendix J.

- **Geology and Soils:** Geology and soils in the study area along with the topography present several potential geologic hazards along the corridor. These include erosion, coal mine subsidence, steep slope, landslide, soft ground, and seismic hazards. The presence of these hazards will be taken into account during design and construction. No unusual complications are expected because of these conditions. Once construction is complete and the highway is in use, the project will have no further effect on geology and soils. For more information, see Appendix K.
- **Hazardous Materials:** The study area contains 31 properties that either had at one time or still have hazardous materials on site. Many of the sites have either been cleaned up or are in the process of being cleaned up. Most of the hazardous materials stored on these sites were in underground storage tanks. Some of these tanks are known to have leaked. Even though hazardous materials are found in the study area, no substantially contaminated sites were identified.

Because WSDOT will comply with all applicable environmental rules and regulations, the I-405 Corridor Programmatic Commitments, and the I-405 Corridor Program ROD, effects from hazardous materials are expected to be few, if any. However, despite measures to manage risks associated with hazardous materials, accidents could occur or unknown contaminants could be encountered. These materials could result in short-term contamination effects to the environment before clean up can begin. For more information, see Appendix L.

- **Land Use:** Effects of the project on land use patterns are related to property acquisitions needed for the project and changes to travel patterns and traffic volumes resulting from project improvements. The area that will be acquired for this project will change from residential and commercial land uses to transportation use as part of a

public transportation facility. This land area represents a small fraction of Tukwila's and Renton's housing and commercial capacity and therefore is considered to be a negligible change in land use.

The project will change vehicular and property access in the study area. These changes will be made to improve traffic flow, allow travelers to get to their destinations with less delay, and minimize congestion. WSDOT does not expect changes in traffic flow and access to be substantial enough to change land use patterns in the study area.

The project is not expected to have a substantial effect on the cities of Tukwila's and Renton's policies, plans, and regulations. The improvements anticipated in the Build Alternative will address the design, land use, transportation, and capital facilities policies of both jurisdictions. In addition, the growth anticipated by both jurisdictions in their comprehensive plans and zoning maps will also be supported by the Build Alternative. For more information, see Appendix M.

Section 6 presents the measures that WSDOT has committed to follow to avoid and minimize effects to the built and natural environments.

What federal, state, and local laws and regulations govern the project?

The laws and regulations listed in Exhibit 5-1 provide the legal framework for the Tukwila to Renton Project EA. These interrelated laws and regulations give us thresholds for evaluating how a transportation project might affect each resource.

Exhibit 5-1: Regulatory Framework

Statutes/Regulations/Ordinances	Discipline Reports & Technical Memoranda
Federal	
<p>42 USC 4231 and 40 CFR 1500-1508 National Environmental Policy Act - promotes the desire for a sustainable environment balanced with other essential needs of the present and future. Established a supplemental mandate for federal agencies to consider potential environmental consequences of proposals and to provide the public an opportunity to comment prior to implementation.</p>	All
<p>16 USC 470 (Section 106 National Historic Preservation Act) – requires federal agencies to take into account the effects of their undertakings on historic or potential historic properties, and afford the Advisory Council on Historic Preservation an opportunity to comment.</p>	Environmental Justice
<p>16 USC 460/-4 Section 6(f) of the Land and Water Conservation Fund Act – concerns transportation projects that propose impacts to, or the permanent conversion of outdoor recreation property that was acquired or developed with Land and Water Conservation Fund Act grant assistance.</p>	Section 4(f) Resources
<p>49 USC 303 Section 4(f) of 1966 DOT Act – preserves the beauty and integrity of public parks and recreation areas, waterfowl and wildlife refuges, and historic sites considered to have national, state, or local significance.</p>	Section 4(f) Resources and Environmental Justice
<p>23 USC 109(h) Federal Aid Highway Act – calls for uniform interstate design standards to accommodate traffic forecast in the future 20 years.</p>	Transportation; Social, Public Services, and Utilities; Economics; and Environmental Justice
<p>23 USC 128 Highways – provides the community an opportunity for a public hearing at or near the project.</p>	Social, Public Services, and Utilities and Economics
<p>23 USC CFR 771 FHWA Right of and Environment – provides requirements to FHWA to implement NEPA for highway projects.</p>	All
<p>42 USC Safe Water Drinking Act – protects public health by regulating the public drinking water supply including its sources.</p>	Transportation; Water Resources; and Hazardous Materials
<p>33 USC 1251 Clean Water Act – mandates the identification and protection of waters in each state. Makes it unlawful for any person to discharge pollutants from a point source into navigable waters, unless a permit is obtained.</p>	Water Resources; Ecosystems; and Cumulative Effects
<p>Endangered Species Act of 1973 – provides for the conservation of endangered and threatened species of fish, wildlife, and plants.</p>	Ecosystems and Cumulative Effects
<p>33 USC 401 (Section 10) Rivers and Harbors Act – provides the process for approvals to construct any bridge, causeway, dam, or dike over or in any port, harbor, canal, navigable river, or other navigable water of the United States.</p>	Ecosystems and Cumulative Effects
<p>16 USC 1451 Coastal Zone Management Act – preserves, protects, develops, and where possible, restores or enhances the resources of the nation's coastal zone.</p>	Ecosystems and Cumulative Effects
<p>Notes: Discipline Reports and Technical Memoranda include: Transportation; Noise; Water Resources; Ecosystems; Geology and Soils; Air Quality; Visual Quality; Economics; Land Use; Cultural, Historic, and Archaeological Resources; Environmental Justice; Social, Public Services, and Utilities; Section 4(f) Resources; Hazardous Materials; and Cumulative Effects.</p>	

Exhibit 5-1: Regulatory Framework (continued)

Statutes/Regulations/Ordinances	Discipline Reports & Technical Memoranda
Federal	
15 CFR 923 to 940 Regulations for Coastal Zone Management – requires states to develop a management program that identifies and evaluates coastal resources in need of management or protection by the state.	Ecosystems and Cumulative Effects
16 USC 703-712 Migratory Bird Treaty Act – makes taking, killing, or possessing migratory birds unlawful.	Ecosystems
16 USC 668a-d Bald and Golden Eagle Protection Act – prohibits any form of possession or taking of bald and golden eagles.	Ecosystems
42 USC 4905-4913 Noise Control Acts – intends an environment free from noise that jeopardizes health or welfare.	Noise
23 CFR 772 Noise Abatement – provides procedures for noise studies and noise abatement measures to help protect the public health and welfare, supplies noise abatement criteria, and establishes requirements for information to be given to local officials for use in the planning and design of highways.	Noise
42 USC 103 Comprehensive Environmental Response, Compensation, and Liability Act – Superfund Cleanup – addresses abandoned, accidentally spilled, or illegally dumped hazardous waste that pose current or future threats to human health or the environment.	Hazardous Materials
40 CFR Resource Conservation and Recovery Act – provides procedures and standards for hazardous/chemical waste management.	Hazardous Materials
USC 7401 Clean Air Act – sets national pollution control standards; allows individual states to have stronger pollution controls, not weaker pollution controls than those set for the nation.	Air Quality and Cumulative Effects
49 CFR Part 24 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 – establishes a uniform policy for the fair and equitable treatment of individuals and businesses displaced as a direct result of programs or projects undertaken by a federal agency with federal financial assistance.	Social, Public Services, and Utilities
23 CFR Reimbursement for Utility Relocation - allows for reimbursement for payment of costs incurred under all Federal Highway Administration (FHWA) utility agreements.	Social, Public Services, and Utilities
45 CFR 91 Age Discrimination Act – prohibits discrimination on the basis of age in programs or activities receiving federal financial assistance. The Age Discrimination Act applies to persons of all ages.	Social, Public Services, and Utilities and Environmental Justice
N-4720.6 Civil Rights Restoration Act – prohibits discrimination throughout an entire agency if any part of the agency receives federal financial assistance.	Environmental Justice
29 USC Section 504 Rehabilitation Act – prohibits an “otherwise qualified handicapped individual” to be excluded from participation in a program or activity receiving federal financial assistance.	Environmental Justice
49 CFR American Disabilities Act – prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, state and local government services, public accommodations, commercial facilities, and transportation.	Environmental Justice
Notes: Discipline Reports and Technical Memoranda include: Transportation; Noise; Water Resources; Ecosystems; Geology and Soils; Air Quality; Visual Quality; Economics; Land Use; Cultural, Historic, and Archaeological Resources; Environmental Justice; Social, Public Services, and Utilities; Section 4(f) Resources; Hazardous Materials; and Cumulative Effects.	

Exhibit 5-1: Regulatory Framework (continued)

Statutes/Regulations/Ordinances	Discipline Reports & Technical Memoranda
Federal	
PL 91-646, as amended Uniform Relocation Assistance and Real Property Acquisition Act – assures that the unique circumstances of any displaced person are taken into account and that persons in essentially similar circumstances are accorded equal treatment.	Social, Public Services, and Utilities and Economics
President’s Executive Order 11990 Wetlands Protection – prohibits adverse effects associated with the destruction or modification of wetlands and new construction in wetlands, wherever practicable.	Ecosystems and Cumulative Effects
U.S. DOT Order 56601A Wetlands – requires federal and state agencies to avoid the adverse effects associated with the destruction or modification of wetlands.	Ecosystems and Cumulative Effects
President’s Executive Order 11988 Floodplain Management – requires federal agencies to avoid to the extent possible the long and short-term adverse effects associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development where there is a practicable alternative.	Water Resources
President’s Executive Order 12898 Environmental Justice – requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.	Social, Public Services, and Utilities and Environmental Justice
President’s Executive Order 13166 Improving Access for those with Limited English Proficiency – requires federal agencies to examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide access to those services.	Social, Public Services, and Utilities and Environmental Justice
AC 150/5200-33A FAA Advisory Circular – provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports.	Water Resources
Chapter 197-11 and Chapter 468-12 WAC State Environmental Policy Act – requires the state and local agencies to consider the likely environmental consequence of a proposal before approving or denying the proposal.	Noise; Ecosystems; Geology and Soils, Water Resources; Visual Quality; Land Use; Cultural, Historic, and Archaeological Resources; Environmental Justice; Social Elements, Public Services and Utilities
Chapter 70-107 RCW Noise Control – provides the state statutory authority for establishing maximum noise levels permissible in identified environments, and thereby provides use standards relating to the reception of noise within such environments.	Noise
State	
RCW 47.40.010 Roadside Improvement and Beautification – declares as a proper highway purpose, the planting and cultivating of any shrubs, trees, hedges, or other domestic or native ornamental growth, the improvement of roadside facilities and view points, and the correction of unsightly conditions, upon the right-of-way of any state highway.	Visual Quality
Notes: Discipline Reports and Technical Memoranda include: Transportation; Noise; Water Resources; Ecosystems; Geology and Soils; Air Quality; Visual Quality; Economics; Land Use; Cultural, Historic, and Archaeological Resources; Environmental Justice; Social, Public Services, and Utilities; Section 4(f) Resources; Hazardous Materials; and Cumulative Effects.	

Exhibit 5-1: Regulatory Framework (continued)

Statutes/Regulations/Ordinances	Discipline Reports & Technical Memoranda
State	
Chapter 36.70 RCW Growth Strategies Act – guides and regulates the physical development of a county or region through connecting both public and private projects and coordinates their execution.	Land Use
RCW 36.70A.070 as amended Growth Management Act – guides the development and adoption of comprehensive plans and development regulations for counties and cities.	Ecosystems; Water Resources; Geology and Soils; Land Use; and Cumulative Effects
Chapter 90.48 RCW Water Pollution Control Act – requires the use of all known, available, and reasonable methods by industries and others to prevent and control the pollution of the waters of the State of Washington.	Water Resources; Ecosystems; and Cumulative Effects
Chapter 173-200 WAC Ground Water Quality Standards – establishes water quality standards for groundwater and applies to all groundwaters of the state that occur in a saturated zone or stratum beneath the surface of land or below a surface water body.	Water Resources
Chapter 173-201A WAC Surface Water Quality Standards – establishes water quality standards for surface waters of the State of Washington consistent with public health and public enjoyment of the waters and the propagation and protection of fish, shellfish, and wildlife.	Water Resources; Ecosystems; and Cumulative Effects
Chapter 220-110 WAC Hydraulic Code – establishes regulations for the construction of hydraulic project(s) or performance of other work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state, and sets forth procedures for obtaining a hydraulic project approval (HPA).	Water Resources; Ecosystems; and Cumulative Effects
Chapter 246-290 WAC Public Water Supplies – defines basic regulatory requirements that protect the health of consumers using public drinking water supplies.	Water Resources
WAC 232-12-292 Washington State Bald Eagle Protection Rules – protects and maintains the bald eagle population so that the species is not classified as threatened, endangered, or sensitive in Washington State. Rules promote cooperative efforts to manage eagle habitat needs through a process which is sensitive to landowner goals as well.	Ecosystems
Chapter 90.58 RCW Shoreline Management Act – adopts guidelines for local governments when developing master programs for shorelines of statewide significance.	Ecosystems and Cumulative Effects
Chapter 47.44 RCW Franchises – requires rules to be adopted to provide for a hearing or an opportunity for a hearing with respect to any franchise application involving the construction and maintenance of utilities or other facilities within the highway right-of-way.	Social, Public Services and Utilities
Chapter 468.34 WAC Utility Franchises and Permits – provides the application requirements for franchises and permits.	Social, Public Services and Utilities
Chapter 70-105 RCW Hazardous Waste Management Act – establishes a comprehensive statewide framework for the planning, regulation, control, and management of hazardous waste. The intention of this framework is to prevent pollution and conserve resources of the state.	Hazardous Materials
Chapter 173-303 WAC Dangerous Waste – implements the Hazardous Waste Management Act and provides processes and standards for management of dangerous and extremely hazardous waste.	Hazardous Materials

Notes: Discipline Reports and Technical Memoranda include: Transportation; Noise; Water Resources; Ecosystems; Geology and Soils; Air Quality; Visual Quality; Economics; Land Use; Cultural, Historic, and Archaeological Resources; Environmental Justice; Social, Public Services, and Utilities; Section 4(f) Resources; Hazardous Materials; and Cumulative Effects.

Exhibit 5-1: Regulatory Framework (continued)

Statutes/Regulations/Ordinances	Discipline Reports & Technical Memoranda
State	
Chapter 173-360 WAC Underground Storage Tank – addresses the threat posed to human health and the environment by leaking underground storage systems containing petroleum and other regulated substances.	Hazardous Materials
Chapter 70.105D RCW Model Toxics Control Act – raises sufficient funds to clean up all hazardous waste sites and to prevent the creation of future hazards due to improper disposal of toxic wastes into the state's lands and waters.	Water Resources and Hazardous Materials
Chapter 173-340 WAC Model Toxics Control Act – addresses the releases of hazardous substances caused by past activities.	Hazardous Materials
Chapter 173-326 WAC Commercial Low-level Radioactive Waste – institutes a user permit system and issues site use permits for generators, packagers, or brokers using the Hanford low-level radioactive waste disposal facility.	Hazardous Materials
Governor's Executive Order 89-10 (Protection of Wetlands) – stated goals of the order are no net loss in function and acreage of existing wetlands and an increase in the quality and quantity of wetlands.	Ecosystems and Cumulative Effects
Governor's Executive Order 90-04 Protection of Wetlands – requires rigorous enforcement of agencies' authority to assure wetlands are protected.	Ecosystems and Cumulative Effects
Governor's Executive Order 93-07 Commitment to Diversity and Equity in Service Delivery and in the Communities of the State – directs all executive agencies and institutions of higher education to initiate actions to integrate the principles of diversity into all facets of workplace community and in the delivery of services to the people of Washington. Reaffirms the commitment to the elimination of all barriers to employment that artificially restrict hiring, promotion, recruitment, and tenure on the basis of any physical, cultural, religious, language, or other status that is not directly related to the performance of a job.	Environmental Justice
WSDOT Highway Runoff Manual – guides WSDOT, engineering consultants, and many local agencies in design of stormwater systems for transportation projects.	Water Resources and Cumulative Effects
Local	
Renton Municipal Code 4-3-050 Critical Areas Regulations – manages and protects environmental quality and human health and welfare including wetlands, floodplains, and groundwater sources.	Water Resources and Cumulative Effects
Tukwila Municipal Code 18.45 Sensitive Area Ordinance – designates ecologically sensitive areas such as regulated wetlands and watercourses and geologically hazardous areas to protect these areas and their functions and values.	Water Resources and Ecosystems
Tukwila Municipal Code 16 Buildings and Construction – provides requirements for development and activity within the city districts including public access with bridges and other structures.	Water Resources and Cumulative Effects
King County Code 20.62 King County Landmarks – protects, enhances, and perpetuates the use of buildings, sites, districts, structures, and objects of historical, cultural, architectural, engineering, geographic, ethnic, and archaeological significance located in King County.	Section 4(f) Resources
Notes: Discipline Reports and Technical Memoranda include: Transportation; Noise; Water Resources; Ecosystems; Geology and Soils; Air Quality; Visual Quality; Economics; Land Use; Cultural, Historic, and Archaeological Resources; Environmental Justice; Social, Public Services, and Utilities; Section 4(f) Resources; Hazardous Materials; and Cumulative Effects.	

CHAPTER 5.1 Traffic and Transportation

The Tukwila to Renton Project will increase the number of vehicles able to travel through the study area, improve travel speeds, and improve safety by reducing the potential for congestion-related accidents.

The I-405 corridor serves as an important transportation thoroughfare for the region. Traffic levels in the corridor have increased as a result of growth in the regional economy and associated changes in employment and population.

Understanding how traffic and transportation conditions change over time is important in developing and maintaining an efficient and effective transportation system. This section of the EA describes the current conditions on this portion of I-405, between I-5 and SR 169, and on SR 167 and predicts what those conditions will be like in the future, both with and without the Tukwila to Renton Project.

How did WSDOT evaluate traffic and transportation data for this project?

The I-405 Team used the Puget Sound Regional Council four-county travel forecast model as a starting point for determining future travel demand. This model predicts traffic volumes and travel patterns based on adopted land use plans within the region. We then refined the model to include the specific details of the I-405 freeway.

We used VISSIM, microsimulation software, to evaluate the freeway traffic operations for the whole I-405 corridor and the adjacent highways. To analyze the performance of freeway traffic operations, we used vehicle trips, person trips, and speed to measure effectiveness.

Traffic data from the year 2005 were used to represent existing conditions in the corridor. Traffic was then predicted for 2014, to include the completed Renton Nickel Improvement Project (Phase 1). The 2014 model represents the baseline conditions for the Tukwila to Renton Project and is used as a basis for comparing the Build and No Build Alternatives. The Build and No Build Alternatives were modeled for 2014 and 2030.



Morning traffic congestion on northbound I-405 in Renton

Please refer to the Tukwila to Renton Project Traffic and Transportation Discipline Report in Appendix Q for a complete discussion of the traffic analysis.

What is traffic like now along I-405 and what will it be like in the future?

In 2005, an average of 146,000 vehicles passed through the study area each day. The I-405 and SR 167 general-purpose lanes currently experience congestion and reduced speeds in the peak travel directions for both the morning and afternoon commuting periods. The I-405/SR 167 interchange acts as a bottleneck limiting the flow of traffic between I-405 and SR 167. The WSDOT Gray Notebook² describes the I-405 and SR 167 interchange as one of the most congested and inefficient sections of roadway in the region.

The slowest average travel speeds in the general-purpose lanes are 20 to 35 miles per hour (mph) on northbound SR 167 during the peak of the morning commute. The high volume of northbound SR 167 vehicles trying to merge onto northbound I-405 in the morning causes the slow travel speeds. The general-purpose lanes on I-405 at this time of day typically flow at 30 to 50 mph.

The high occupancy vehicle (HOV) lanes in the study area generally operate well during the morning and afternoon peak hours running at 45 to 55 mph. Speed is reduced in the HOV lanes only when the adjacent general-purpose lanes are heavily congested.

Between now and 2014, the Renton Nickel Improvement Project will be completed. Under these baseline traffic conditions, about 166,000 vehicles will travel this part of I-405 each day. Even though the Renton Nickel Improvement Project will increase capacity, travel speeds in the general-purpose lanes are predicted to remain slow for most locations in the study area. The slowest average travel speeds in the general-purpose lanes will be 10 to 25 mph on northbound SR 167 during the peak of the morning commute.

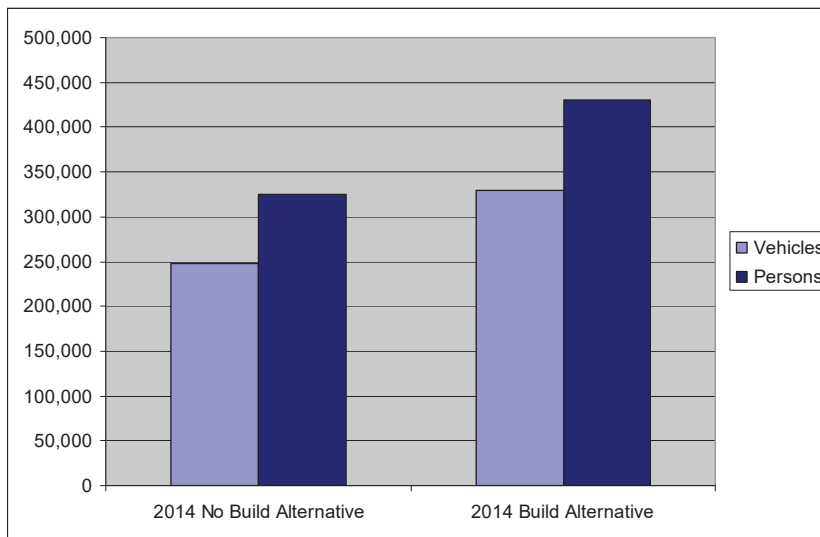
We forecast that future HOV 2+ traffic levels will continue to increase, and the speeds in the HOV lanes will begin to fall below WSDOT's 45 mph performance goal for HOV lanes. Consequently, we have assumed that the HOV occupancy requirement will be increased to HOV 3+, which will improve travel speeds in the HOV lanes.

² WSDOT, 2006

How will the completed project affect traffic on I-405?

The Tukwila to Renton Project will improve peak travel speeds for most locations in the study area by an average of 20 mph. This allows more vehicles and people to travel through the study area. The proposed direct-connector ramps at the I-405/SR 167 interchange will have more capacity and improve the efficiency of the freeway system. Exhibit 5-2 shows the improved capacity at the interchange.

Exhibit 5-2: Vehicles and Persons Traveling Through the I-405/SR 167 Interchange During the Busiest 10 Hours



The highest increases in average travel speeds are for northbound I-405, which raises the speeds by as much as 30 mph. The project improves northbound I-405 average travel speeds during the morning and afternoon peak hours for the years 2014 and 2030. However, the project will lower average travel speeds in some locations. This is because the project improves operations, which in turn delivers higher traffic volumes to the bottleneck locations at the edges of the study area: southbound I-405 approaching I-5 and southbound SR 167 south of SW 43rd Street. The higher traffic volumes can create more congestion in the bottleneck locations and slow travel speeds in those areas. In the year 2014, the slowest average travel speeds in the general-purpose lanes are 10 to 25 mph on northbound SR 167 approaching I-405 during the morning peak hour, which is the same condition expected for the No Build Alternative.

What do we mean by “level of service”?

Transportation analysts rate intersection delay as a level of service (LOS) that is graded from A to F. LOS F is the worst condition with very long delays and heavy congestion.

How will the completed project affect local arterials and streets?

The level of service at most study intersections will stay the same or improve once the project is built. The project will increase freeway volumes and, in turn, more vehicles will use the local streets to enter and exit the freeway. While more vehicles will use the local streets near the freeway interchanges, the project will construct major local street improvements to accommodate the higher traffic volumes.

How will the completed project affect freight movement?

Nine percent of the daily traffic volumes are projected to be truck traffic in 2014. This project will improve freight travel speeds by an average of 20 mph through most of the study area.

How will the completed project affect safety?

Historically, the majority of crashes on I-405 have been rear-end collisions related to congestion. The project will improve safety by adding capacity to I-405 and SR 167, and by reducing stop-and-go traffic. The reduced congestion is expected to decrease the overall crash rate in the study area, in particular the frequency of rear-end crashes on I-405 and SR 167.

The project will also improve safety by reducing the frequency and severity of accidents related to merging into the HOV lanes. This is accomplished by limiting access to the HOV lanes to defined merge points and adding a four-foot-wide striped buffer that separates the HOV lanes from the general-purpose lanes. The project will also add direct-connector HOV ramps that will allow HOV traffic to flow between I-405 and SR 167 without merging out of the HOV lane.

Several ramps and intersections designated as High Accident Locations (HALs) will be rebuilt by this project, reducing the crashes at each one:

- The on-ramp to northbound I-405 from Tukwila Parkway
- The off-ramp from northbound I-405 to Interurban Avenue (SR 181)

- The off-ramp from southbound I-405 to Interurban Avenue (SR 181)
- The stretch of Interurban Avenue (SR 181) between Fort Dent Way and S 156th Street
- The northbound I-405 lane that directs traffic onto southbound SR 167
- The interchange-ramp from southbound I-405 to southbound SR 167
- The interchange-ramp from southbound I-405 to northbound SR 167 (Rainer Avenue S)
- The interchange-ramp from northbound SR 167 to northbound I-405
- The off-ramp from northbound I-405 to southbound SR 169

The safety concerns at these locations are all related to congestion and the roadway configuration. With the improvements in place, all of the HAL ramps should experience a reduction in rear-end crashes due to reduced congestion on the I-405 mainline and surface streets near the interchanges. As an example, the project will remove the northbound I-405 on-ramp from Tukwila Parkway, a HAL, thereby increasing safety on the freeway by eliminating the merge of slower vehicles entering the freeway. Once the Tukwila to Renton Project is completed, we anticipate that the section of I-405 from I-5 to SR 167 will no longer be classified as a High Accident Corridor.

How will the completed project affect transit and HOVs?

The project will add HOV direct-connector ramps at the I-405/SR 167 interchange. The new HOV direct-connector ramps will be built from the northbound SR 167 HOV lane to the northbound I-405 HOV lane, and from the southbound I-405 HOV lane to southbound SR 167 HOV lane. The new ramps will make the freeway system more efficient and save time for transit and HOVs as they will no longer have to weave across the general-purpose lanes to enter and exit the freeway. The HOV direct-connector ramps are expected to operate at free-flow conditions during the morning and afternoon peak periods.

The project will allow access into and out of HOV-only lanes at designated locations, and will add a four-foot-wide striped buffer separating the HOV lanes from the general-purpose lanes. The HOV-lane buffers and limited entry and exit points will discourage random access to the lanes. Drivers will be less concerned with vehicles merging into the HOV lane from the slower, general-purpose lanes, thereby enabling traffic to flow more smoothly as drivers are better able to maintain their travel speeds. We anticipate the HOV lanes will operate at 60 mph for locations with the buffers.

How will the completed project affect bicycle and pedestrian facilities?

The new Tukwila Parkway extension will have sidewalks providing a new pedestrian crossing of the Green River. Currently, the Interurban Trail crosses underneath I-405 at SR 181. To provide a more direct connection, the Interurban Trail will be relocated to the east to travel underneath I-405 adjacent to the Union Pacific railroad tracks. The project will also reconstruct the Cedar River Trail pedestrian bridge across the Cedar River at a new location. Finally, the project will construct a new trail connecting the Renton Hill Neighborhood with Renton's parks and trails

How will travel be affected during construction?

During the widening of I-405 and northbound SR 167, WSDOT will shift and/or realign the mainline lanes through the construction area. We anticipate no weekday daytime lane closures to construct this project. Temporary night and weekend lane closures may be required for mainline widening. Full freeway closures will be required at limited times to shift traffic between construction steps or during the replacement of bridges over I-405 at 66th Avenue S, Lind Avenue SW, and Renton Avenue S, and the removal of the Cedar Avenue S bridge. SR 167 will be closed temporarily to reconstruct the I-405 bridges and the northbound I-405 frontage road. Full closures of I-405 and SR 167 will also be required during the construction of the direct-connector ramps between I-405 and SR 167. The traffic effects of these closures are anticipated to be localized in the immediate Tukwila/south Renton area and are not likely to affect neighboring jurisdictions such as Seattle, SeaTac, Kent, Auburn, or

Bellevue. Measures to minimize the effects of road closures and detours have been incorporated into the project and are detailed in Section 6.

The Green River Trail, Interurban Trail, Springbrook Trail, and Cedar River Trail are existing regional pedestrian trails that travel through the study area. The project will reconstruct I-405 where the Green River Trail, Interurban Trail, and Cedar River Trail cross underneath I-405. When there is overhead construction on I-405, these three trails will be closed to pedestrians and bicyclists for public safety. A signed detour will be provided during these trail closures and notices will be posted and provided to bicycle clubs to keep the public informed about construction.

What would traffic be like if WSDOT did not build the project?

Traffic demand on I-405 will continue to increase. If WSDOT does not build this project, peak travel periods would continue to lengthen with congestion lasting longer than it does today. In the year 2014, the slowest general-purpose lanes average travel speeds are 10 to 25 mph. By the year 2030, we project the traffic congestion would continue to worsen and travel speeds would continue to decrease without the project.

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CHAPTER 5.2 Noise

The Tukwila to Renton Project will increase noise levels in some areas. Two new noise barriers are planned as part of this project. These walls will reduce traffic noise in the Renton Hill area and at the Berkshire Apartment complex.

Sound is an element of daily life that people call noise when they perceive it as unpleasant, unwanted, or disturbingly loud. WSDOT considered this project's effects on noise so that we could understand the potential effect of traffic and construction noise on public health and welfare.

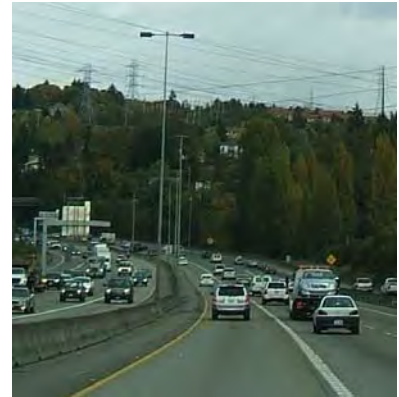
How did WSDOT evaluate noise levels for this project?

WSDOT used the FHWA Traffic Noise Model Version 2.5 computer model³ to predict future noise levels. To validate the model, noise levels were measured for 15-minute periods at 18 locations near the study area. These measurements also help describe the existing noise levels, identify major noise sources in the study area, and characterize weekday background noise levels.

Predicted noise levels were based on the loudest hour of the day (when traffic volumes are high but not congested) to estimate worst-case noise levels. Noise levels in the study area were predicted for the baseline (year 2014) and the design year (year 2030) both with and without the project.

Once the data were modeled, the noise levels were compared to the FHWA Noise Abatement Criteria (NAC). In places where noise levels were modeled as approaching, meeting, or exceeding the NAC, noise specialists evaluated whether mitigation measures could reduce traffic noise substantially enough to warrant the cost of barrier construction. This evaluation was based on WSDOT's feasibility and reasonableness criteria.

Construction noise was considered using EPA reference levels. The analysis was based on noise levels from equipment typically used for roadway construction. Noise levels were



Noise is generated from vehicles traveling on the roadway

Please refer to the Tukwila to Renton Project Noise and Vibration Discipline Report in Appendix N for a complete discussion of the noise and vibration analysis.

What is the Noise Abatement Criteria (NAC)?

For residential and public use buildings or outdoor recreational areas, FHWA defines the NAC at 67 dBA. WSDOT has adopted the NAC and states its own criteria at 66 dBA so that noise levels do not approach, meet, or exceed the NAC. If the NAC is approached, met, or exceeded, noise mitigation must be evaluated.

³ FHWA, 2005

reviewed at various distances from the proposed area of construction.

What do the terms feasible and reasonable mean?

WSDOT evaluates many factors to determine whether barriers will be feasible and/or reasonable. To be feasible, a barrier must be constructible where noise levels will be reduced by at least 7 dBA for one or more receptors and will be reduced by at least 5 dBA at most of the first row of receptors.

WSDOT determines reasonableness based on how many receptors benefit by a reduction in noise of at least 3 dBA, the cost effectiveness of the barriers, and concerns such as aesthetics, safety, and the desires of nearby residents.

How noisy is the study area?

Baseline conditions include the effects of the Renton Nickel Improvement Project. Under these conditions, some study area locations already approach, meet, or exceed the NAC. Locations that currently approach, meet, or exceed 67 dBA include approximately 98 residences, 2 hotels, 6 parks, and 3 trails. Eleven of these residences and the 2 hotels exceed the NAC because of noise from local traffic on Main Avenue, S Grady Way, Benson Road S, N 3rd Avenue, the SR 169/N 3rd Avenue connector, and/or SR 169.

How will construction activities affect noise levels?

Construction will usually be carried out in several steps, each with its own mix of equipment and its own noise characteristics. Adverse effects may result from construction noise levels generated by heavy equipment, including heavy trucks, excavators, jackhammers, and pile drivers. However, this noise will be temporary, occurring only during the construction period. Measures to minimize construction noise effects have been incorporated into the project and are detailed in Section 6.

How will noise levels change after the project is completed?

The Tukwila to Renton Project will increase noise levels throughout the entire study area, primarily affecting residences in the Renton Hill and Talbot Hill neighborhoods. Noise levels will grow over time with an increase of 0 to 12 dBA by the year 2030.

To accommodate the road widening, WSDOT will acquire 30 noise-affected residences and one park as right-of-way for the roadway project. If the project were built without noise barriers, 92 residences and 1 library would go from being below the NAC to approaching, meeting, or exceeding the NAC. Added to the 98 residences, 2 hotels, 6 parks, and 3 trails that are already at or above the NAC, a total of 190 residences, 2 hotels, 1 library, 6 parks, and 3 trails are

predicted to experience noise levels at or above the NAC of 66 dBA in 2030.

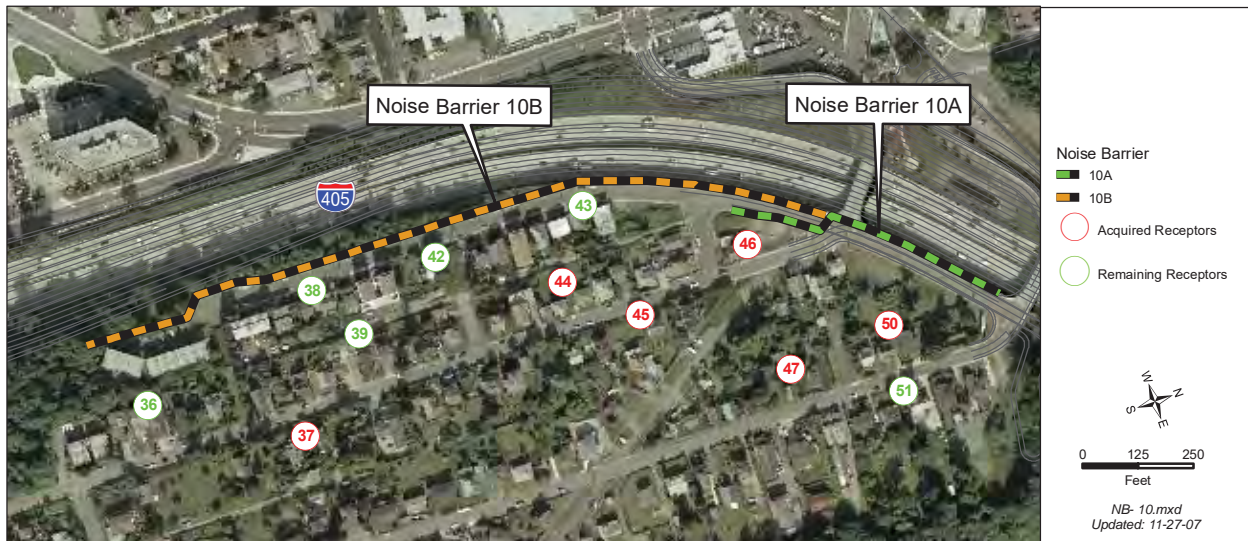
Fourteen noise barriers were evaluated for the Tukwila to Renton Project. Two of these noise barriers meet WSDOT's criteria for construction as part of the Tukwila to Renton Project. Noise Barrier 8 is planned for construction along the WSDOT right-of-way line east of Benson Road S and southeast of I-405 near the Berkshire Apartments. At a height of 20 feet, Noise Barrier 8 will reduce the number of residences that experience noise levels that approach, meet, or exceed the NAC from 27 to 5 residences in the area behind Noise Barrier 8. Exhibit 5-3 shows the location of this proposed barrier.

Exhibit 5-3: Location of Noise Barrier 8



Noise Barrier 10 is composed of two walls, Noise Barriers 10A and 10B, which work together as a system. The barrier system is planned for construction atop a retaining wall from Renton Avenue S to the end of Mill Avenue S. At a height of 14 to 20 feet and 20 feet respectively, Noise Barriers 10A and 10B would reduce the number of residences that experience noise levels that approach, meet, or exceed the NAC from 76 to 29 residences in the area behind Noise Barrier 10. Exhibit 5-4 shows the location of this proposed barrier.

Exhibit 5-4: Location of Noise Barrier 10



With these barriers in place, the 190 residences that approach, meet, or exceed the NAC will be reduced to 121 residences. These noise barriers will not change the noise levels at the 2 hotels, 1 library, 6 parks, and 3 trails that are also expected to approach, meet, or exceed the NAC after the project is complete.

Noise Barrier East 5, which was built under the Renton Nickel Improvement Project, will be relocated to a new location as part of the Tukwila to Renton Project. Exhibit 5-5 shows the new location of this barrier. The residences behind this barrier will experience additional noise effects, although the magnitude of these effects will be minimized by the shielding effects of the relocated noise barrier. The possibility of increasing the size of Noise Barrier East 5 was analyzed but this option was not found to be feasible.

Exhibit 5-5: Noise Barrier East 5 Modification



With the noise barriers in place for the Build Alternative, noise levels will approach, meet, or exceed the NAC at 36 locations (representing 121 residences, 2 hotels, 1 library, 6 parks, and 3 trails). The Tukwila to Renton Project will not cause any substantial (more than 10 dBA) increases in noise.

What would future noise levels be like if WSDOT did not build this project?

If this project is not built, no additional receptors will approach, meet or exceed the NAC. Under the No Build Alternative, the 98 residences, 2 hotels, 6 parks, and 3 trails that already approach, meet or exceed the NAC will continue to experience noise levels that approach, meet, or exceed the NAC in 2030.

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CHAPTER 5.3 Communities, Businesses, and Public Services

To construct the Tukwila to Renton Project, 16 commercial properties and 25 residential properties will need to be acquired, resulting in relocations. WSDOT will provide fair compensation and relocation assistance for these people and businesses. Construction of the project will also have minor short-term effects on public services and utilities in the study area. Relocation of utilities may cause temporary, minor disruptions in service. The project will improve response time for emergency service vehicles along I-405 and SR 167.

Communities, neighborhoods, and businesses are the heart of a region's social identity and economic vitality. Studying and understanding the social and economic effects of the Tukwila to Renton Project is an important step in maintaining the area's unique characteristics, as well as nurturing its living and business environments.

Public services and utilities are an important part of any community because they enhance and simplify the quality of human life. They allow us to live in a safer environment and enjoy a higher standard of living.

This section summarizes the I-405 Team's analyses of the project's potential effects on communities, businesses, and public services.

What economic and social data did WSDOT evaluate for this project?

Data for evaluating effects to economics and social elements were gathered from the following sources:

- King County Assessor's Office
- Washington State Employment Security Division
- U.S. Census Bureau
- National Center for Education Statistics



Emergency services use I-405 and SR 167 to answer calls and serve the public

For a complete discussion of these analyses, please refer to the Tukwila to Renton Project Social, Public Services, and Utilities Technical Memorandum in Appendix P; Economics Technical Memorandum in Appendix H; Land Use Discipline Report in Appendix M; and the Environmental Justice Discipline Report in Appendix J.

Other references from studies previously completed in the study area were also used including the technical documents written for the Renton Nickel Improvement Project.

Who lives and works in the study area?

Roughly 17,000 people live in the City of Tukwila and 50,000 live in the City of Renton according to the 2000 census data. Almost 58 percent of residents in Tukwila are renters and 50 percent in Renton are renters. Nearly 14 percent of households in Tukwila contain people aged 65 years or older. In Renton, over 17 percent of households contain residents aged 65 years or older. Statistical profiles of the local community indicate that approximately 10 percent of the study area residents are low income.

Within the study area as a whole, 39 percent are minorities, with substantial numbers of non-English speaking people. The largest minority groups within both Tukwila and Renton are African American and Asian. The data indicate that approximately 54 percent of Tukwila's population is white, with an African American population of approximately 13 percent and an Asian population of approximately 11 percent. Approximately 66 percent of Renton's population is white, with an Asian population of approximately 13 percent and an African American population of approximately 9 percent.

What do we mean by neighborhood cohesion?

Cohesion refers to the ability of people to communicate and interact with each other in ways that lead to a sense of community. The evaluation of community cohesion includes neighborhood population characteristics and connections with churches, schools, and other community facilities.

What communities, businesses, and services are located in the study area?

Industrial and commercial land uses dominate the study area, with pockets of residences in both Tukwila and Renton. The three recognized neighborhoods in the City of Tukwila within the study area are Tukwila Hill, Thorndyke, and McMicken. The Renton neighborhoods in the study area are North Renton, Piazza Renton, Monterey Terrace, Renton Hill, South Renton, Talbot Hill, Valley Vue, and Victoria Park as shown in Exhibit 5-6. The degree of cohesion varies with the neighborhood.

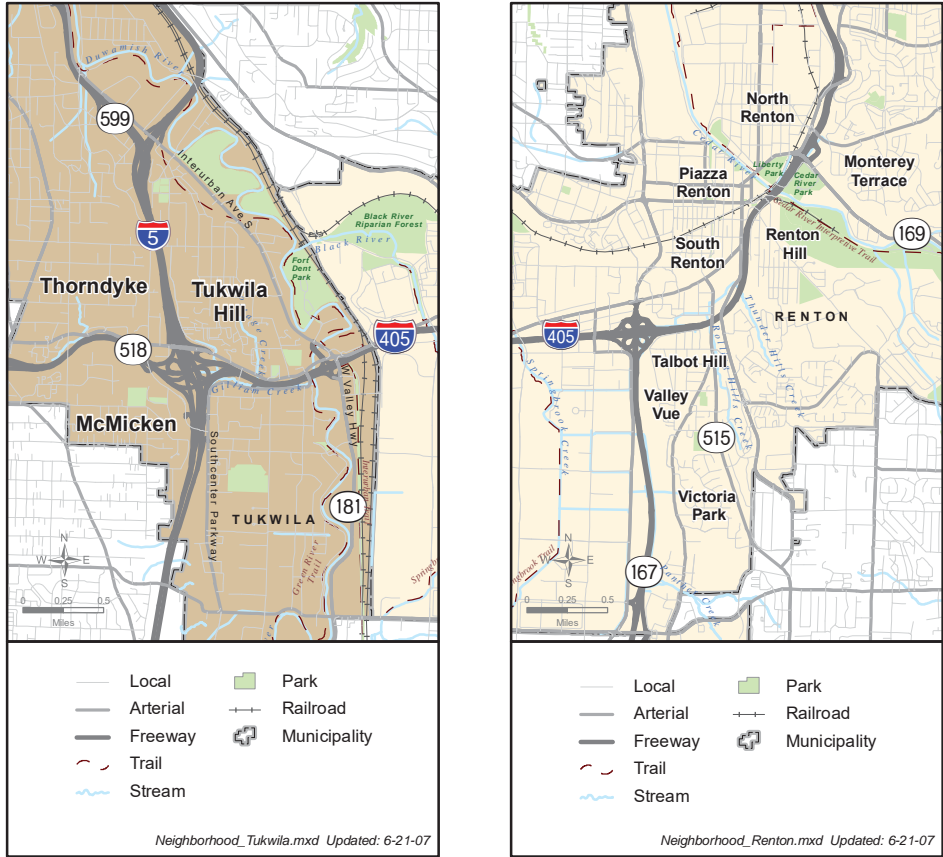


Exhibit 5-6: Tukwila and Renton Neighborhoods in the Study Area

Many social resources, such as schools, community centers, and health care facilities are available to these residents. The public services in the area include emergency response services (fire, police, etc.), parks and recreational facilities, transit, places of worship, mail delivery, cemeteries, government offices, and maintenance services.

The utilities in the study area include municipal agencies, special utilities districts, and private companies that provide services such as electricity, natural gas, water, wastewater or stormwater collection, fiber optics, and telecommunications. Utilities are located within public rights-of-way in accordance with state law and franchise agreements with the cities of Tukwila and Renton and WSDOT.

Will any properties be acquired?

WSDOT will need to fully acquire 64 properties and partially acquire 91 properties to construct the proposed project. While many partial acquisitions are slivers of a property with a minimal community effect, 40 of the full acquisitions and one

of the partial acquisitions will displace residences or businesses. The Main Avenue design option for local access would require 10 additional properties to be fully acquired, resulting in 7 additional commercial relocations. However, the Mill Avenue design option will not require these additional property acquisitions and is the preferred design option for the project. The community of Talbot Hill will be the most affected by the property acquisitions because it has residences immediately adjacent to both I-405 and SR 167. Property acquisitions that will require relocation are listed in Exhibit 5-7. Exhibits 5-8 through 5-15 show all planned acquisitions.

Exhibit 5-7: Property Acquisitions that Require Relocation

No. ¹	Current Land Use	City	Business Name/Type	Acquisition Type
1-22	Single-Family Residential	Renton	N/A	Full
23	Multi-Family Residential	Renton	Berkshire Apartments	Partial
24	Single-Family Residential	Renton	N/A	Full
25	Commercial	Tukwila	Service Station	Full
26	Commercial	Tukwila	Best Western Inn	Full
27	Commercial	Renton	Longacres Industrial Park	Full
28	Commercial	Renton	South 405 Place	Full
29	Commercial	Renton	Shuttle Express	Full
30	Single-Family Residential	Renton	N/A	Full
31	Commercial	Renton	Seattle Lumber Company	Full
32	Commercial	Renton	Sprint Communications	Full
33	Commercial	Renton	Popa's Roofing Company	Full
34	Commercial	Renton	Cope & McPhetres Marine Service	Full
35	Commercial	Renton	Dahlby Construction	Full
36	Commercial	Renton	1420 Building	Full
37	Commercial	Renton	Office Building	Full
38	Commercial	Renton	Taylor's Auto Body	Full
39	Commercial	Renton	Shurguard Storage	Full
40	Commercial	Renton	Strada de Valle	Full
41	Commercial	Tukwila	Hampton Inn	Full

1. The number shown in the first column corresponds to the bubbles shown on Exhibits 5-5 through 5-12.

Exhibit 5-8: Property Acquisitions, Sheet 1



Exhibit 5-9: Property Acquisitions, Sheet 2

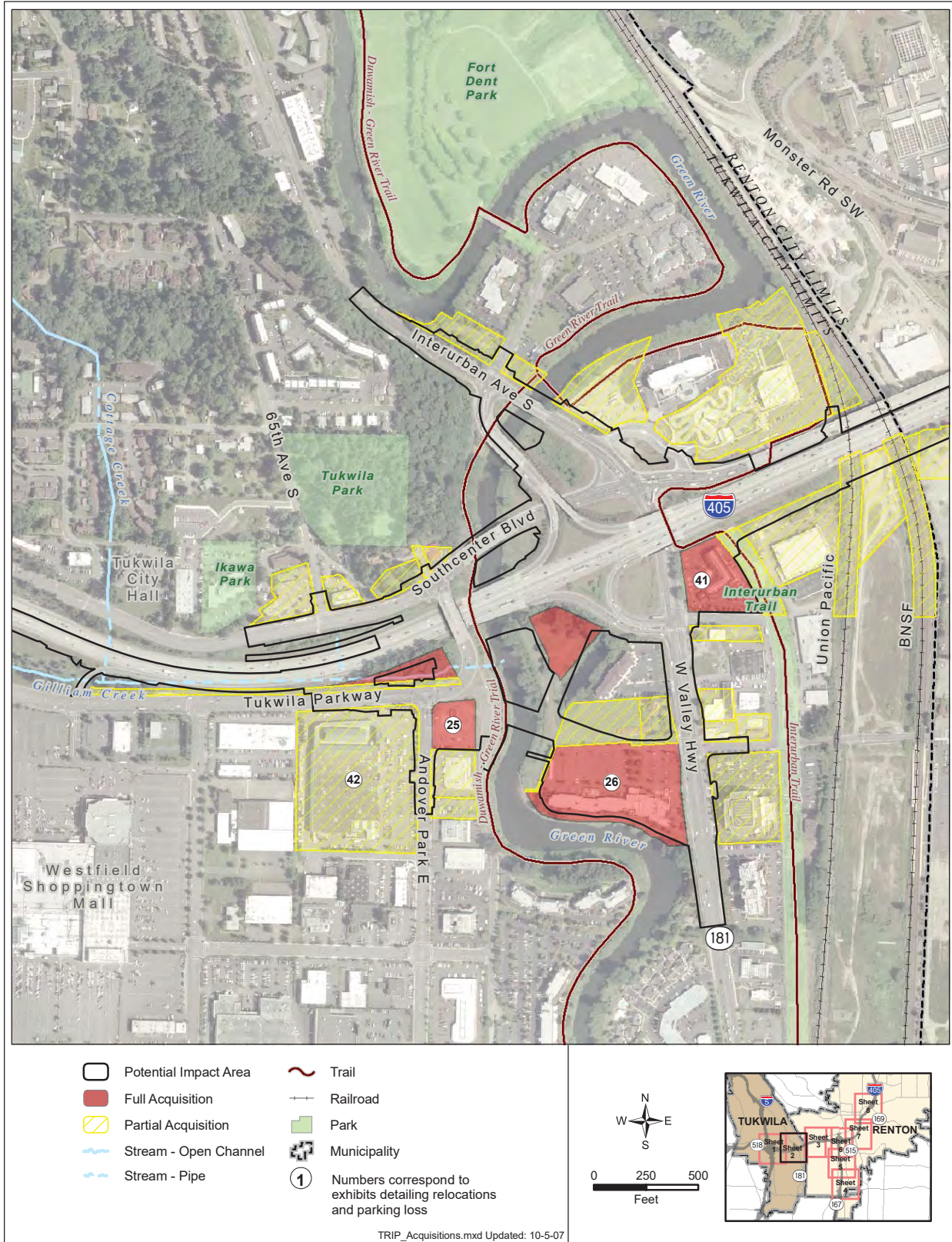


Exhibit 5-10: Property Acquisitions, Sheet 3



Exhibit 5-11: Property Acquisitions, Sheet 4



Exhibit 5-12: Property Acquisitions, Sheet 5



Exhibit 5-13: Property Acquisitions, Sheet 6

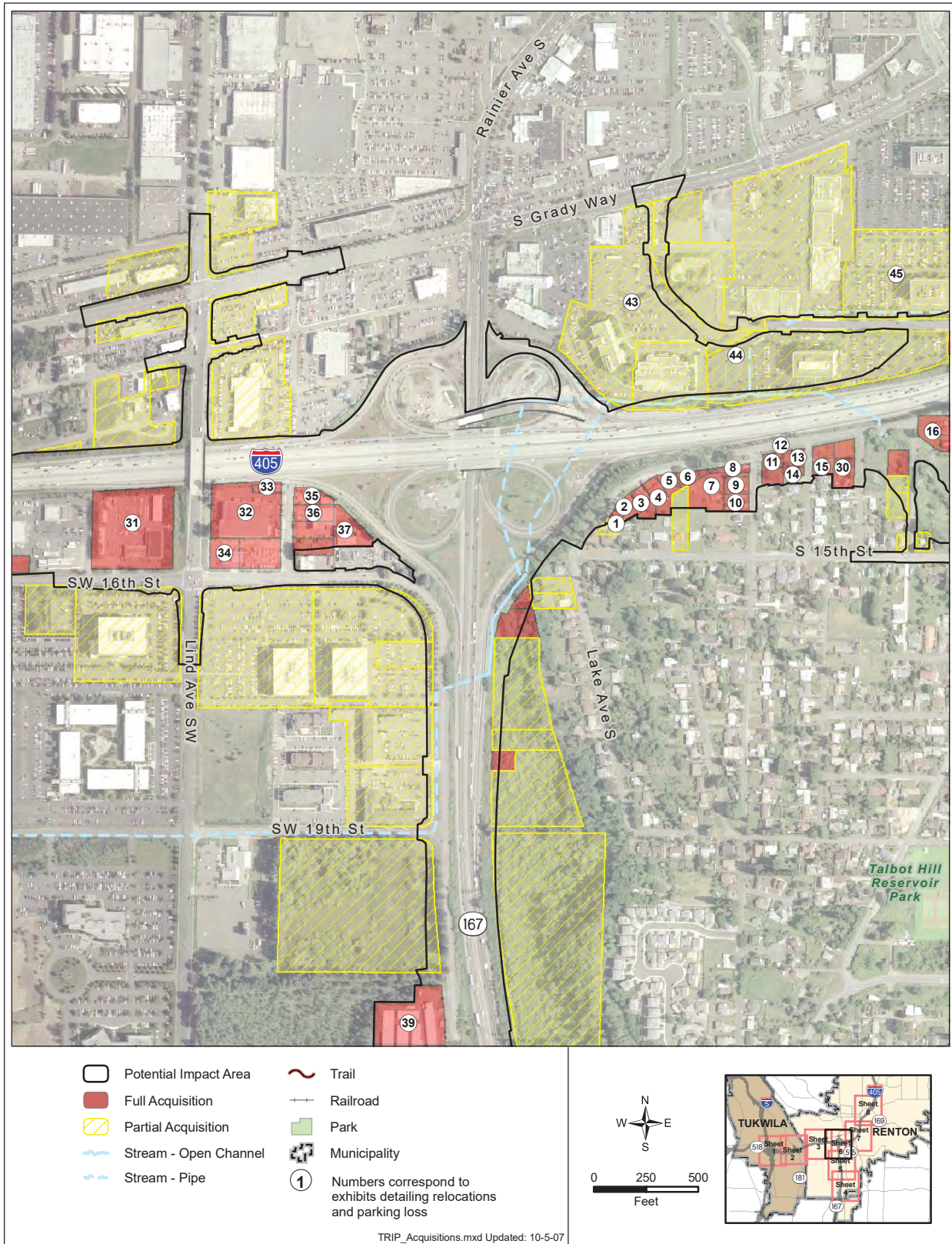


Exhibit 5-14: Property Acquisitions, Sheet 7

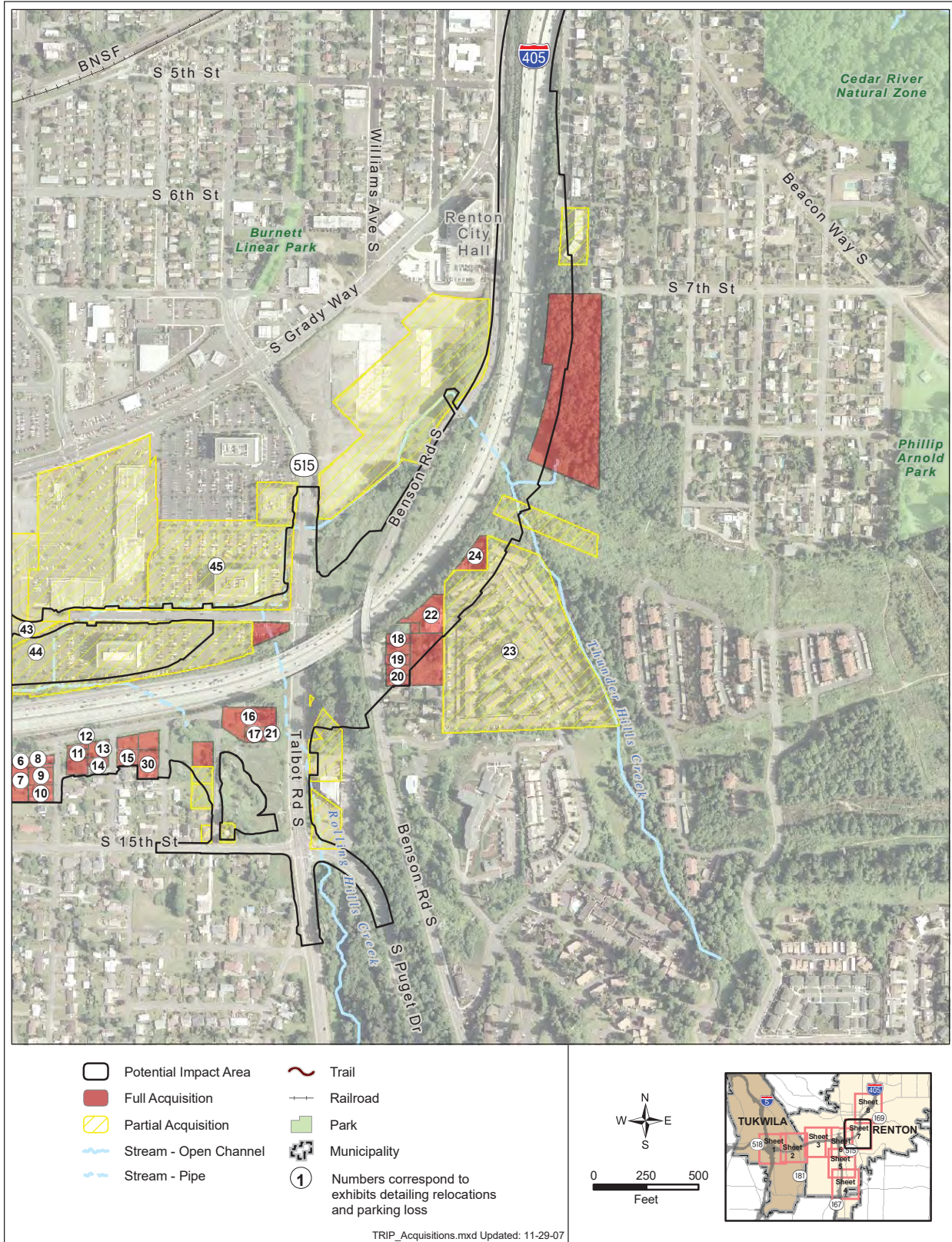


Exhibit 5-15: Property Acquisitions, Sheet 8



Commercial property acquisitions will also result in the loss of approximately 358 parking spaces within the study area as shown in Exhibit 5-16. All acquisitions will be completed in compliance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended. For details on how WSDOT will mitigate these effects, see Section 6.

Exhibit 5-16: Parking Loss

No. ¹	Business Name/Type	City	Current Parking Spaces	Proposed Parking Spaces	Parking Loss
42	Lowe's	Tukwila	409	298	11 ²
43	Evergreen Building	Renton	515	436	79
44	Triton Tower One	Renton	586	409	177
45	Triton Tower Two	Renton	579	522	57
46	304 Office Building	Renton	39	24	15
47	JB Graphix	Renton	24	16	8
48	Golden Palace Chinese Restaurant	Renton	23	12	11
Total			2,175	1,717	358

1. The number shown in the first column corresponds to the bubbles shown on Exhibits 5-8 through 5-15.
2. Lowe's currently uses 100 parking spaces for storage. These spaces are not included in the calculation of parking loss.

The Main Avenue design option property acquisitions also include the loss of an additional 5 parking spaces. However, the Mill Avenue design option does not require property acquisitions and does not add to parking losses. See Section 5.8 for more details on the design options to replace local access lost due to removing the Houser Way bridge.

Will any public services be displaced?

No public services are expected to be displaced by the proposed project. The Main Avenue design option would displace the YWCA Renton Regional Center. However, the Mill Avenue design option will not displace this public service as it does not require the acquisition of properties and is the preferred design option for this project.

How will construction activities affect communities, businesses, and services?

Project construction will have minor short-term effects such as higher noise levels, more dust, decreased visual aesthetics, and increased traffic congestion that could affect people living in, working in, and traveling through the study area. Some trails will be temporarily rerouted and some parks will be temporarily unavailable for use. Measures have been incorporated into the project to minimize these effects as discussed in Section 6.

How will the completed project affect communities, businesses, and services?

The Build Alternative will benefit the area population by raising freeway travel speeds, decreasing congestion at most intersections, and improving safety. Those using HOV facilities will benefit from higher speeds and direct-connector ramps. These benefits will affect the general public uniformly including minority and low-income populations.

How will the project affect minority and low-income populations?

Although the project does have some adverse construction and operational effects, it will not result in disproportionately high or adverse effects on minorities or low-income populations. Minority and low-income populations will experience some benefits from the project, primarily due to improvements to HOV facilities.

What would happen to these communities, businesses, and services if WSDOT did not build this project?

Without the Tukwila to Renton Project, traffic congestion in the area would continue and would become worse in the future. Traffic congestion could discourage patrons and decrease the livability of the area for residents.

CHAPTER 5.4 Recreational and Cultural Resources

The Tukwila to Renton Project will not adversely affect any recreational or cultural resources. The project will have direct uses and temporary occupancy of some of the Section 4(f) and 6(f) resources in the study area. WSDOT has identified measures to minimize these effects. These include providing signing and temporary detours for trails, restoring a trailhead, replacing lost parking, and implementing mitigation measures in concert with the City of Renton's master plan for the Tri-Park complex.

Citizens appreciate recreational resources because they help to improve the quality of life within our communities. Public spaces that are enjoyable, accessible, and diverse in their social and recreational functions enrich minds, bodies, and spirits.

Likewise, archaeological and historic resources provide an important link to the past while establishing meaningful connections to lives today. They serve as memories and symbols of a community's accomplishments and represent the distinctive architecture, landscape, and engineering design of our region.

How did WSDOT identify and evaluate recreational and cultural resources in the study area?

Parks and other recreational areas were evaluated within 0.25 miles of the Tukwila to Renton Project. The precedent for studying this distance on each side of the freeway was generally agreed upon in the *I-405 Corridor Program Final Preliminary Section 4(f) Evaluation*. Additional research beyond the preliminary evaluation included site investigations at each potential Section 4(f) resource and coordination with the cities of Tukwila and Renton; King County; the Recreation and Conservation Office (RCO); and the National Park Service (NPS). This coordination has been documented in the *Draft Section 4(f) Evaluation* for this project (see Appendix O).

Effects to these recreational resources were evaluated based on guidance in the FHWA Section 4(f) Policy Paper issued March 1, 2005; Title 23 of the Code of Federal Regulations, Section 771.135 (Section 4(f)); and the WSDOT Environmental Procedures Manual published in March 2006.



Duwamish-Green River Trail passing under I-405

Please refer to the Tukwila to Renton Project Draft Section 4(f) Evaluation in Appendix O and the Cultural, Historic, and Archaeological Technical Memorandum in Appendix F for a complete discussion of the recreational and cultural resources analyses.

Historic resources in the project area that predate 1965 were also evaluated. The year 1965 was selected to cover all cultural resources that would be 50 or more years old by the time the first parts of the project are built, assumed to be 2015.

Archaeological investigations were conducted by reviewing previous reports and by conducting field investigations. The I-405 Team determined the location of areas near the project with the highest likelihood of pre-European cultural activity. The I-405 Team then compared these areas to the project footprint to determine where potential disturbance of cultural artifacts might occur when the project is constructed. Testing for artifacts was done in these areas, where practical, by digging holes in multiple locations to see if artifacts could be found.

Some portions of the area of potential effect (APE) were not currently available for archaeological study due to funding and access issues. In unfunded areas, testing cannot be conducted where buildings currently stand or if an area is currently paved. WSDOT tested for archaeological resources on the funded portion near Talbot Road for the SR 515 half-diamond interchange. The remaining archaeological studies will be completed when funding and access are secured under the terms of a Section 106 Programmatic Agreement developed for the project under 36 CFR 800.14. This Programmatic Agreement⁴ is included in Appendix C of this EA.

What is Section 4(f) and what constitutes a use of a Section 4(f) resource?

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) prohibits the FHWA from approving a transportation project that uses land from a significant public park, recreation area, wildlife or waterfowl refuge, or land of an historic site of national, state, or local significance, unless:

1. There is no feasible and prudent alternative.
2. The project includes all possible planning to minimize harm to the property.

A feasible and prudent alternative must be selected if it avoids using this land. Measures that minimize the harm to the

⁴ *The Programmatic Agreement is currently a draft and is being circulated for signatures. The final signed agreement will be included in the Finding of No Significant Impact.*

resource must be identified and incorporated if use of the Section 4(f) resource is unavoidable.

A Section 4(f) evaluation must be prepared if any resources protected by Section 4(f) are used by a project. "Use" of Section 4(f) resources as defined by the Act⁵ occurs when:

1. Land is permanently incorporated into a transportation facility. The physical and permanent procurement of a protected resource for use by a transportation project is known as an actual or direct use.
2. The land is subject to temporary occupancy and adverse changes, such as contour alterations or removal of mature trees and other vegetation as may result during project construction. Temporary occupancy during construction will not always constitute a use of Section 4(f) land. Short-term, temporary occupancy or effect (e.g., for a construction easement) does not constitute a use under Section 4(f) as long as all of the following conditions are met:
 - Occupancy is temporary (i.e., shorter than the construction period for the entire project) and ownership does not change;
 - Changes are minimal;
 - No permanent adverse physical effects result and there is no interference with the activities or purposes of the resources on either a temporary or permanent basis;
 - The land being used will be restored to a condition which is at least as good as that prior to the project; and
 - Documented agreement(s) exist between relevant jurisdictions regarding temporary use of the resource.
3. There is a constructive use of land. A constructive use occurs when:
 - Noise from the project substantially interferes with the use and enjoyment of the resource, such as enjoyment of a historic site where a quiet setting is a generally recognized feature or attribute of the site's significance, or enjoyment of any park where serenity and quiet are significant attributes; or

What is a constructive use?

A constructive use is a type of indirect use in which a transportation project's proximity effects (as opposed to direct effects) are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Examples include excessive noise level increases, diminished aesthetic features, ecological intrusions, and other indirect effects to the resource's environment or utility. In all instances, a "substantial impairment" of the resource is necessary for a constructive use to occur.

When does noise become a constructive use?

The noise increase must not only be detectable to the human ear (i.e., an increase greater than 2 to 3 decibels) and exceed the FHWA noise abatement criterion as contained in Table 1 of 23 CFR Part 772, but it must be severe enough to truly impair enjoyment of the Section 4(f) resource.

⁵ 23 CFR 771.135(p) (1) and (2) is where DOT specifically describes 4(f) "use."

How does proximity contribute to a constructive use?

An example might be the location of a roadway that obstructs or eliminates a view or substantially detracts from the setting of a park or historic site that derives its value in substantial part due to its setting.

- The proximity of the proposed project substantially impairs aesthetic features or attributes of the resource, where these features or attributes are considered important contributing elements to the value of the resource; or
- The project restricts access and would result in a substantial decrease in the usability of the resource; or
- Vibration emanating from the project substantially impairs the use of the resource.

What is a Section 6(f) resource?

Section 6(f) resources are defined as public outdoor recreational lands purchased or developed with financial assistance from the Land and Water Conservation Fund (LWCF). In 1965, Congress passed the Land and Water Conservation Fund Act (LWCFA) that provides grants paying up to half the cost to acquire and develop outdoor recreation sites and facilities. Section 6(f) of the LWCFA addresses transportation projects and prohibits converting property acquired or developed with these grants to a non-recreational purpose without approval of the NPS. Exhibit 5-17 identifies the two Section 6(f) resources near the proposed Tukwila to Renton Project, which are also Section 4(f) resources.

Exhibit 5-17: Section 6(f) Resources and RCFB Investment Properties

Resource	Section 6(f) Resource	RCFB Investment Property
Duwamish-Green River Trail/ Christiansen Greenbelt	X	X
Cedar River Trail – South Loop	X	X
Cedar River Trail		X

What is a Recreation and Conservation Funding Board investment property?

Recreation and Conservation Funding Board (RCFB) investment properties are defined as public outdoor recreational lands purchased or developed with financial assistance from the State. Within the study area, three RCFB investment properties were identified as shown in Exhibit 5-17. The RCO must approve uses of RCFB properties protected under Section 4(f) if these properties benefitted from state and federal grant programs.

What recreational resources are located in the study area?

There are 23 publicly-owned parks and recreation areas and no waterfowl or wildlife refuges near the proposed Tukwila to Renton Project right-of-way. Exhibit 5-18 lists these resources from east to west (northbound) and compares each resource with Section 4(f) criteria. Of these, 19 are protected Section 4(f) properties. Exhibits 5-19 and 5-20 show these properties.

Exhibit 5-18: Park, Trail, and Recreation Areas Compared Against Section 4(f) Criteria

Property/Jurisdiction	Publicly Owned	Open to the Public	Major Purpose is Recreation	Significant as a Park	Section 4(f) Protected Property
Crystal Springs Park (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Ikawa Park (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Tukwila Park (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Duwamish-Green River Trail/Christensen Greenbelt (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Duwamish-Green River Trail Trailhead (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Fort Dent Park (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Interurban Trail (<i>Tukwila</i>)	Yes	Yes	Yes	Yes	Yes
Springbrook Trail (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Lake Street Open Space (<i>Renton</i> ¹)	Yes	No	No	No	No
Panther Creek Wetlands Open Space (<i>Renton</i>) ¹	Yes	No	No	No	No
Gateway Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Piazza Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Burnett Linear Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Cedar River Trail-South Loop (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Tonkins Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Renton Hill Park (<i>Renton</i>) ^{2, 3}	Yes	Yes	Yes	No	No
Veterans Memorial Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Jones Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Cedar River Natural Area (<i>Renton</i>) ¹	Yes	Yes	No	No	No
Narco Property (<i>Renton</i>) ⁴	Yes	Yes	Yes	Yes	Yes
Cedar River Trail (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Cedar River Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes
Liberty Park (<i>Renton</i>)	Yes	Yes	Yes	Yes	Yes

1 The City of Renton Parks Department and the City of Renton *2003 Park, Recreation, and Implementation Open Space Plan* show these are currently undeveloped and only receive incidental or occasional recreation, therefore they are not significant under Section 4(f).

2 Consultation with the City of Renton Parks Department concluded that this park is not identified in the City of Renton *2003 Park, Recreation, and Implementation Open Space Plan* and is not considered significant within the recreational and park objectives of the City.

3 Renton Hill Park is also known as Freeway Park.

4 While the Narco Property has not been developed, the City of Renton has completed long-range master planning that integrates the property and future recreation facilities with Cedar River Park, Liberty Park, and the Cedar River Trail.

Exhibit 5-19: Potential Section 4(f) Resources Identified in the Study Area

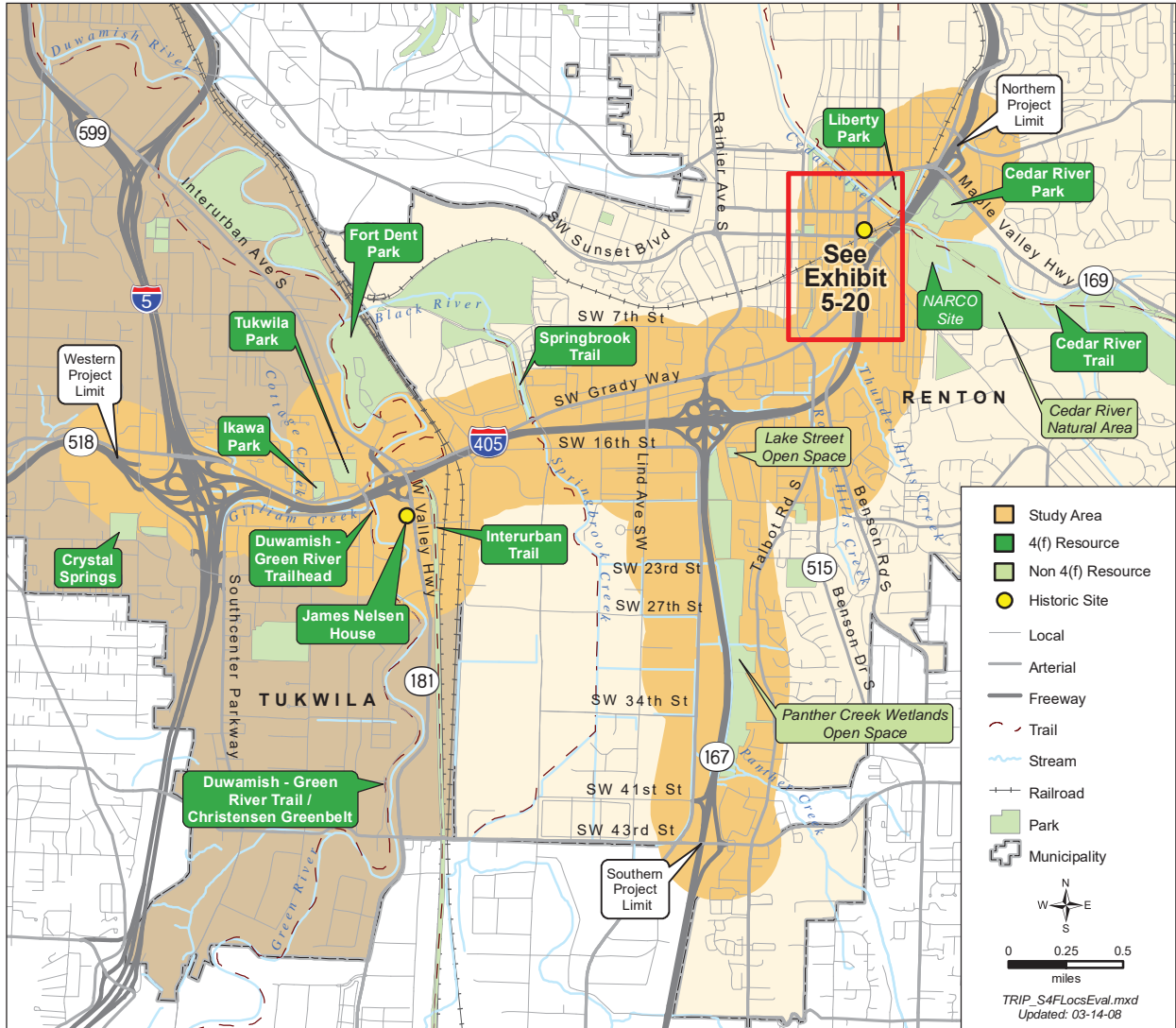


Exhibit 5-20: Inset, Potential Section 4(f) Resources Identified in the Study Area



What historic and cultural resources are located in the study area?

Historic properties found within the project area are presented in Exhibit 5-21 along with their status as historic properties and whether or not they are protected under Section 4(f).

Exhibit 5-21: Historic Properties Compared Against Section 4(f) Criteria

Property(Jurisdiction)	Listed on National Register of Historic Places (NRHP)	NRHP Status	Section 4(f) Protected Property
James Nelsen House (Private Trust) ¹	No	Eligible	Yes
Renton History Museum (Renton) ¹	No	Eligible	Yes

1. Property listed on the Washington Heritage Register.

How will construction activities affect recreational and cultural resources?

During development of the project, the I-405 Team strove to find reasonable options that avoid effects to the community and the environment while improving driving conditions for motorists on I-405. The development of a viable project necessitated finding an optimal balance between meeting the project purpose and need and minimizing project effects. FHWA and WSDOT also considered avoidance alternatives to eliminate effects to Section 4(f) resources.

Recreational Resources

The Tukwila to Renton Project would have a Section 4 (f) use at the following five resources:

- Duwamish-Green River Trail Trailhead
- Cedar River Park
- Liberty Park
- Cedar River Trail
- Narco Property

The project is also expected to have a Section 6(f) use at the Duwamish-Green River Trail/Christensen Greenbelt. The Section 4(f) and 6(f) uses are detailed below starting at the west end of the project and moving east (northbound):

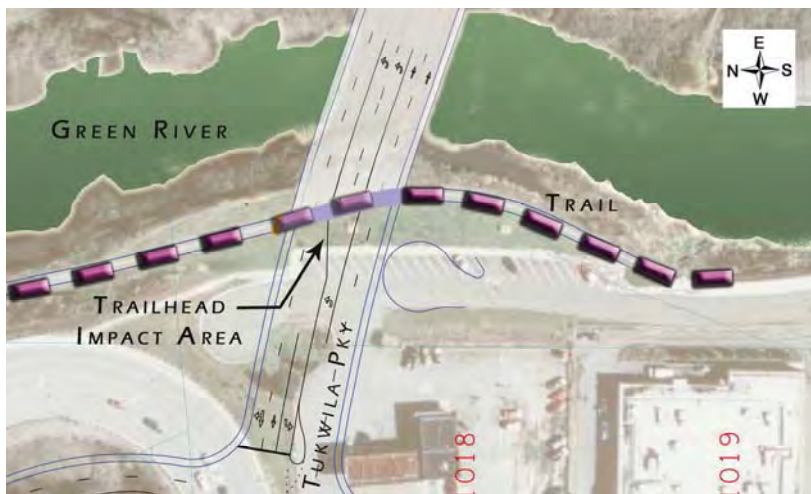
- **Duwamish-Green River Trail/Christensen Greenbelt.** While no land will be permanently incorporated into the transportation facility, the trail will experience a temporary occupancy so that the trail's slope can be revised to ensure adequate clearance for the trail beneath the bridges. The trail will be lowered by up to eight feet to maintain a minimum 10-foot vertical clearance between the new Tukwila Parkway Bridge and the trail. This occupancy does not constitute a "use" because the closure will be temporary and over a shorter duration than the construction of the full project. The trail will be restored following construction. The City of Tukwila has concurred with this finding as documented in Appendix B.

The project will not have a direct use under Section 4(f) because the bridges will span the trail and the piers for the bridges will not be located within the 14-foot-wide trail

property. However, due to the new bridge spanning above the trail, air rights will be effected, which are considered a Section 6(f) conversion impact. The RCO will review the Section 6(f) conversion request for this permanent direct use effect. The RCO, a state agency, administers federal and state funding to acquire, develop, and restore real properties for public outdoor recreation.

- **Duwamish-Green River Trail Trailhead.** Approximately 4,500 square feet of land will be permanently incorporated into the transportation facility as a result of the construction of the Tukwila Parkway extension as shown in Exhibit 5-22. This loss of land will also displace 13 parking stalls.

Exhibit 5-22: Impact Area at Duwamish-Green River Trail Trailhead



- **Tri-Park complex.** The City of Renton proposes to combine Cedar River Park, Liberty Park, and the Narco Property into one large integrated park complex, Tri-Park. These properties plus the Cedar River Trail share common borders. As a precursor to planning the I-405 improvements in Renton, the City of Renton recreational facilities at Liberty and Cedar River Parks, Cedar River Trail, and the Narco property and an improved (widened) I-405 could co-exist in a physically constrained area. The resulting charrette concept integrated Liberty Park, Cedar River Park, and the Narco property into one large park complex. The design scheme assumed redeveloping both existing parks, realigning the trail, developing the Narco site with sports fields, and acquiring an additional property to the east to develop ball fields. This is known



Baseline view of Duwamish-Green River Trail Trailhead



Proposed view of Duwamish-Green River Trail Trailhead

What is a design charrette?

A charrette consists of an intense period of design activity. It is a collaborative session in which a group of stakeholders and technical experts draft a solution to a design problem. A charrette typically promotes joint ownership of solutions and attempts to defuse traditional confrontational attitudes between stakeholders.

as the City of Renton's Tri-Park Master Plan. More information about the Tri-Park Master Plan can be obtained by contacting the City of Renton.

WSDOT will permanently acquire 35,752 square feet of land at Cedar River Park to construct the northbound off-ramp from I-405 to SR 169. WSDOT will not acquire any land from Liberty Park, Cedar River Trail, and the Narco property.

While the proposed direct uses can be measured and expressed in a quantifiable area, both WSDOT and the City of Renton concur that the Tukwila to Renton Project will impose other, even though less quantifiable, adverse uses to the recreation environments at Liberty Park, Cedar River Park, Cedar River Trail, and the Narco property. These uses will include:

- Reconstructing the pedestrian bridge for the Cedar River Trail over the Cedar River.
- Replacing one of the Cedar River Park accesses with a new secondary access.
- Reconfiguring the service access and parking on west side of the Community Center at Cedar River Park.
- Removing and replacing landscaping at the northwest corner of Cedar River Park.
- Relocating the SR 169 entrance to Cedar River Park further south along SR 169.
- Eliminating major access to Liberty Park by removing the Houser Way Bridge.
- Modifying the existing access road under I-405 to the Narco property.

The project was also evaluated to determine whether any constructive use would occur. Noise, visual quality, and air quality studies were completed for the Tukwila to Renton Project EA. These studies found that the project would not have constructive uses at any of the recreational properties within the study area. See the *Draft Section 4(f) Evaluation* in Appendix O for more information on these findings.

Cultural Resources

The Tukwila to Renton Project will have no direct or indirect effects on the two NRHP-eligible historic structures within the project's APE (James Nelsen House and Renton History Museum). Approximately 27,350 square feet land will be permanently acquired from the James Nelsen House property when Tukwila Parkway is extended to SR 181. However, this property does not meet the criteria for protection under Section 4(f). Only the James Nelsen House itself is covered under Section 4(f) as a historic structure. Features in the area where the encroachment will occur consist of former pasture and ornamental landscaping that separates the James Nelsen House structure from a commercial parking lot and SR 181. These features do not contribute to what makes the structure historically significant. Although construction will produce noise and vibration in the vicinity of the Nelsen House, and the project will introduce a freeway access ramp directly adjacent to the property, the Nelsen House is already surrounded by freeway features and urban development. Therefore, noise and vibration will be similar to existing levels and the property's setting will change little.

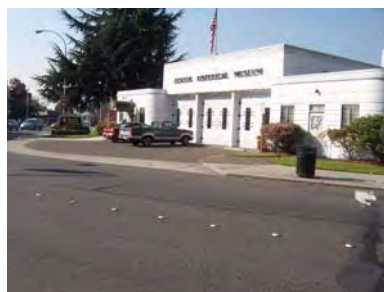
Increased traffic due to closing Houser Way could potentially increase noise or vibration near the Renton History Museum. However, the building has already experienced a change in setting from its original construction, and this project will not further alter the setting. The Main Avenue design option to replace local access would increase noise and vibration minimally because this building is separated from Main Avenue by the Veterans Memorial Park.

Direct and indirect effects to currently unknown archaeological sites in the currently unfunded and inaccessible area of the APE will be determined under provisions of the I-405 Programmatic Agreement (see Appendix C).

The Washington State Department of Archaeology and Historic Preservation (DAHP) has concurred with these findings (see Appendix B).



James Nelsen House



Renton History Museum

How will the completed project affect the recreational and cultural resources?

Recreational Resources

There will not be a constructive use of any park in the study area as a result of the Tukwila to Renton Project.

The design charrette that resulted in the City of Renton's Tri-Park Master Plan identified anticipated effects to these Tri-Park recreational facilities. The Tri-Park Master Plan and agreement with the City includes mitigation for effects from the Tukwila to Renton Project.

Cultural Resources

This project will have no adverse effects on historic and archaeological resources.

What would happen to the recreational and cultural resources if WSDOT did not build this project?

Recreational Resources

Under the No Build Alternative, the use of recreational resources would be avoided. However, the No Build Alternative is not considered to be a feasible and prudent alternative as it would neither reduce congestion nor increase roadway capacity on I-405.

The No Build Alternative will have an adverse effect on the City of Renton Tri-Park Master Plan. The implementation of the City Master Plan improvements at Cedar River Park, Liberty Park, Cedar River Trail, and at the Narco property is contingent on WSDOT proceeding with the Tukwila to Renton Project. The No Build Alternative will cause the city to re-evaluate the master plan for recreation facilities at these locations.

Cultural Resources

Historic and archaeological resources in the area would remain unaffected if this project is not built.

CHAPTER 5.5 Visual Quality

Context-sensitive solutions such as architectural treatments will be applied to this project to improve the aesthetics of the highway corridor. In some areas, existing topography and vegetation will screen the project from freeway neighbors. In other areas, views will be improved; however, many people will have their views affected negatively.

When a person views their environment during an everyday commute or on a first-time trip through an area, the visual characteristics strongly influence a response, either positive or negative.

This section describes how WSDOT studied visual quality for the Tukwila to Renton Project and examined how construction and operations will affect the views found within the local communities.

How did WSDOT evaluate visual resources for this project?

The FHWA *Visual Impact Assessment for Highway Projects* (FHWA-HI-88-054) method was used to evaluate visual quality for the Tukwila to Renton Project. To ensure that the potential effects to visual quality and aesthetics resulting from a transportation project are adequately and objectively considered, the FHWA method uses both quantitative and qualitative analyses to remove subjectivity and provide a basis for comparison. The quantitative analysis assigns numerical values to describe the physical attributes of the landscape character using professionally accepted terminology. This numerical method results in a visual rating scale from 1 to 7, with 1 being low visual quality and 7 being high visual quality.

What views can people currently see in the study area?

The area that is visible from the project is called the topographic viewshed. The topographic viewshed is defined as areas with a line-of-sight looking toward and away from I-405 without regard for how vegetation and structures screen



People traveling I-405 and SR 167 will see views change as the corridor improvements are constructed

Please refer to the Tukwila to Renton Project Visual Quality Technical Memorandum in Appendix R for a complete discussion of the Visual Quality analysis.

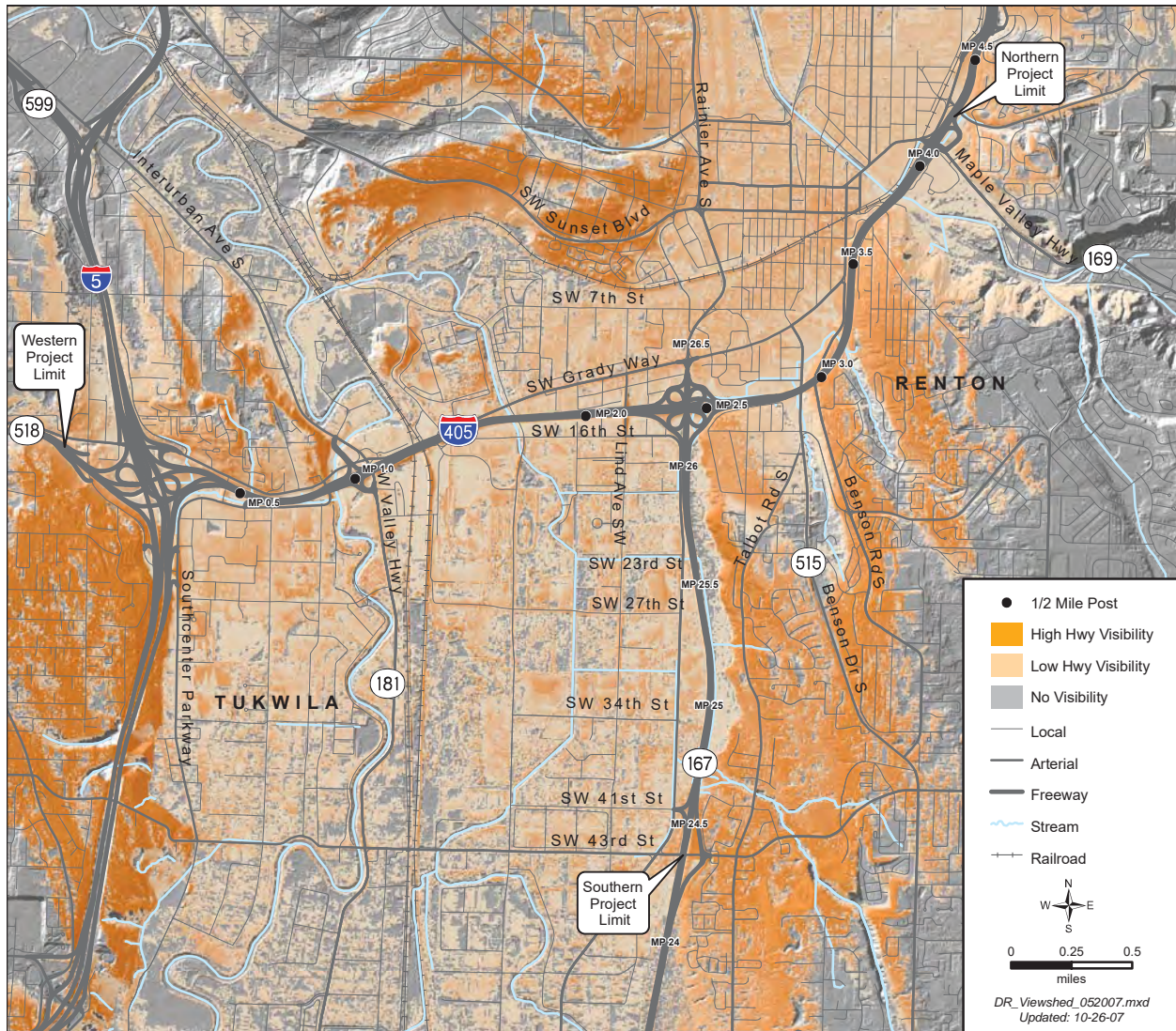
What are context-sensitive solutions?

Context-sensitive solutions (CSS) are guidelines that incorporate design preferences into a project's design. Throughout development of I-405 project, local input has been encouraged to ensure that community concerns for how the project fits into the landscape are addressed.

These efforts have resulted in an I-405 theme of "Culture, Nature, and Progress," with nature being the dominant theme for corridor-wide and local I-405 designs.

views.⁶ Exhibit 5-23 illustrates the topographic viewshed for the Tukwila to Renton Project.

Exhibit 5-23: Tukwila to Renton Project Topographic Viewshed



What project features will have noticeable effects on visual quality?

The primary changes to I-405 that will affect visual quality will generally be caused by the following improvements from west to east (northbound) as follows:

- Five reconstructed bridges and one new bridge over the Green River.

⁶ I-405 Visual Resources Expertise Report, David Evans and Associates, 2001.

- Southbound and northbound frontage roads (elevated structures) connecting Talbot Road and Lind Avenue.
- Direct-connector ramps (elevated structures) between southbound I-405 and southbound SR 167 and northbound SR 167 and northbound I-405 at the I-405/SR 167 interchange.
- Two additional general-purpose lanes in both directions on I-405 from SR 167 through SR 169 and the associated retaining wall (below the reconstructed S 14th Street in Talbot Hill Neighborhood), requiring demolition of 13 single-family homes.
- An on-ramp from Talbot Road (SR 515) and associated 70-foot tall retaining wall requiring demolition of two apartment buildings in the Berkshire apartment complex on Renton Hill.
- Main Avenue design option would reconfigure the road for two-way traffic to provide access to Bronson Way. The Main Avenue design option would require demolishing five buildings on the east side of the street. However, the Mill Avenue design option is preferred for this project. See Chapter 5.8 for more discussion of the project's two design options.
- Relocate the BNSF Railroad Bridge over the Cedar River north of its current alignment and reconstruct three bridges over the Cedar River.

For a more detailed explanation of these project features, see Chapter 4 of this EA.

How will the completed project affect what people see?

The project will permanently change the visual character for both I-405 users and neighbors. In some areas, existing topography and vegetation will make the project less visible to many viewers. In these areas, effects to visual quality will be minor. However, where the project is not screened and where the project elements are extensive, visual quality will be noticeably different. Measures to minimize effects to visual quality are described in Section 6.

The changes to visual quality were found to be positive in some areas, but negative in most areas. Of the twelve

viewpoints analyzed for this project, one was found to be a positive change and 11 were found to be a negative change. One additional viewpoint, T-9, was analyzed to evaluate effects of the two design options for replacing local access. The evaluation showed that the Main Avenue design option would have a slight positive effect on visual quality. A summary of the visual effects findings is shown in Exhibit 5-24.

Exhibit 5-24: Summary of Potential Visual Quality Effects

View Point	Existing Visual Quality	Potential Visual Quality	Change in Visual Quality	Primary Viewer Group(s)	Viewer Sensitivity	Frequency	Type/Duration	Visual Quality Effect
<i>Views From the Road</i>								
F1	3.75	3.00	-0.75	I-405 Travelers	Low	High	Moving/short	Negative
F2	3.75	3.50	-0.25	I-405 Travelers	Low	High	Moving/short	Negative
F3	3.75	3.33	-0.42	I-405 Travelers	Low	High	Moving/short	Negative
<i>Views Toward the Road</i>								
T1	3.92	2.92	-1.00	Pedestrians	Moderate	Moderate	Moving	Negative
T2	3.33	3.67	+0.34	Employees, Pedestrians	Low	Moderate	Moderate	Positive
T3	3.75	2.75	-1.00	Residents ¹ , Local Traffic	High	High	Stationary	Negative
T4	2.67	2.08	-0.59	Residents ²	High	High	Stationary	Negative
T5	3.42	2.58	-0.84	Residents ² , Local Traffic	High	High	Stationary/Moving	Negative
T6	2.92	2.75	-0.17	Visitors	Moderate	Moderate	Moderate	Negative
T7	4.25	2.92	-1.33	Residents ¹	High	High	Stationary	Negative
T8	3.75	2.17	-1.58	Visitors, Local Traffic	Low	Moderate	Moving/Short	Negative
T9 (Main Avenue ³)	2.17	2.33	+0.16	Residents ² , Local Traffic	High	High	Stationary/Moving	Positive
T9 (Mill Avenue ³)	2.17	2.17	0.00	Residents ² , Local Traffic	High	High	Stationary/Moving	No Effect
T10	4.25	2.92	-1.33	Residents ¹ Local Traffic	High	High	Stationary/Moving	Negative

¹ Single-family, ² Multifamily; ³ one of two design options to provide access to Bronson Way for local northbound traffic

Exhibit 5-25 shows where each viewpoint is located and examples of the visual changes are shown in Exhibits 5-26 and 5-27.

Exhibit 5-25: Viewpoint Locations

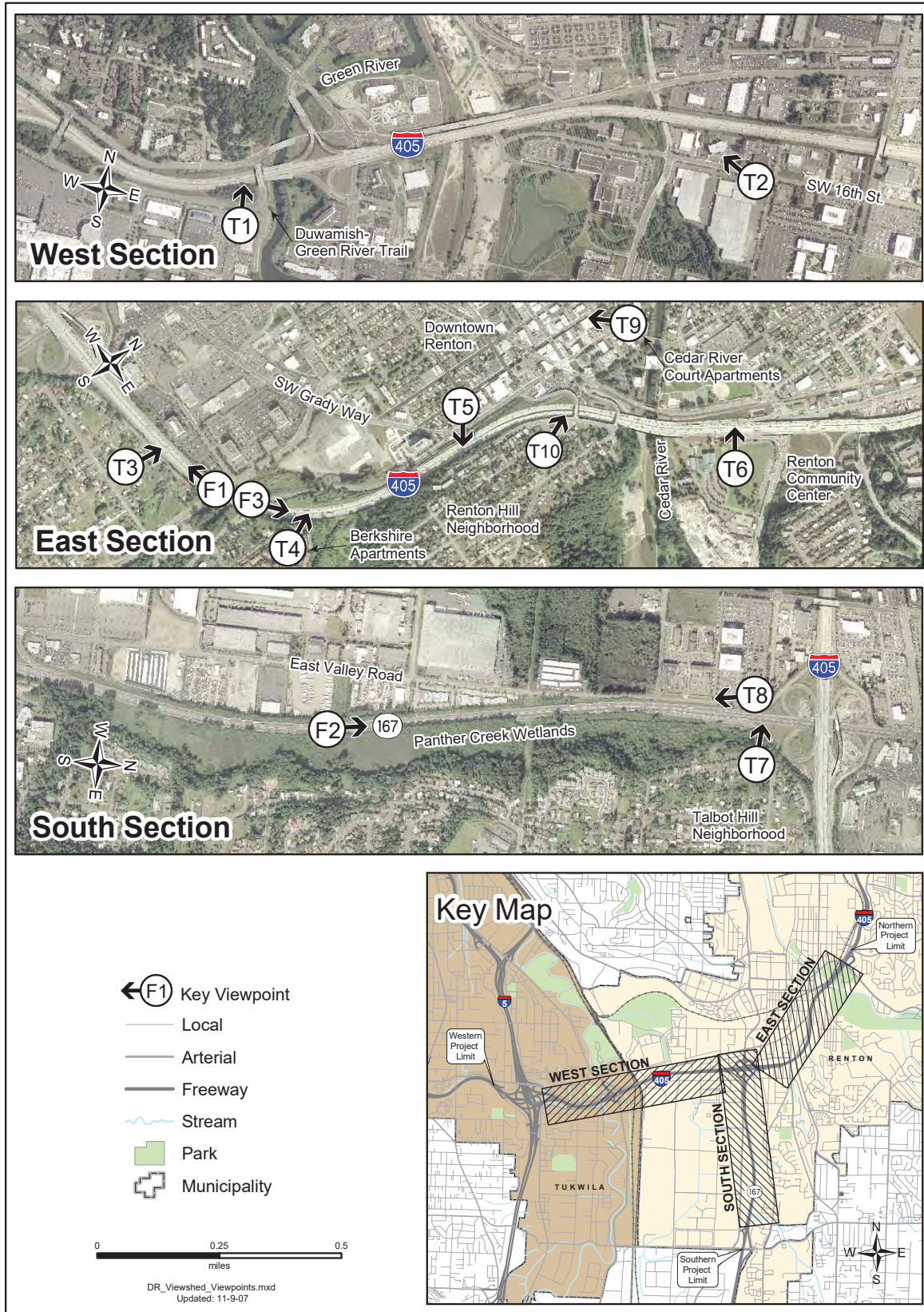


Exhibit 5-26: Visual Change of Southbound I-405 from a Driver's Perspective (Viewpoint F1)

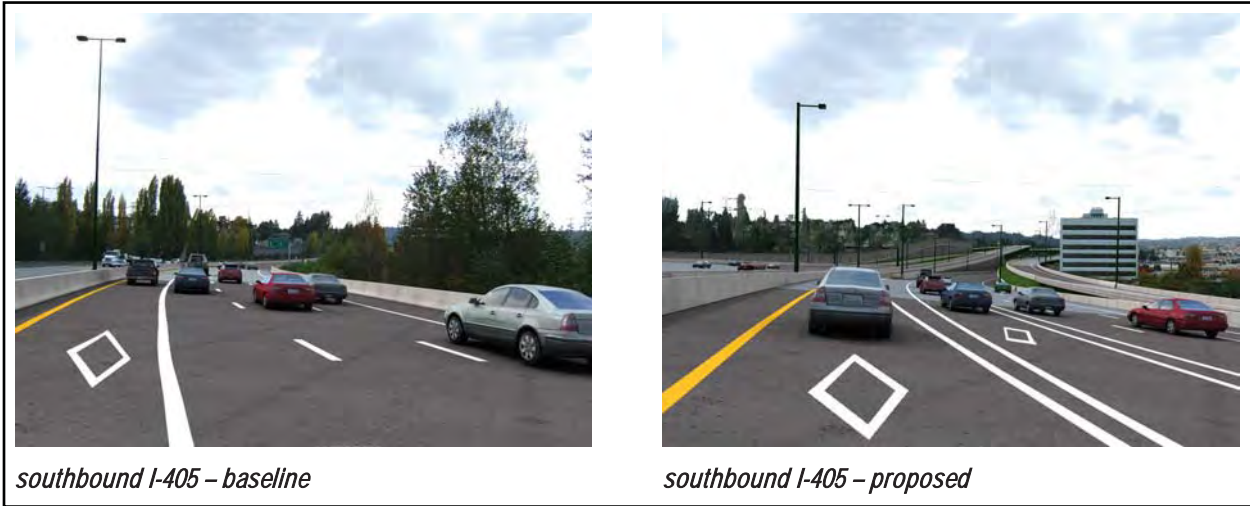


Exhibit 5-27: Visual Change of Southbound SR 167 from a Pedestrian's Perspective (Viewpoint T8)



***What would happen to visual resources if
WSDOT did not build this project?***

If this project is not built, the visual quality of the area will not change.

CHAPTER 5.6 Water Resources

The Tukwila to Renton Project will add 58 acres of new impervious surface to the area. Stormwater facilities built for the project will treat approximately 154 acres of impervious surface thereby expanding treatment to areas of the highway that currently have no treatment.

WSDOT will need to add fill to some floodplains to build this project. To compensate for this fill, an equal amount of material will be removed from the same floodplains at the same elevation.

This project is not expected to negatively affect the Cedar Valley Aquifer because of the proposed construction techniques and mitigation measures. The Cedar Valley Aquifer provides drinking water for the City of Renton.

Water resources are essential to maintaining human health, fish and wildlife habitat, and vegetation. These resources can be affected by roadway projects because increased impervious surfaces can lead to changes in water movement, degrade the surface waters that drain to streams and thereby affect natural habitats. These changes can also influence flooding effects and groundwater recharge.

How did WSDOT evaluate water resources for this project?

The I-405 Team used the methods described in WSDOT's Environmental Procedures Manual (EPM) to evaluate the project's effects on surface water, water quality, floodplains, and groundwater during construction and operation. The manual provides guidance that WSDOT follows to ensure that its projects comply with local, state, and federal laws and regulations. We elaborate on the evaluation methods in the following sections.

Surface Water

To determine operational effects, the I-405 Team compared baseline conditions with the proposed project drainage designs to determine the new impervious pavement



The Green River in Tukwila

Please refer to the Tukwila to Renton Project Water Resources Discipline Report in Appendix S for a complete discussion of the Water Resources analysis.

What is MGSFlood?

MGSFlood is a model used in hydrologic analyses. The program is a general, continuous, rainfall-runoff computer model developed specifically for stormwater facility design in the lowlands of Western Washington. The program meets the requirements for the 2001 Washington State Department of Ecology Stormwater Management Manual for Western Washington.

What are best management practices?

Best management practices, referred to commonly as BMPs, are methods used to minimize or avoid construction effects to water quality such as sediment getting into streams. Examples of BMPs include installing filter fabric fence downstream of all exposed slopes, around existing drainage inlets, and along river, stream, and drainage channels near work areas to prevent sediment-laden stormwater from entering streams.

distribution and the affected streams and rivers. The WSDOT Highway Runoff Manual (HRM) requires the use of MGSFlood to calculate runoff from impervious pavement. These runoff values are used by the I-405 Team to verify the number and size of ponds needed to protect receiving waters.

Water Quality

The I-405 Team used Method 1 in WSDOT's EPM to calculate pollutant load estimates that the project will generate during operation. Method 1 is known as the WSDOT Data-FHWA method. This method estimates pollutant loads based on highway runoff data collected in western Washington since 2001. These data provide an estimate of pollutant concentrations flowing from both treated and untreated highway surfaces because they are recent and specific to WSDOT highways.

Floodplains

The I-405 Team compared baseline conditions with the proposed project to determine where construction will require fill or bridge piers to be placed in the floodplain. The I-405 Team used the floodplain elevation maps prepared by the Federal Emergency Management Agency to determine floodplain locations.

To evaluate whether the floodplain will be affected by the project, the I-405 Team compared how much material is being placed in the floodplain and how much material is being removed. If, for the same floodplain at the same elevation, more material is being removed than being placed as fill, then the project will not negatively affect floodplain storage capacity.

Groundwater

The I-405 Team reviewed the proposed project design and likely construction methods to evaluate the project's potential effects. Evaluations were based primarily on sound engineering principles, WSDOT practices, and professional judgment. Part of WSDOT's practice is to use the 2005 Geotechnical Design Manual, which contains many WSDOT design and construction practices that minimize impacts to groundwater.

What water resources are found in the study area?

Surface Water

The study area primarily includes surface waterbodies in the Green River watershed (Water Resource Inventory Area [WRIA] 9). The study area also includes surface waterbodies in the Cedar River watershed (WRIA 8). The surface waterbodies in the study area are Cottage Creek, Gilliam Creek, an unnamed tributary to Gilliam Creek, the Green River, Springbrook Creek, Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, and the Cedar River as shown in Exhibit 5-28.

In general, the surface waterbodies in the study area have been highly altered from their natural states to accommodate residential, commercial, and industrial land uses. This alteration has included bank hardening, such as installing riprap and placing streams in concrete channels and pipes; reducing or removing streamside vegetation; straightening stream channels; and removing in-stream habitat. The installation of levees has also reduced the historic floodplains associated with many of these waterbodies.

Water Quality

The Washington State Department of Ecology (Ecology) prepares a 303(d) list that identifies waterbodies that do not meet the state water quality standards and the reasons why. According to the most recently approved 303(d) list, published in 2004, three waterbodies within the study area do not meet the state water quality standards:

- Green River for fecal coliform bacteria, dissolved oxygen, and temperature
- Springbrook Creek for dissolved oxygen and fecal coliform bacteria
- Cedar River for fecal coliform bacteria and temperature downstream of the study area

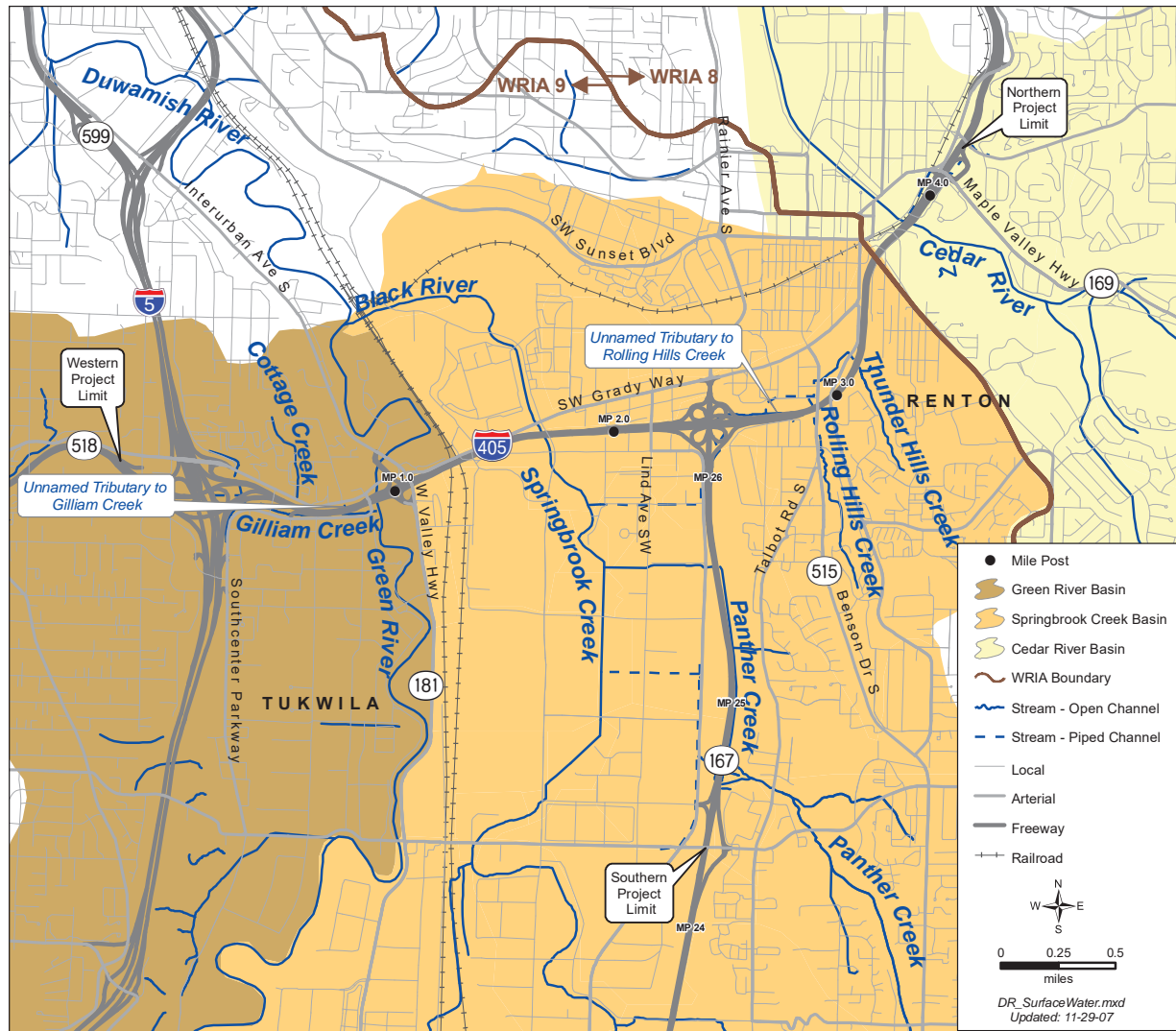
What is the Ecology 303(d) List?

The federal Clean Water Act (CWA), adopted in 1972, requires states to restore their waters to be "fishable and swimmable." The Clean Water Act established a process to identify and clean up polluted waters. Every two years, all states are required to prepare a list of waterbodies that do not meet water quality standards. This list is called the 303(d) list because the process is described in Section 303(d) of the Clean Water Act.

Ecology has prepared a preliminary assessment of water quality in Washington. The assessed waters are listed in categories that describe the status of water quality. For those waters that are in the polluted category, beneficial uses—such as drinking, recreation, aquatic habitat, and industrial use—are impaired by pollution.

At the time research was conducted for the Tukwila to Renton Project, the 2006 list was not yet available.

Exhibit 5-28: Water Resources in the Study Area



What is a total maximum daily load (TMDL)?

A TMDL is part of the water clean up plan for each waterbody on Ecology's 303(d) list. It is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet State water quality standards. Percentages of the TMDL are allocated to the various pollutant sources.

Some historic pollutant sources to rivers in the study area have already been eliminated. In 1987, the outfall of King County's South Wastewater Treatment Plant was moved from the Green River to Puget Sound. Prior to moving the outfall, the treatment plant was a major source of pollution in the Green River causing increased temperature, low dissolved oxygen, and ammonia toxicity.⁷ In 1992, the EPA approved a total maximum daily load (TMDL) issued by Ecology. The Green River TMDL does not allow discharge of ammonia-nitrogen into the river.

⁷ King County 2000

No other TMDLs have been developed for the waterbodies in the study area at this time. However, as stated in the 2004 303(d) list, Ecology anticipates preparing TMDLs for both the Cedar River and Springbrook Creek in the future. The 2006 303(d) list is expected to be finalized in 2008.

Currently, King County is undertaking a major study called the Green-Duwamish Watershed Water Quality Assessment. Its goal is to develop tools to analyze current and future water quality issues, to assist with salmon recovery planning, to guide stormwater management decisions, and to provide guidance for Ecology's TMDL program.

Floodplains

The floodplain elevation maps for the study area show floodplains associated with the Green River, Springbrook Creek, Panther Creek, Rolling Hills Creek, and the Cedar River. Exhibit 5-29 shows these floodplains.

Groundwater

The study area has two main aquifers: the Green-Duwamish Alluvial Aquifer and the Cedar Valley Aquifer, which is a sole-source aquifer.

Groundwater flow in the Green-Duwamish Alluvial Aquifer is complex. Wetlands and drainage ditches locally influence groundwater flow patterns. The primary discharge is to the Green River, but some groundwater may also discharge to the Delta Aquifer subunit of the Cedar Valley Aquifer (described below) and Lake Washington. Direct infiltration from precipitation recharges the Green-Duwamish Alluvial Aquifer, but recharge can also occur from higher elevation areas within the Green-Duwamish River drainage, and from overland flow from the bordering valley hills. No groundwater supply wells are receiving water from this aquifer within 0.5 miles of the study area.⁸

What are Sole-Source Aquifers?

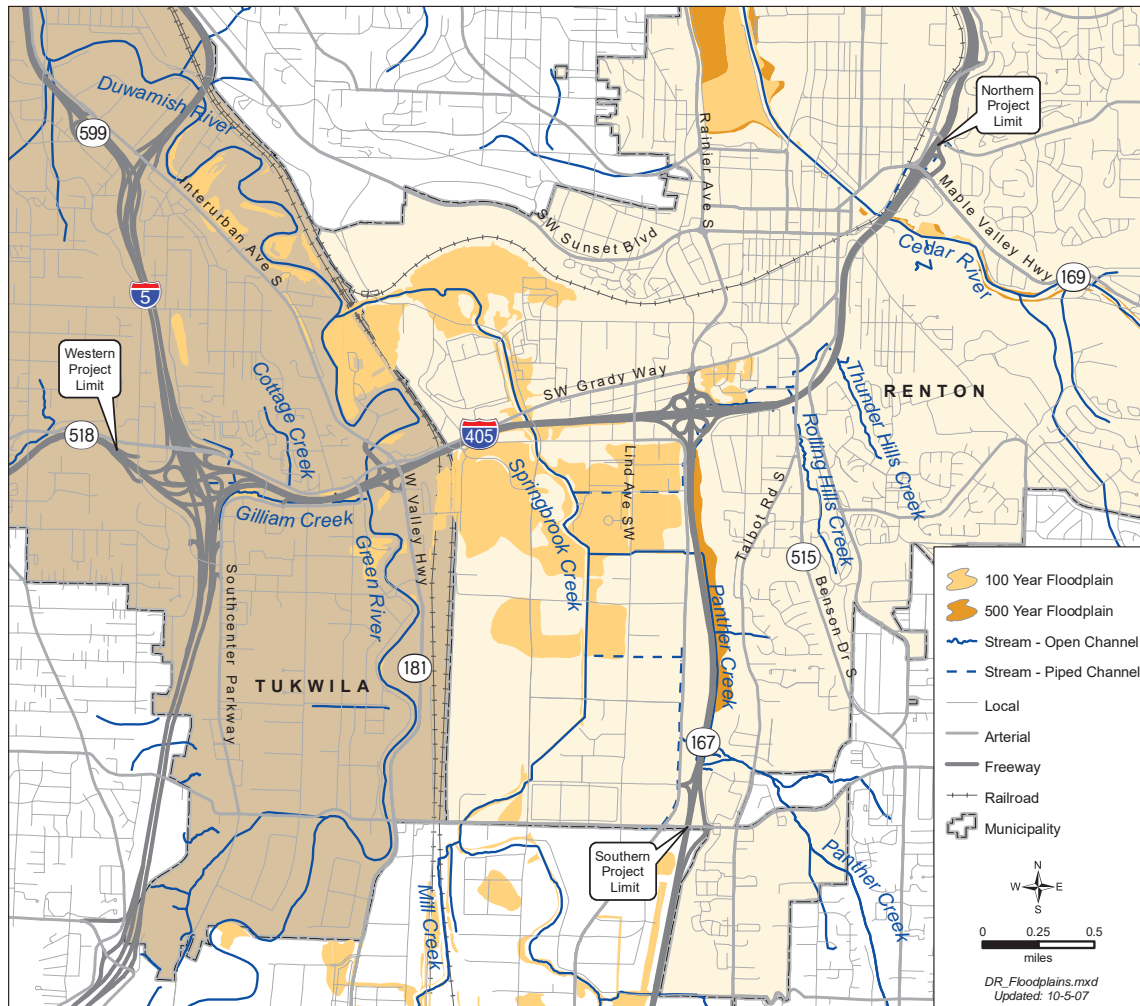
Sole Source Aquifers are EPA-designated aquifers where few or no reasonable alternatives exist for acquiring drinking water.

What is an unconfined aquifer?

An unconfined aquifer is usually a relatively shallow aquifer that can be recharged directly by downward seepage. An unconfined aquifer is called this because the aquifer is not overlain by a thick, low permeability layer, such as a thick deposit of clay.

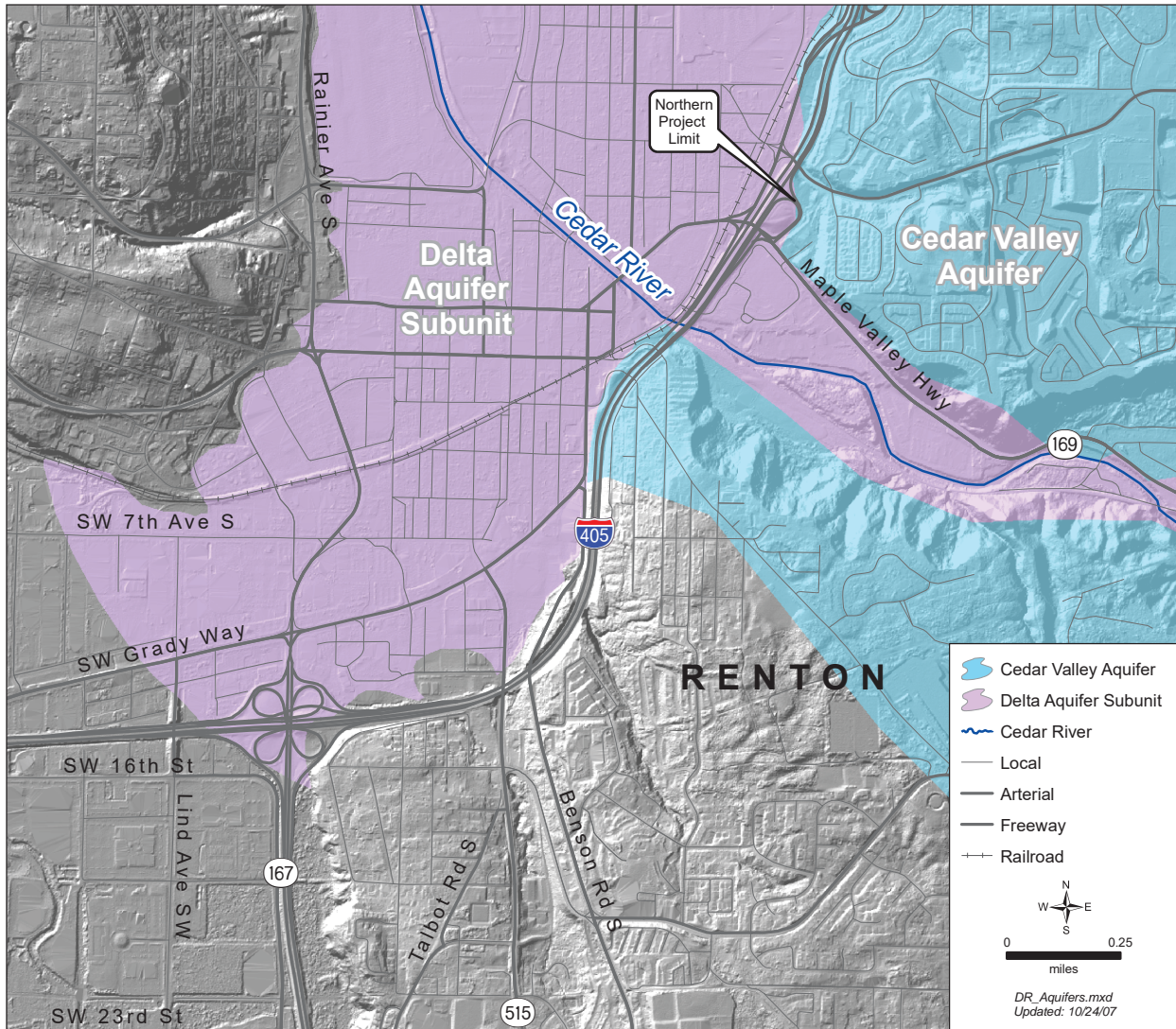
⁸ King County 2005.

Exhibit 5-29: Floodplains in the Study Area



The Cedar Valley Aquifer is the most important aquifer in the study area as it is an EPA-designated “Sole-Source Aquifer.” This aquifer has been subdivided into several smaller aquifer units. The Delta Aquifer is a subunit of the Cedar Valley Aquifer and is located along the lower drainage of the Cedar River. This aquifer is the closest to the project. The Delta Aquifer is unconfined and composed of alluvial sediments deposited by the lower Cedar River. The boundaries of the Delta Aquifer are shown in Exhibit 5-30. The City of Renton uses the Delta Aquifer as the primary source for its drinking water.

Exhibit 5-30: The Delta Aquifer, a Part of the Cedar Valley Aquifer



How will construction activities affect water resources?

Surface Water

Peak and base flow rates to streams and rivers will not be negatively altered during project construction because detention ponds will be constructed prior to the highway widening. These ponds may be used for temporary erosion and sediment control. Measures to avoid or minimize effects are described in Section 6.

Water Quality

WSDOT does not anticipate measurable effects to surface water quality, because WSDOT will apply temporary erosion and sediment control measures during construction. Work crews will clear, grade, and prepare the site for new pavement. Constructing this new pavement area will expose bare soil that is easily eroded by rainfall and surface water runoff, which can create short-term effects to surface water quality. These effects include silt-laden, turbid water that may clog the gills of fish and bury aquatic insects.

Construction can also create the potential for unexpected spills of hazardous materials used during the construction process. Construction work typically uses hazardous or toxic materials such as fuel, oil, paint, and other potentially toxic liquids, which may be temporarily stored on site. These materials present the greatest risk near open waterbodies where streams and rivers pass under the highway. Where work will take place over open water, such as at the Green and Cedar Rivers, spills of concrete are a concern because concrete can raise the pH of waterbodies and potentially harm aquatic life.

Measures to avoid or minimize effects to water quality during construction are described in Section 6.

What is Falsework?

Falsework is the temporary structure erected to support work during the process of construction.

Floodplains

During construction, temporary fill, piles, or falsework could be placed in the Green River, Springbrook Creek, Panther Creek, Rolling Hills Creek, and Cedar River floodplains. These structures provide work platforms and support the new roadway structures as they are built. Depending upon the length of time for construction, some of the temporary fill, piles, or falsework may need to remain in place through the winter, when the risk of flooding is at its highest.

Groundwater

The study area contains a sole source aquifer with wellhead protection areas. Potential groundwater effects during construction of the Tukwila to Renton Project include contamination and reduced well capacity. Implementation of the SPCC Plan and the TESC protocols and adherence to the Washington Administrative Code and the Renton Municipal Code are expected to avoid these potential construction effects to aquifers.

How will the completed project affect water resources?

Surface Water

Pavement typically has higher stormwater runoff volumes and peak runoff rates than most other land covers because these surfaces are highly impervious. Surface waters can be negatively affected by these changes unless they are classified in the HRM as a major receiving waterbody. Stormwater discharges to these major waterbodies are exempt from flow control. Both the Green and Cedar Rivers are classified as major waterbodies in this study area. Direct discharge of stormwater will occur only to the Cedar River and will occur at existing outfall locations.

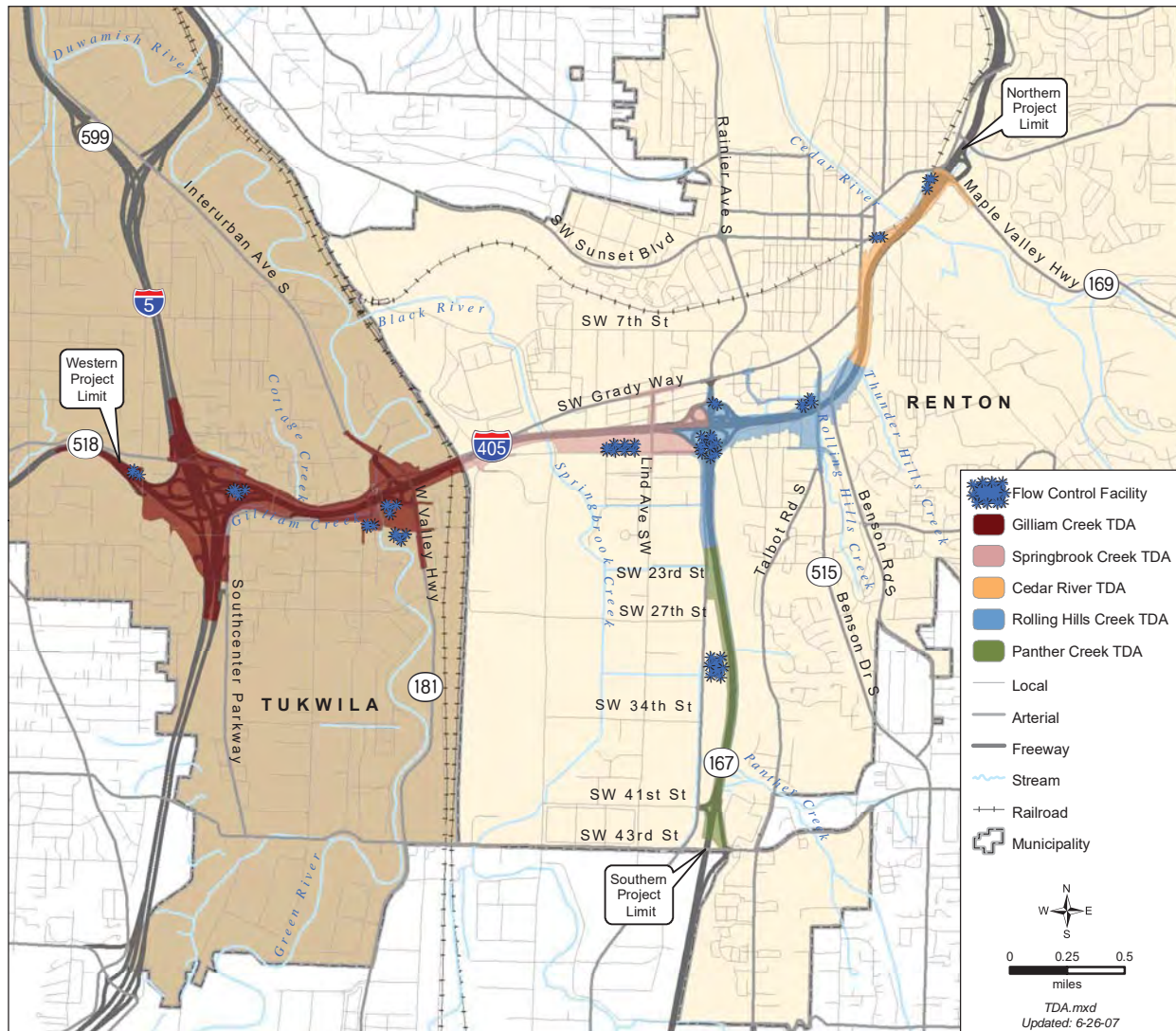
Infiltration within the study area would not be an effective method of flow control because the majority of the project is on river-valley bottom that has shallow groundwater. Detention ponds are the preferred flow control BMP for this project to minimize the negative effects of high stormwater volumes and peak runoff rates. The Tukwila to Renton Project will also use stormwater vaults where the right-of-way is limited. Exhibit 5-31 shows the proposed location for these flow control facilities along with the drainage areas (known as threshold discharge areas or TDAs).

Peak flow rates of stormwater discharged to streams and rivers will be reduced from present day conditions because about 68 acres of existing pavement will be retrofitted for flow control and water quality treatment. The Renton Nickel Improvement Project retrofitted about 2 percent of the existing untreated pavement. The Tukwila to Renton Project will retrofit an additional 30 percent of the existing untreated pavement. Together the projects retrofit a total of 32 percent of untreated pavement since the beginning of the highway improvements in this area.

What is infiltration?

The passage of water through the soil surface into the subsoil. Infiltration is one way drainage flows are controlled. If soil has a good infiltration rate, then infiltration is often integrated as part of the surface water management approach.

Exhibit 5-31: Flow Control Facilities Proposed for the Tukwila to Renton Project



Water Quality

Highway runoff contains several pollutants of concern: nutrients such as nitrogen and phosphorous, which generally bond to dirt particles; heavy metals such as copper and zinc; and petroleum hydrocarbons. These contaminants accumulate on the road surface and are eventually washed away by rainfall.

This project will add approximately 58 acres of new impervious surface. The total area of impervious surface in the study area after project completion will be approximately 301 acres. The Tukwila to Renton Project will provide enhanced water quality treatment of the runoff from approximately 154 acres, which is well over twice the amount

of impervious area added by the project. This level of water quality treatment is anticipated to be provided using ecology embankments and biofiltration swales and will be in accordance with the WSDOT HRM.

Because this project will not only treat the pavement area it is adding but will also treat areas that are currently untreated, we expect water quality from the study area to improve over baseline conditions.

Floodplains

Building new roadway and associated embankments, new piers for bridges, direct-connector ramps, and off-ramps in the Green River, Springbrook Creek, Rolling Hills Creek, Panther Creek, and Cedar River floodplains will add approximately 33,110 cubic yards of fill. A break down of floodplain fill and excavation for each subbasin (drainage area) is shown in Exhibit 5-32.

Exhibit 5-32: Floodplain Fill Volumes for each Subbasin

Floodplain	Volumes (cubic yards)	
	Fill	Excavation
Green River	3,300	490
Springbrook Creek	19,300	0
Panther Creek	10,200	0
Rolling Hills Creek	300	330
Cedar River	10	10
Total	33,110	830

Groundwater

The project is not expected to have adverse permanent effects related to groundwater. One issue, the increase in impervious surfaces, will not substantially affect the total amount of recharge to the shallow alluvial aquifers in the vicinity of the project, since the majority of recharge to these aquifers is derived from much larger, upgradient drainage areas that are outside the highway corridor. For example, the water yield of the Cedar Valley Aquifer is estimated at 9,000 gallons per minute (gpm).⁹ This compares to the potential loss of water

⁹ City of Renton, 1999

recharge of about 70 to 80 gpm for the entire study area due to adding approximately 58 acres of impervious pavement.

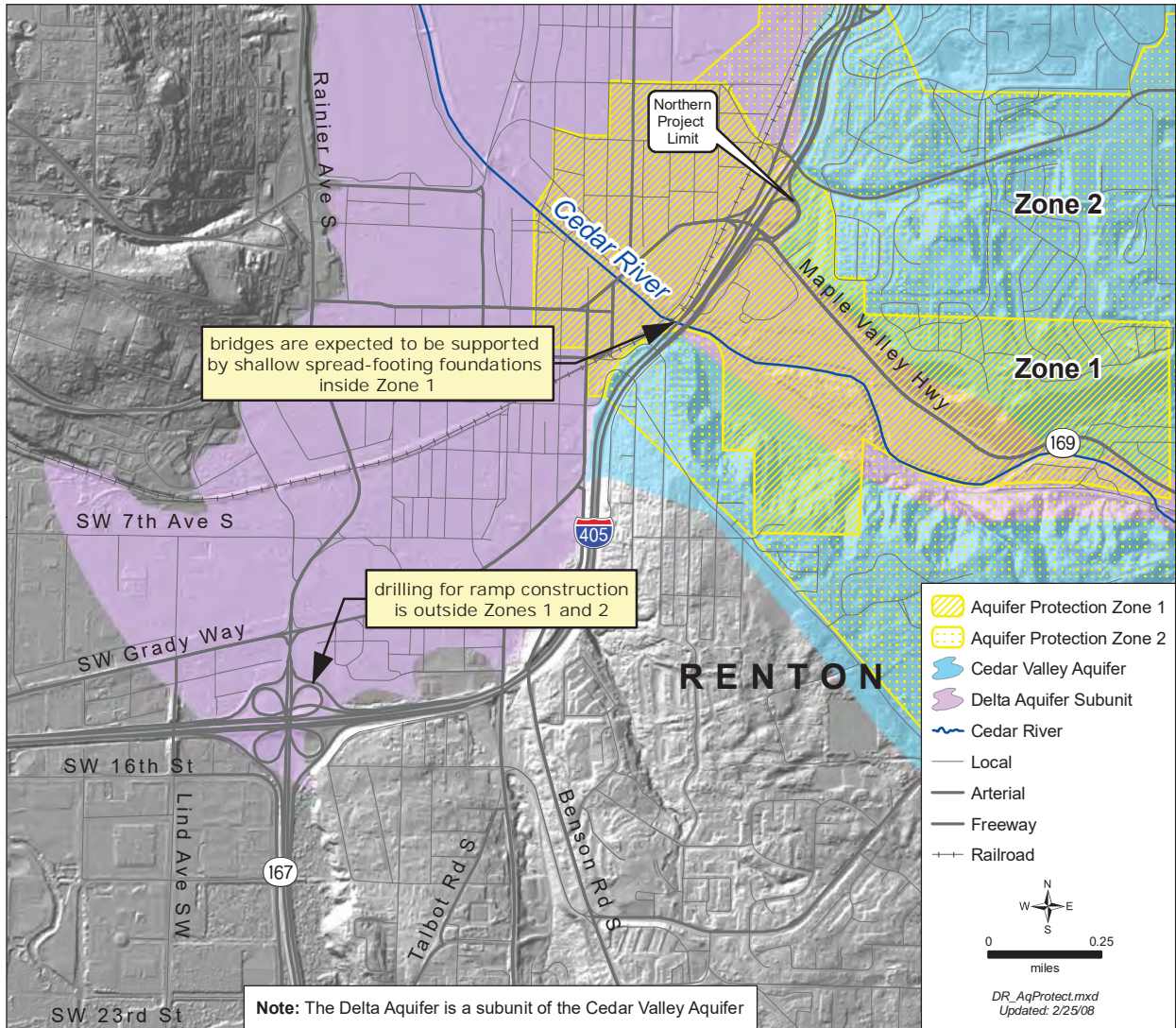
Detention ponds in the study area are shallow and will not reach below shallow groundwater levels. Except within the sole-source aquifer protection zones, most of these ponds will not be lined, so some infiltration may occur at those facilities.

Construction is not expected to affect the Cedar Valley Aquifer in Aquifer Protection Zone 1 or Zone 2. New piers for the bridges over the Cedar River are expected to have shallow spread-footing foundations that will not penetrate the aquifer. Thus this project should have no effects on the aquifer. Several piers for the direct-connector ramps in the SR 167 interchange will penetrate the edge of the Cedar Valley Aquifer. However, these piers are outside of the protection zones and are not expected to affect the water quality of the aquifer (Exhibit 5-33).

What would happen to water resources if WSDOT did not build this project?

Effects of construction on the study area will not occur under the No Build Alternative. A beneficial aspect of the Tukwila to Renton Project is the retrofitting of existing impervious surfaces with proposed stormwater flow control and treatment facilities. As previously mentioned, retrofit will occur on about 30 percent of existing impervious surfaces under the Build Alternative. With the No Build Alternative, these benefits would not be realized.

Exhibit 5-33: The Aquifer Protection Zones for the Delta Aquifer



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CHAPTER 5.7 Ecosystems

The Tukwila to Renton Project will permanently fill approximately 7.5 acres of wetlands and temporarily disturb an additional acre. The filled wetlands will be replaced at the Springbrook Creek Wetland and Habitat Mitigation Bank, which will provide higher quality wetlands than those filled by the project.

Permanent effects to stream channels will cover about 1.7 acres of channel area with another 1.5 acres being affected temporarily. WSDOT is planning to mitigate some of these effects by implementing the Panther Creek Watershed Rehabilitation Plan. Additional mitigation will be provided for effects in other basins.

The introduction of new pavement by the project is expected to displace about 34 acres of potential wildlife habitat. Wildlife species are likely to relocate to other portions of the study area or outside the study area.

Healthy ecosystems are essential to the wellbeing of all living things. Ecosystems provide the habitat and life sustaining essentials for plants, animals, and people. Streams, wetlands, and upland areas contribute to clean air, clean water, rainwater retention, and the reduction of flooding.

How did WSDOT identify and evaluate ecosystems in the study area?

Biologists on the I-405 Team collected existing information on ecosystems resources in the study area by reviewing available literature and previous WSDOT studies; performing internet searches; and conducting interviews with various state, county, and local agencies. The biologists collected additional information on the quantity and quality of baseline ecosystems resources by delineating wetlands, surveying streams and rivers, and identifying vegetation types and wildlife habitat in the study area.



Rolling Hills Creek in Renton

Please refer to the Tukwila to Renton Project Ecosystems Discipline Report in Appendix I for a complete discussion of the ecosystems analysis.

Wetlands

The I-405 Team evaluated potential effects to wetlands using wetland information gathered in the field, coupled with an overlay of the project footprint. Project engineers reviewed the wetland mapping, compared it to the project footprint, and calculated permanent and temporary wetland losses using computer-aided design software. Effects to wetland buffers were calculated by evaluating the project's temporary and permanent construction effects that will occur within the regulated wetland buffers. In addition, the team evaluated each affected wetland to determine whether the extent of the effects will alter the overall function and viability of each wetland.

Aquatic Resources

The I-405 Team evaluated the effects on aquatic resources by reviewing information gathered on aquatic resources in the study area and by assessing project design data and WSDOT construction practices. This information was then reviewed to identify potential changes to the study area's aquatic resources' size and functions during and following project construction. Similar to wetlands, potential permanent and temporary effects to aquatic resources from the project were calculated by overlaying the project footprint on a map with the streams and rivers in the study area.

Wildlife and Vegetation

The I-405 Team evaluated the effects of the project on wildlife habitat by comparing the project's temporary and permanent construction areas to wildlife and vegetation information collected from the Washington State Department of Natural Resources National Heritage Program and Washington State Department of Fish and Wildlife Priority Habitat and Species databases, from resource agency biologists, and from reconnaissance-level field surveys. A geographical information system (GIS)-based land cover analysis, including reconnaissance-level surveys to verify the accuracy of the GIS data, was performed. This analysis determined the extent of existing upland vegetation and impervious surface in the study area. Data from these sources were converted into a single land cover GIS map.

The I-405 Team then overlaid the project footprint on the land cover GIS dataset to quantify the amount of upland vegetation

and documented sensitive wildlife species that the project will affect. In addition to direct effects, the team also worked with noise and stormwater experts to determine the extent of potential effects to wildlife species and habitat as a result of new noise or stormwater stemming from the project.

What ecosystems are located in the study area?

Wetlands

Wetland biologists identified 22 wetlands totaling approximately 94 acres within the study area for the Tukwila to Renton Project. Wetlands identified in the study area are typically associated with streams, hillside seeps, or drainage ditches that receive road runoff and convey stormwater.

Locations of the wetlands studied in this EA are shown in Exhibits 5-34 through 5-36. The wetland numbers show the milepost where the wetland is relative to the highway, and the letters indicate if the wetland is on the left side of the freeway (L), the right side of the freeway R, or in the freeway median (M).

Aquatic Resources

The Tukwila to Renton Project is primarily located in the lower Green River subwatershed of the Green-Duwamish River watershed (Water Resource Inventory Area [WRIA] 9) with the northernmost extent of the project extending into the Renton reach of the Cedar River subwatershed in the Lake Washington Watershed (WRIA 8).

Exhibit 5-34: Tukwila to Renton Project Wetlands Sheet 1

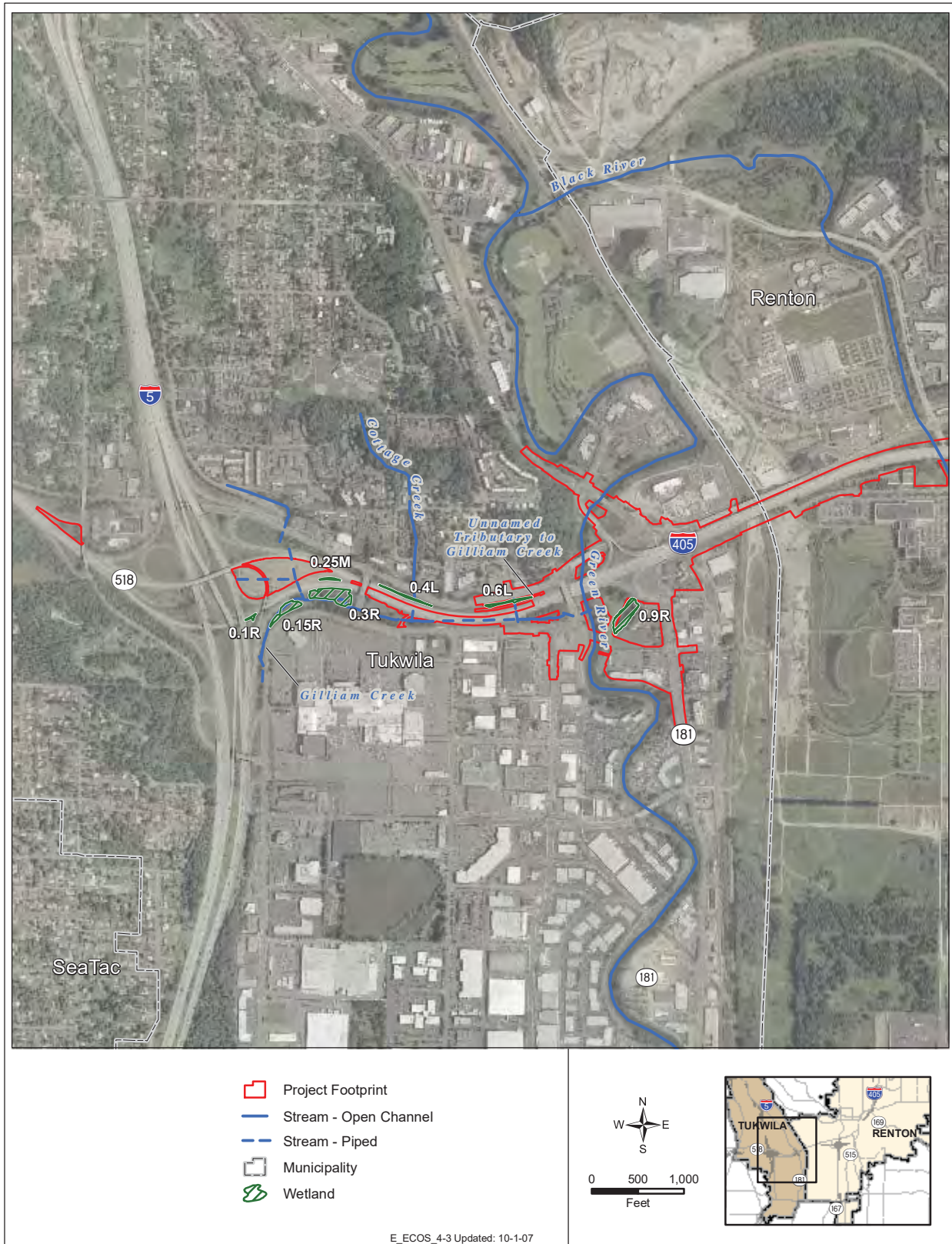


Exhibit 5-35: Tukwila to Renton Project Wetlands Sheet 2

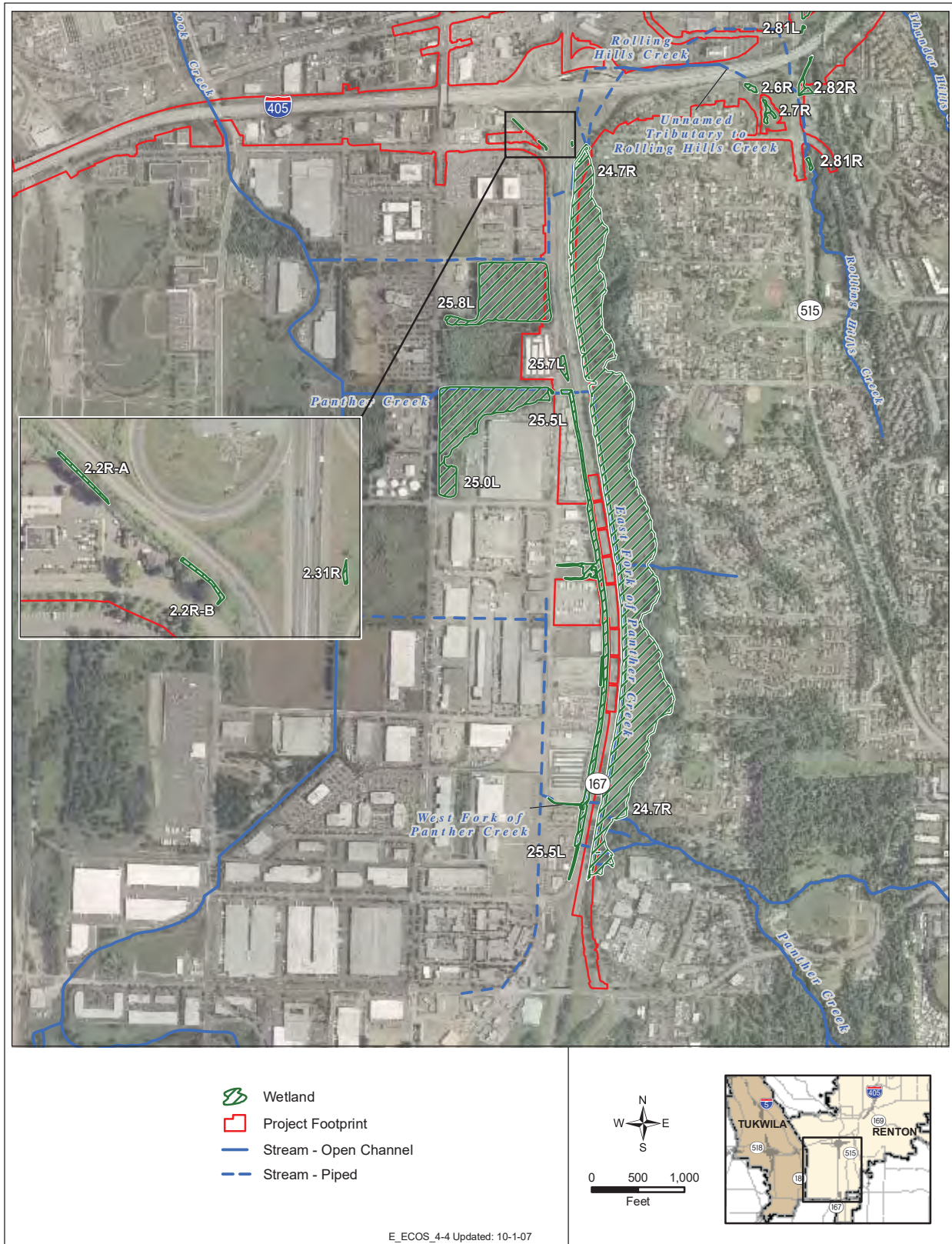
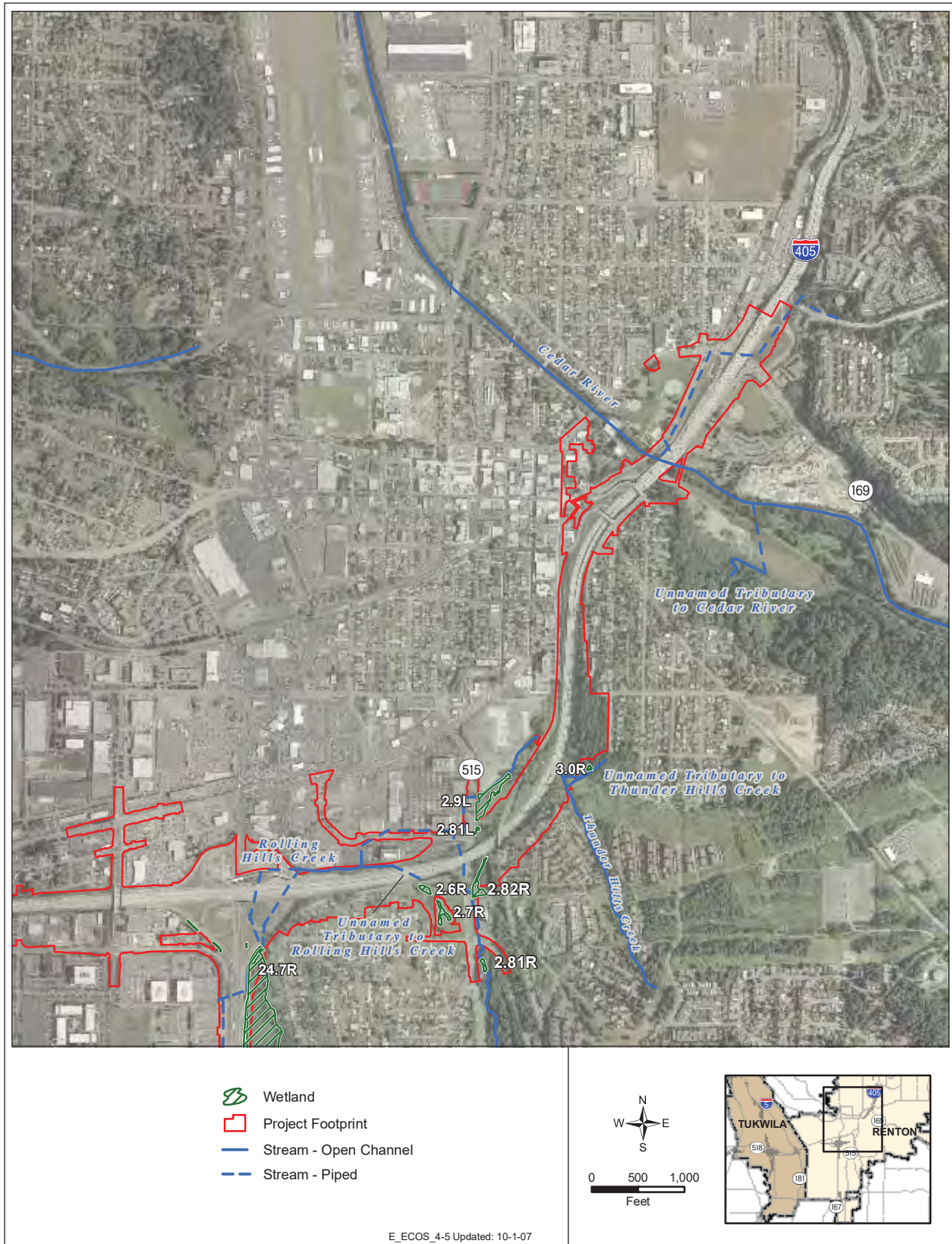


Exhibit 5-36: Tukwila to Renton Project Wetlands Sheet 3



The rivers and streams in WRIA 9 that are crossed by I-405, SR 167, or are otherwise in the vicinity of the study area are Gilliam Creek, an unnamed tributary to Gilliam Creek, Cottage Creek, the Green River, Springbrook Creek, Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, and an unnamed tributary to Thunder Hills Creek. Two waterbodies in WRIA 8 are within the study area: the Cedar River and an unnamed tributary to the Cedar River.

In general, the rivers and streams in the study area have been highly altered from their natural states to accommodate residential, commercial, and industrial land uses. This alteration has included bank hardening, such as installing riprap and placing streams in concrete channels; reducing or removing streamside vegetation; straightening stream channels; removing in-stream habitat, and introducing barriers to fish passage. These alterations have also resulted in loss of the historic floodplains associated with most of these waterbodies. Significant changes have occurred in the vegetation surrounding these waterbodies. What was once predominantly mature native vegetation has been replaced by a mix of immature native vegetation and non-native invasive plant species.

WSDOT has identified 10 existing culverts that convey waters of the state. These have been determined to be fish bearing, and where in-water work will occur as a result of the project. Of these 10 culverts, WSDOT has determined that seven of them are existing fish passage barriers.¹⁰ These fish passage barriers occur on Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, and Thunder Hills Creek. The remaining three culverts are presently fish passable. WSDOT will address fish passage at the culverts per the Memorandum of Agreement between WSDOT and the Washington State Department of Fish and Wildlife. Exhibit 5-37 details the 10 fish bearing culverts owned by WSDOT and associated with in-water work.

¹⁰ WSDOT, 2007a

Exhibit 5-37: Fish Bearing Culverts owned by WSDOT and Associated with In-water Work

Stream Conveyed	Culvert Type	Culvert Length (ft)	Upstream Habitat (lf)*	Fish Passable	Barrier Description
Gilliam Creek	108 inch CMP	1,103	600 to 800	Yes	N/A
Gilliam Creek	108 inch CMP	207	1,300 to 2,600	Yes**	N/A
Rolling Hills Creek	48 inch CONC	551	10,200***	No	Temporal barrier based on velocity
Rolling Hills Creek	132 inch CMP	918	10,200***	No	Pipe exceeds velocity criteria at high fish passage design flow
Unnamed Tributary to Rolling Hills Creek	30 inch CONC	281	200	No	Pipe exceeds velocity and water depth criteria at high fish passage design flow
Thunder Hills Creek	48 inch CONC	466	100	No	Pipe exceeds velocity criteria at high fish passage design flow
Panther Creek	24 inch CMP	155	2,600	No	Pipe exceeds velocity criteria at high fish passage design flow
Panther Creek	30 inch CMP	153	2,600	No	Pipe exceeds velocity criteria at high fish passage design flow
Panther Creek	72 inch Steel	189	7,100	No	Temporal barrier based on velocity
Rolling Hills Creek	3-foot by 4-foot box	265	N/A**** (fish passable)	Yes	N/A

- All habitat gains are approximations based on field reconnaissance and are rounded to the nearest hundred foot increment.

** A large metal flap gate (which controls high flows) and a splash pad are located at the end of this culvert. The flap gate and splash pad on downstream end of the culvert prevent fish from moving up or downstream when it is closed. This culvert is owned by the City of Tukwila (Gilliam Creek Basin Stormwater Management Plan, <http://www.ci.tukwila.wa.us/pubwks/gilliam.pdf>).

*** These culverts both carry the main flow of Rolling Hills Creek underneath the I-405/SR 167 interchange. As such, they must be considered together for purposes of fish passage. One culvert is an overflow culvert and only conveys flow during high flow events.

**** No upstream habitat length is identified for this culvert as it is presently fish passable and all known upstream habitat is presently available.

CMP = corrugated metal pipe CONC = concrete ft = feet lf = linear feet

All native species of salmonids can be found in the study area, including Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), and sockeye salmon (*O. nerka*); steelhead trout (*O. mykiss*); and sea-run cutthroat trout (*O. clarki clarki*). In addition, bull trout (*Salvelinus confluentus*), Dolly Varden (*S. malma*) (hereafter referenced synonymously with bull trout), and resident cutthroat trout (*O. clarki*) are known to use the waterbodies in the study area. Anadromous salmonid species primarily use the rivers and streams in the study area for upstream and downstream migration and rearing. The study area also contains limited spawning habitat for Chinook, coho, pink,

sockeye, and chum salmon and steelhead. Resident cutthroat trout use the study area for all life stages.

Other fish species likely to be found in the study area include threespine stickleback (*Gasterosteus aculeatus*), longnose dace (*Rhinichthys cataractae*), speckled dace (*R. osculus*), longfin smelt (*Spirinchus thaleichthys*), prickly sculpin (*Cottus asper*), riffle sculpin (*C. gulosus*), reticulated sculpin (*C. perplexus*), shorthead sculpin (*C. confusus*), torrent sculpin (*C. rhotheus*), largescale sucker (*Catostomus macrocheilus*), pacific lamprey (*Lampetra tridentate*), river lamprey (*L. ayresi*), and western brook lamprey (*L. richardsoni*). Exhibits 5-38 and 5-39 detail the anadromous and resident fish species known to occur in the individual streams and rivers in the study area.

Exhibit 5-38: Anadromous Fish Species Known or Presumed to be in the Study Area

	Chinook Salmon	Coho Salmon	Pink Salmon	Sockeye Salmon	Chum Salmon	Steelhead Trout	Bull Trout	Sea-Run Cutthroat	Pacific Lamprey
Gilliam Creek	√	√				√		√	√
Cottage Creek									
Unnamed Tributary to Gilliam Creek									
Green River	√	√	√	√	√	√	√	√	√
Springbrook Creek	√	√				√			
Panther Creek	√	√				√			
Rolling Hills Creek									
Unnamed Tributary to Rolling Hills Creek									
Thunder Hills Creek									
Unnamed Tributary to Thunder Hills Creek									
Cedar River	√	√		√		√	√		
Unnamed Tributary to Cedar River									

Exhibit 5-39: Resident Fish Species Known or Presumed to be in the Study Area

	Fish Species								
	Cutthroat Trout	River Lamprey	Western Brook Lamprey	Sculpin	Longnose Dace	Speckled Dace	Largescale Sucker	Threespine Stickleback	Longfin Smelt
Gilliam Creek	√	√	√	√	√	√	√	√	
Cottage Creek	√		√	√	√	√	√	√	
Unnamed Tributary to Gilliam Creek									
Green River	√	√	√	√		√	√	√	
Springbrook Creek	√		√	√		√	√	√	
Panther Creek	√		√	√	√	√	√	√	
Rolling Hills Creek	√		√	√	√	√		√	
Unnamed Tributary to Rolling Hills Creek				√				√	
Thunder Hills Creek	√		√	√				√	
Unnamed Tributary to Thunder Hills Creek									
Cedar River	√	√	√	√		√	√	√	√
Unnamed Tributary to Cedar River	√			√				√	

Several of the rivers and streams in the study area contain various life stages of Chinook salmon, steelhead, and bull trout, which are currently listed as threatened under the Endangered Species Act (ESA). Critical habitat areas for Chinook salmon and bull trout are also present in the study area.

Waterbodies in the study area known to be used by Chinook salmon include the Green and Cedar Rivers and Springbrook Creek. It is also likely that some smaller waterbodies in the study area support certain Chinook salmon life stages, such as Gilliam Creek, and the lower reaches of Panther Creek. Chinook salmon primarily use the portions of these waterbodies that are in the study area for upstream and downstream migration and rearing; however, substrate conditions in the Cedar River in the study area could provide some limited spawning habitat. The Chinook salmon found in these waterbodies are a part of the Puget Sound evolutionarily significant unit of Chinook salmon, listed as threatened under ESA.

Historically, bull trout were reported to use the lower Green River in “vast” numbers.¹¹ However, bull trout are observed infrequently in this system today. In recent times, bull trout have been reported on the lower Green River from the mouth, through the study area, and as far upstream as the mouth of Newaukum Creek at approximately river mile 41. In addition, the Lake Washington system (including the Cedar River), the lower Green River, and the marine areas of Puget Sound have been identified as containing important foraging, migration, and overwintering habitat necessary for bull trout recovery.

Waterbodies in the study area known or anticipated to be used by steelhead include the Green and Cedar Rivers and Gilliam, Springbrook, and Panther Creeks, though it is likely that some smaller waterbodies in the study area also support certain steelhead trout life stages. The steelhead trout found in these waterbodies are a part of the Puget Sound distinct population segment) of steelhead trout. The National Marine Fisheries Service (NMFS) has concluded that critical habitat cannot be determined at this time for the Puget Sound steelhead trout.

What is an evolutionarily significant unit?

An evolutionarily significant unit of a fish species is the term used by National Marine Fisheries Services for the population protected by a listing under the Endangered Species Act.

What is a distinct population segment?

A subgroup of a vertebrate species that is treated as a species for purposes of listing under the Endangered Species Act. The subgroup must be separable from the species as a whole yet significant to the species to which it belongs.

¹¹ *Suckley and Cooper, 1860*

Coho salmon and Pacific and river lamprey (federal species of concern under the ESA) can also be found in the waterbodies in the study area.

Wildlife and Vegetation

Wildlife and upland vegetation was evaluated in an area that extends out one-half mile from both sides of the highway. I-405 biologists identified five categories to describe upland vegetation found in the study area. The five categories include wetlands and four land cover types: forested, shrubs and grasses, maintained vegetation, and impervious surface or area. Land cover in the study area totals approximately 5,785 acres.

The associated acreages and percentages of land cover types in the study area, and typical percentages of these land cover types in the watersheds in the study area, are listed in Exhibit 5-40.

Exhibit 5-40: Baseline Land Cover In the Study Area

Land Cover	Baseline Land Cover in Study Area (acres)	Percentage of Land Cover in Study Area (percent)	Typical Percentage of Land Cover in Green River, Springbrook, and Cedar River Watersheds*
Forested	550	9%	19%
Shrubs and Grasses	251	4%	6%
Maintained Vegetation	1,550	27%	6%
Impervious Surface	3,434	60%	46%
Total	5,785		

* Within 5 miles of the project footprint

No federally listed upland species are known to inhabit the study area. The U.S. Fish and Wildlife Service (USFWS) website shows that ESA-listed species, including Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), marbled murrelet (*Brachyramphus marmoratus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), golden paintbrush (*Castilleja levisecta*), marsh sandwort (*Arenaria paludicola*), grizzly bear

(*Ursus arctos horribilis*), or fisher (*Martes pennanti*) could occur in King County; however, there are no known occurrences of and no suitable habitat exists for these species in the study area.

How will project construction temporarily affect ecosystems?

To build the Tukwila to Renton Project, construction activities will need to occur in and adjacent to wetlands, streams, and their associated buffers. In addition, construction activities will also occur in areas containing wildlife habitat. Project biologists worked with project engineers to identify where improvements would potentially affect the ecosystems' resources. Prior to finalizing the project footprint, WSDOT modified the design, where feasible, to reduce or avoid effects to wetlands, streams, their associated buffers, and upland habitat. When one of these ecosystem elements was located within the construction footprint, WSDOT changed the footprint to avoid the element or, if the element could not be avoided, WSDOT determined to what degree project construction will affect ecosystem elements. Based on this information, WSDOT incorporated measures into the project to minimize or mitigate the identified effects. These measures are described in Section 6.

WSDOT has also prepared a Biological Assessment for the project in compliance with Section 7 of ESA that addressed potential adverse effects to listed species. On March 3, 2008, WSDOT received concurrence with the determination from NMFS and USFWS that the project "is not likely to jeopardize the continued existence of Puget Sound Chinook salmon and Puget Sound Steelhead and is not likely to destroy or adversely modify designated Puget Sound Chinook salmon critical habitat" and "is not likely to jeopardize the continued existence of bull trout".

Wetlands

Six wetlands (approximately 1.1 acres) will be temporarily disturbed. Nine wetlands will also have temporary effects to the buffers (approximately 0.5 acre). See Exhibit 5-41 for temporary effects to wetlands and buffers.

Exhibit 5-41: Summary of Temporary Wetland Effects

Wetland	Wetland Size (acres)	Temporary Wetland Effects (acres)	Percentage of Wetland Incurring Temporary Effects (%)	Wetland Buffer Size (acres)	Temporary Buffer Effects (acres)	Percentage of Wetland Buffer Incurring Temporary Effects (%)**
0.6L	0.17	0.00	0%	0.63	0.08	13%
0.9R	1.00	0.03	3%	1.70	0.06	4%
2.7R	0.25	0.00	0%	1.03	0.02	2%
2.82R	0.38	0.02	5%	1.22	0.02	2%
2.9L	1.05	0.03	3%	0.74	0.03	4%
24.7R	61.00*	0.83	1%	25.90	0.08	1%
25.0L	4.51	0.05	1%	3.92	0.08	2%
25.5L	11.38*	0.00	0%	4.41	0.02	1%
25.8L	11.50	0.08	1%	3.42	0.02	1%
Total	11.5*	1.1***	1%	42.97	0.5***	1%

*The size of these wetlands was estimated as the majority of their area lies outside of the study area. The total wetland acreage includes both the estimates and actual wetland survey data. This total represents only those wetlands that are affected by the Tukwila to Renton Project.

**Wetlands with less than 1 percent disturbance are rounded up to 1 percent.

***The total temporary effects in this table have been rounded to the nearest tenth of an acre.

Aquatic Resources

Project construction will have several temporary effects on aquatic resources. These temporary effects are primarily related to construction-related in-water disturbances and stream diversions, in-stream sedimentation, and stream buffer and riparian vegetation. Streams that will be temporarily affected by project construction are the Green River, Gilliam Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, Panther Creek, an unnamed tributary to Thunder Hills Creek, and the Cedar River.

Construction activities over, in, or near a stream can disturb fish, other aquatic species, and aquatic habitat. Except where absolutely necessary (as in the case of culvert replacements or extensions, and bridge removal and construction), construction equipment will not enter streams below the OHWM. In addition, streams will be dewatered prior to replacing or lengthening culverts. Dewatering and stream diversions could strand or entrain (draw in) fish and create temporary barriers to fish migration. Dewatering of most waterbodies will only occur in localized areas where

construction will take place. Rivers and streams that may need to be dewatered to construct the project include Gilliam Creek, the Green River, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, Panther Creek, and the Cedar River. A summary of the temporary construction effects to aquatic resources can be found in Exhibit 5-42.

Exhibit 5-42: Summary of Temporary Aquatic Resource Effects

	Regulated Stream Buffer (feet)	Temporary Effect Below OHWM (square feet)	Temporary Effect to Stream Buffer (square feet)	Temporary Effects from Shading * (square feet)
Gilliam Creek	100	436	3,920	0
Green River	100	57,499	14,810	436
Panther Creek	100	3,050	6,969	0
Rolling Hills Creek	75	436	3,920	436
Unnamed tributary to Rolling Hills Creek	75	436	1,307	871
Thunder Hills Creek	75	436	4,792	0
Unnamed Tributary to Thunder Hills Creek	75	436	6,970	0
Cedar River	100	871	3,049	2,178
Total		64,000**	46,000**	4,000**

*Areas of shading detail only those new areas that will be shaded and do not account for existing shaded areas. The shaded areas represent areas directly below/in the footprint of an overwater structure. Whereas other areas are shaded during a solar day, these are likely the areas where the effects and duration are the greatest.

**Total temporary effects have been rounded to the nearest 500 square feet.

Wildlife and Vegetation

Temporary effects to wildlife species include noise associated with general and localized construction activities. Wildlife species in the study area will be affected by the localized increase in noise levels. Wildlife species disturbed by this localized increase in noise will likely disperse to locations where the noise levels are lower and only return to the disturbed areas when construction ceases. Due to the levels of noise typically associated with the I-405 and SR 167 corridors, noise levels from localized construction activities will decrease

to ambient levels at approximately 1,600 feet away from the construction activity.¹²

In addition to direct effects to wildlife, construction activities will affect the land cover types and associated wildlife habitat in the study area. Temporary effects to land cover are shown in Exhibit 5-43. After the project is complete, these temporarily disturbed areas will be graded and replanted with appropriate native vegetation of the same cover type.

Exhibit 5-43: Potential Temporary Land Cover Loss In the Study Area

Land Cover	Baseline Land Cover in Study Area (acres)	Permanent Land Cover Change (acres)	Percentage of Overall Land Cover Change
Forested	550	6.0	1%
Shrubs and Grasses	251	6.6	3%
Maintained Vegetation	1,550	60.7	4%
Total	2,351	73.3	3%

How will the completed project permanently affect ecosystems in the study area?

Wetlands

Of the 22 wetlands in the study area, 12 wetlands (approximately 7.5 acres) will be permanently disturbed by filling or grading to construct road improvements.

Wetland buffer effects will include permanent effects to the buffers of nine wetlands (approximately 8.1 acres). If a wetland is wholly filled, it is not considered to incur buffer effects. See Exhibit 5-44 for permanent effects to wetlands and buffers. These effects will be mitigated as described in Section 6.

¹² WSDOT, 2005w

Exhibit 5-44: Summary of Permanent Wetland Effects

Wetland	Wetland Size (acres)	Permanent Wetland Effects (acres)	Percentage of Wetland Incurring Permanent Effects (%)	Wetland Buffer Size (acres)	Permanent Buffer Effects (acres)	Percentage of Wetland Buffer Incurring Permanent Effects (%)**
0.6L	0.17	0.00	0%	0.63	0.26	41%
0.9R	1.00	0.12	12%	1.70	0.64	49%
2.2R-A	0.03	0.03	100%	0.00***	0.00	0%
2.2R-B	0.03	0.03	100%	0.00***	0.00	0%
2.31R	0.01	0.01	100%	0.00***	0.00	0%
2.6R	0.15	0.15	100%	0.49	0.00	0%
2.7R	0.25	0.00	0%	1.03	0.03	3%
2.81L	0.03	0.03	100%	0.00	0.00	0%
2.82R	0.38	0.17	45%	1.22	0.93	76%
2.9L	1.05	0.06	6%	0.74	0.12	16%
24.7R	61.00*	5.42	9%	25.90	4.23	16%
25.0L	4.51	0.61	14%	3.92	0.87	22%
25.5L	11.38*	0.00	0%	4.41	0.04	1%
25.7L	0.30	0.30	100%	0.34	0.34	0%
25.8L	11.50	0.57	5%	3.42	0.60	17%
Total	11.8*	7.5****	8%	41.47	8.1****	17%

*The size of these wetlands was estimated as the majority of their area lies outside of the study area. The total wetland acreage includes both the estimates and actual wetland survey data. This total represents only those wetlands that are affected by the Tukwila to Renton Project.

**Wetlands with less than 1 percent disturbance are rounded up to 1 percent.

***City of Renton wetlands less than 2,200 square feet (0.05 acre) are exempt from regulation under RMC Critical Areas Regulations (RMC 4-3-50 B(7)).

****The total permanent effects in this table have been rounded to the nearest tenth of an acre.

Aquatic Resources

As a result of the project, new roadways and roadway structures (e.g., bridges and culverts) will be built within, over, or near river and stream habitats that support fish and other aquatic species within the study area. Project elements that will permanently affect aquatic resources include:

- Constructing one new bridge and reconstructing five additional bridges over the Green River to accommodate roadway widening, including installation of piers below the OHWM of the Green River.

- Constructing a new stormwater outfall to the Green River.
- Encroaching into the OHWM of Rolling Hills Creek to accommodate I-405, SR 167, and local roadway improvements.
- Encroaching into the OHWM of Thunder Hills Creek to accommodate I-405 roadway improvements including construction of a retaining wall.
- Reconstructing three bridges over the Cedar River, including a pedestrian bridge, and relocating the BNSF Railroad bridge.
- Reconstructing stormwater outfalls to the Cedar River.
- Encroaching into the OHWM of Panther Creek between SR 167 and East Valley Road in order to expand SR 167 to the west.
- Encroaching into the OHWM of Panther Creek on the east side of SR 167 to accommodate a new northbound SR 167 auxiliary lane.

Some project elements will have positive effects on aquatic resources such as:

- Removing the Houser Way bridge over the Cedar River to accommodate widening of I-405.
- Removing the existing pier within the OHWM that supports the pedestrian bridge over the Cedar River. Removal of this pier will only occur if needed for project mitigation.
- Constructing new stormwater facilities for the treatment of water quality and quantity associated with new impervious surfacing created by the project. For more information on stormwater facilities, see the *Water Resources Discipline Report* for this project in Appendix S.

Permanent effects to aquatic resources from the project include effects from new or reconstructed over-water structures, permanent structures placed within existing waterbodies, stream buffer encroachment, and stormwater runoff that could affect stream flow and water quality. A summary of the permanent effects to aquatic resources can be found in Exhibit 5-45. These effects will be mitigated as described in Section 6.

Exhibit 5-45: Summary of Permanent Aquatic Resource Effects

	Regulated Stream Buffer (feet)	Permanent Effect Below OHWM (square feet)	Permanent Effect to Stream Buffer (square feet)	Permanent Shading Effects from New Over-water Cover (square feet)*
Gilliam Creek	100	1,742	46,174	0
Green River	100	16,553	121,532	16,988
Panther Creek	100	45,738	36,590	0
Rolling Hills Creek	75	4,792	33,106	5,227
Unnamed Tributary to Rolling Hills Creek	75	871	12,632	871
Thunder Hills Creek	75	2,614	37,462	0
Unnamed Tributary to Thunder Hills Creek	75	495	4,356	0
Cedar River	100	436	25,700	14,375
Total		73,500**	318,000**	37,500**

*Areas of shading detail only those new areas that will be shaded and do not account for existing shaded areas

**Total permanent effects in this table have been rounded to the nearest 500 square feet.

WSDOT has identified seven existing fish passage barriers where in-water work will occur. These fish passage barriers occur on Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, and Thunder Hills Creek.

Wildlife and Vegetation

The constructed project will result in approximately 58 acres of new net impervious surfacing in the study area and an associated reduction of other land use cover types and associated habitats. The permanent loss of approximately 34 acres of potential habitat will affect wildlife species in the study area. Permanent removal of vegetation will eliminate habitat currently available to wildlife species. Wildlife species are likely to migrate to other portions of the study area or outside the study area to find usable and available habitat. The permanent effects to wildlife habitat are shown in Exhibit 5-46.

Exhibit 5-46: Potential Permanent Land Cover Loss In the Study Area

Land Cover	Baseline Land Cover (acres)	Permanent Land Cover Change (acres)	Percentage of Overall Land Cover Change
Forested	550	1.7	1%
Shrubs and Grasses	251	3.1	1%
Maintained Vegetation	1,550	29.2	2%
Total	2,351	34.0	2%

How will project operation affect ecosystems in the study area?

No additional negative effects on wetlands, aquatic resources, or wildlife habitat are expected during operation of the Tukwila to Renton Project. Some wetlands, streams, and rivers within the study area are currently affected by routine vegetation maintenance to meet safety and operation standards as set forth by WSDOT. Wetland and riparian 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.

What would happen to the ecosystems if WSDOT did not build this project?

The No Build Alternative assumes that the project will not be constructed and WSDOT would continue with ongoing maintenance activities in the study area.

Wetlands

The No Build Alternative would have no new permanent, temporary, or indirect effects on wetlands in the study area. No wetland or wetland buffer would be filled or cleared under this alternative, and there would be no change to current management of stormwater flows or existing wildlife habitat functions.

Wetlands in the study area that currently receive untreated runoff would likely continue to be affected by these conditions. Water quality improvements anticipated from the Tukwila to Renton Project would not be realized. It is possible that emission-reducing improvements in automobiles or increases in traffic volumes could change the concentrations of pollutants and contaminants entering these wetlands; however, there is no means to accurately predict that such changes would occur.

Aquatic Resources

With the No Build Alternative, no physical changes would occur to the rivers and streams from construction activities, though some disturbance to stream buffers may occur through routine maintenance activities such as mowing or brushing. The amount of untreated stormwater entering these waterbodies from I-405, I-5, SR 181, SR 167, SR 169, and Talbot

Road would remain unchanged from baseline. It is possible that emission-reducing improvements in automobiles or increases in traffic volumes could change the concentrations of pollutants and contaminants entering these streams; however, there is no means to accurately predict that such changes would occur.

The No Build Alternative would not increase impervious surface areas. For this reason, it is assumed that the No Build Alternative would result in little change to baseline water quality in, and increased flow into, the streams and rivers in the study area. This alternative would not change the existing effects on fish and other aquatic organisms and the habitats in which they live.

Wildlife and Vegetation

The No Build Alternative would have no permanent, temporary, or indirect effects on wildlife and land use cover types in the Tukwila to Renton Project study area. No cover types would be fragmented, cleared, or converted under this alternative, and there would be no change to current baseline wildlife habitat functions.

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CHAPTER 5.8 Design Options

Local traffic will function equally well under either the Mill Avenue or Main Avenue design options and will be an improvement over current conditions. The preferred design option is the Mill Avenue design option. This preference is based on the information presented in the supporting technical documents for this EA with consideration of public comments and preferences.

What design options are proposed for this project?

The Tukwila to Renton Project will remove the Houser Way bridge over the Cedar River. This allows the project to widen I-405 in Renton without affecting the City's public water well buildings. To replace the local access lost with the removal of the Houser Way bridge, WSDOT considered two design options to reroute local traffic to Bronson Way. These design options are:

Mill Avenue design option – This design option routes traffic along Mill Avenue, which will be a one-way northbound street. Main Avenue remains a one-way southbound street under this design option.

Main Avenue design option – This design option routes traffic along Main Avenue. To accommodate this, Main Avenue would be widened to the east and become a two-way street.

Both of these design options are described in greater detail in Chapter 4 of this EA. Exhibits 4-13 and 4-14 illustrate the two design options.

What effects would each of the two design options have?

Exhibit 5-47 summarizes the effects of the two design options.

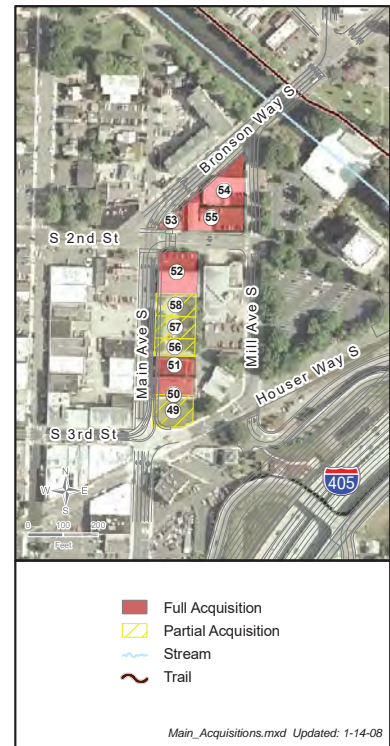


Exhibit 5-47: Main Avenue Design Option Property Acquisitions

Exhibit 5-48: Comparison of Effects between the Mill Avenue and Main Avenue Design Options

Discipline	Mill Avenue Design Option	Main Avenue Design Option
Air Quality	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will have only minor temporary effects during construction. This option increases the amount of demolition and clearing. Fugitive dust and emissions from construction equipment will be present during construction.
	Effects: Neutral	Effects: Negative (temporary)
Cultural, Historic, and Archeological Resources	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will have no additional effects beyond those reported for the project as a whole.
	Effects: Neutral	Effects: Neutral
Cumulative Effects	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will have no additional effects beyond those reported for the project as a whole.
	Effects: Neutral	Effects: Neutral
Economics	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	If the displaced businesses relocate locally, the Main Avenue design option will have no additional effects beyond those reported for the project as a whole.
	Effects: Neutral	Effects: Neutral (conditionally)
Ecosystems - Fish, Wetlands, Upland Vegetation and Wildlife	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will have no additional effects beyond those reported for the project as a whole.
	Effects: Neutral	Effects: Neutral
Environmental Justice	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will displace the Young Woman's Christian Association (YWCA), an important resource for the community.
	Effects: Neutral	Effects: Negative
Geology and Soils	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option adds to the overall area that needs to be cleared for project construction, thereby increasing exposed areas that could experience temporary erosion. This effect is expected to be minor.
	Effects: Neutral	Effects: Negative (temporary)
Hazardous Materials	Two properties adjacent to the project area are sites of concern for hazardous materials. Neither of these properties would be acquired.	Five properties adjacent to the project area are sites of concern for hazardous materials. Two of these properties are reported as cleaned up. Two of these properties would be acquired to implement this option (one total take is a site of concern; the other is a cleaned up property).
	Effects: Neutral	Effects: Negative

Exhibit 5-48: Comparison of Effects between the Mill Avenue and Main Avenue Design Options (continued)

Discipline	Mill Avenue Design Option	Main Avenue Design Option
Land Use	The Mill Avenue design option has no additional Land Use effects beyond those reported for the project as a whole.	Although Main Avenue design option will acquire seven properties, this is not expected to alter local land use patterns. This option is generally consistent with city land use plans, policies, and regulations.
	Effects: Neutral	Effects: Neutral
Noise and Vibration	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will have temporary minor effects because of locally increased noise and vibration during construction.
	Effects: Neutral	Effects: Negative (temporary)
Section 4(f)	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will acquire part of Veterans Memorial Park, removing some landscaping and lawn and part of a walkway.
	Effects: Neutral	Effects: Negative
Social Elements, Public Services, and Utilities	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will require ten additional property acquisitions as shown on the map on page 5-91. These acquisitions include seven commercial relocations and an additional loss of five parking spaces in the City of Renton. Utilities on the east side of Main Avenue may have to be relocated.
	Effects: Neutral	Effects: Negative
Transportation	The Mill Avenue design option operates slightly better than the Main Avenue design option. During the morning peak-hour, three area intersections operate at LOS A and one operates at LOS B. During the evening peak-hour, one area intersection operates at LOS A and three at LOS B.	During the morning peak-hour, two area intersections operate at LOS A and two operate at LOS B. During the evening peak-hour, one area intersection operates at LOS A, two operate at LOS B, and one operates at LOS C.
	Effects: Positive (relative to No Build)	Effects: Positive (relative to No Build)
Visual Quality	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole. The visual quality rating for this option is 2.17.	Residents and local traffic will see a reconfigured Main Avenue that will be widened and striped for two-way traffic. This will open up the view in this area having a slight positive effect on visual quality. The visual quality rating for this option is 2.33. This assumes no new buildings are constructed on these lots.
	Effects: Neutral	Effects: Positive
Water Resources - Surface Water, Water Quality, Floodplains, and Groundwater	The Mill Avenue design option will have no additional effects beyond those reported for the project as a whole.	The Main Avenue design option will have no additional effects beyond those reported for the project as a whole.
	Effects: Neutral	Effects: Neutral

How will WSDOT compensate for any adverse effects?

The Mill Avenue design option does not generate any adverse effects and therefore no compensatory action is needed.

The Main Avenue design option generates adverse effects associated with demolition and construction due to the widening of Main Avenue. WSDOT would follow standard construction practices to reduce construction related effects such as erosion, noise, and traffic congestion.

Relocation of the businesses that would be displaced by this option would be done in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended. The five parking spaces lost with this design option would not be replaced.

Part of Veterans Memorial Park would be acquired as part of the Main Avenue design option. After construction, landscaping along the new edge of Veterans Memorial Park would be restored.

What is the preferred design option?

WSDOT has selected the Mill Avenue design option as the preferred design option for this EA. This selection has been based on the ability of the Mill Avenue design option to provide effective traffic operations as well as avoid the effects listed above for the Main Avenue design option. In particular selecting the Mill Avenue design option avoids the need to acquire more property and relocate seven businesses including the YWCA.

The alternatives analysis demonstrates that the Mill Avenue design option is both feasible and prudent as an option to avoid permanent direct use of Veterans Memorial Park. In recent discussions with the City of Renton, WSDOT has learned that the City plans potentially to develop a city hall campus in the vicinity of Mill and Main avenues, with thoughts of relocating Veterans Memorial Park. These plans are currently conceptual in nature and lack funding. However, when funding is secured for this portion of the Tukwila to Renton Project, WSDOT may update its Section 4(f) analysis to include the most current baseline condition. If at that point Veterans Memorial Park is relocated by the City

from its current location, the Main Avenue design option may be reanalyzed.

Comments received on the EA will be taken into consideration for the final approval of the preferred design option for the Tukwila to Renton Project.

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CHAPTER 5.9 Cumulative Effects

The Tukwila to Renton Project will not have adverse effects in conjunction with other nearby projects. Design requirements and standard construction practices keep project effects to a minimum. Cumulatively in the region, new construction projects can be beneficial because they often retrofit older development thereby improving environmental conditions in urban areas.

Cumulative effects are important to consider during the construction and operation of a project. While project effects may be minor when viewed in the individual context, they can add to the effects of other actions and eventually lead to a measurable environmental change.

What are cumulative effects and why do we study them?

In the regulations that implement the procedural provisions of the National Environmental Policy Act, the Council on Environmental Quality¹³ defines cumulative effects as:

“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.”¹⁴

The Council on Environmental Quality recommends that an agency’s analysis accomplish all of the following:

- Focus on the effects and resources within the context of the proposed action.
- Present a concise list of issues that have relevance to the anticipated effects of the proposed action or eventual decision.
- Reach conclusions based on the best available data at the time of the analysis.



All activities within watersheds contribute to cumulative effects

Please refer to the Tukwila to Renton Project Cumulative Effects Analysis Technical Memorandum in Appendix G for a complete discussion of the cumulative effects analysis.

¹³ *The federal agency charged with implementing the National Environmental Policy Act*

¹⁴ *40 CFR 1508.7 Protection of Environment, Council on Environmental Quality, Cumulative Impact*

- Rely on information from other agencies and organizations on reasonably foreseeable projects or activities that are beyond the scope of the analyzing agency's purview.
- Relate to the geographic scope of the proposed project.
- Relate to the time period of the proposed project.

Cumulative effects can be positive as well as negative depending on the environmental resources being evaluated. It is possible that some environmental resources can be both negatively and positively affected by the same proposed project.

How does this cumulative effects analysis relate to the analysis in the I-405 Corridor Program Final EIS?

The cumulative effects analysis for the Tukwila to Renton Project used the cumulative effects analysis in the I-405 Corridor Program Final EIS as a starting point. The I-405 Corridor Program cumulative effects analysis focused on air quality, energy, farmlands, aquatic resources, surface water, and wetlands. However, for the Tukwila to Renton Project, neither energy nor farmlands were included in the cumulative analysis. Farmlands were determined not to be affected at all by the project. Energy was not analyzed because the difference in energy consumption at the regional level with or without the project was predicted to be inconsequential. The project-level analysis was then conducted based on the results of scoping, agency consultations, and the anticipated direct and indirect effects on air quality, surface water, wetlands, and aquatic resources due to the Tukwila to Renton Project.

What time and geographic boundaries did WSDOT use for this analysis?

When evaluating cumulative effects, the analyst must consider other projects in the vicinity of the proposed project, as well as past, present, and future actions that may affect the environmental resources of concern.

The geographic scope of analysis is defined in two steps. First, the physical limits or boundaries of the Tukwila to Renton Project's effect on an environmental resource are defined. Second, the boundaries of other activities that also may contribute to the effects on that environmental resource are

defined. These two actions define the geographic scope. The time period is determined by identifying time limits that are both relevant to the project and reasonable. The time period and geographic boundaries can be different for each environmental resource evaluated.

Geographic Boundaries

The geographic boundary for the project-level air quality analysis was set at 0.5 mile from the centerline of the project right-of-way. This boundary allowed the effects on air quality of other nearby projects to be considered.

The geographic boundaries for the wetlands, surface water, and aquatic resources analyses were set at one mile from the centerline of the project right-of-way. Expanding the geographic area beyond that of the direct effect area of the Tukwila to Renton Project allowed a more comprehensive analysis of the cumulative effects on these resources.

Time Period Boundaries

The time period from 1960 through 2030 was set for the four environmental resources that were analyzed. Using 1960 as the starting point for the analyses allowed an assessment of the changes that have occurred since the original construction of I-405. The year 2030 is the future year used in regional transportation planning documents.

How did WSDOT identify other projects to include in this analysis?

For the effects of other major projects to be considered, the projects must be located within or near the geographic boundaries used for this analysis. The projects must also be reasonably foreseeable, which typically means they are planned, approved, and funded. Specific projects considered in this analysis are:

- Link Light Rail Phase 1 – S 154th Street to Seattle-Tacoma International Boulevard (Sound Transit)
- Link Light Rail Station – Tukwila International Boulevard/Southcenter Boulevard (Sound Transit)
- SR 518 Corridor Improvements (WSDOT)
- Westfield Shoppingtown Mall Access Improvement: Klickitat Drive/Southcenter Parkway (City of Tukwila)

- I-5 Pavement Replacement (WSDOT)
- Strander Boulevard/SW 27th Street (City of Tukwila)
- I-405, Renton Nickel Improvement Project (WSDOT)
- Black River Pump Station Improvements (King County)
- Springbrook Creek Wetland and Habitat Mitigation Bank (WSDOT/City of Renton)
- SR 167 HOT Lanes Pilot Project (WSDOT)
- SR 515 Corridor Improvements (WSDOT)
- Benson Road Sidewalk Improvements (City of Renton)
- South Grady Way Improvements (City of Renton)
- Rainier Avenue Improvement Project (City of Renton)
- Boeing Renton Plant Site Redevelopment (The Boeing Company/City of Renton)
- SR 169 Improvements (City of Renton)
- I-405, SR 169 to I-90, Renton to Bellevue Project (WSDOT)

What is the history of the environmental resources WSDOT evaluated for this analysis?

What is a non-attainment area?

Non-attainment areas are regions that have not attained compliance with the National Ambient Air Quality Standards.

What is a maintenance area?

Air quality maintenance areas are regions that have recently attained compliance with the National Ambient Air Quality Standards.

Air Quality

Carbon Monoxide

Air quality in the central Puget Sound Region has varied since 1960. In 1978, air quality had degraded to the point that the central Puget Sound Region was classified by the EPA as a “non-attainment area” for carbon monoxide (CO) and ozone. The degradation was largely a result of the rise in vehicle travel associated with increasing population and urbanization.

Air quality improved over the next two decades due to technological improvements in emissions control equipment and more stringent regulations. This improvement enabled the EPA to designate the region as a “maintenance area” for CO in 1996.

Climate Change

Greenhouse Gas Emissions

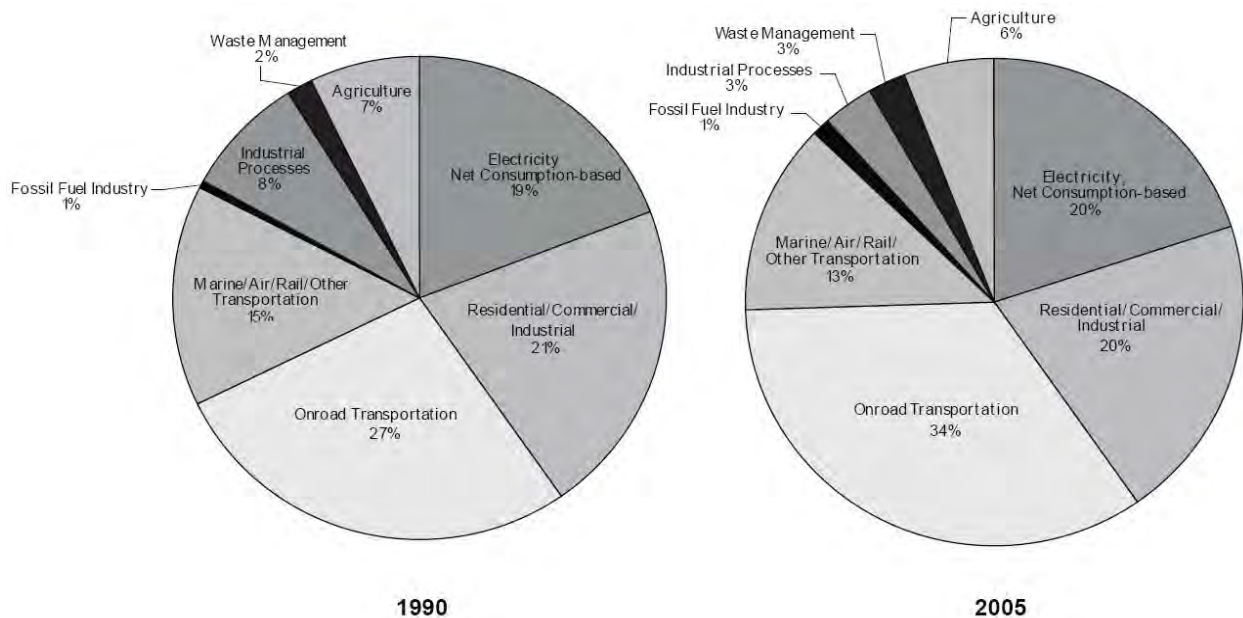
Any process that burns fossil fuel releases carbon dioxide into the air. Carbon dioxide is the primary greenhouse gas emitted

by vehicles. Transportation is a significant source of greenhouse gas emissions, and contributes to global warming through the burning of gasoline and diesel fuel.

National estimates show that the transportation sector (including on-road, airplanes, and boats) accounts for almost 30 percent or more of total domestic CO₂ emissions.¹⁵

In Washington State, with the state’s reliance on in-state hydropower for electricity generation, the transportation sector accounts for roughly 50 percent of greenhouse gas emissions.

Exhibit 5-49: Greenhouse Gas Emissions for 1990 and 2005



Source -- Carbon Dioxide (CO₂) Emissions in Washington State by Source. Washington State University Energy Program

Efforts to reduce greenhouse gas emissions

In February 2007, the Governor issued Executive Order 07-02 requiring state agencies to find ways to reduce greenhouse gas emissions and adapt to the future that climate change may create. In April 2007, the U.S. Supreme Court ruled that the EPA has the authority to regulate greenhouse gas emissions for cars and trucks.

¹⁵ This percentage is based on 2004 data from the International Energy Administration and is consistent with 1996 guidelines on greenhouse gas emissions calculations issued by the IPCC (Intergovernmental Panel on Climate Change).

On May 3, 2007, the Washington legislature passed Senate Bill 6001, which among other things, adopted Governor Gregoire's Climate Change goals into state law. The law aims to achieve 1990 greenhouse gas levels by 2020, a 50 percent reduction below 1990 levels by 2030, and more by 2050. Yet, regulations to implement these goals are in development and will not be sufficiently determined before project design and construction permits are obtained.

At this time, the main way to reduce greenhouse gas emissions by transportation is to reduce the amount of fossil fuel consumed by drivers. This can be achieved by three means:

- (1) create more efficient driving conditions,
- (2) reduce the amount of driving, and
- (3) introduce more fuel-efficient vehicles.

Researchers are also working to reduce the carbon content of motor fuel for the future.

WSDOT is working to reduce driving through a variety of regional and statewide efforts such as commute trip reduction and construction of park-and-ride lots. Through House Bill 1397 in 2005 and the 2007 Senate Bill 5109 revision, the state legislature mandated vehicles sold in Washington, starting with 2009 model years, meet updated California emission standards. The new vehicle standards will reduce greenhouse gas emissions, in addition to reducing carbon monoxide and ozone pollution contributors even more.

Surface Water

According to the 303(d) list Ecology published in 2004, three waterbodies in the study area do not meet the state water quality standards: Green River, Springbrook Creek, and Cedar River. In the study area, the Green River is 303(d)-listed for fecal coliform bacteria, dissolved oxygen, and temperature. Springbrook Creek is 303(d)-listed for not complying with standards for dissolved oxygen and fecal coliform bacteria. The Cedar River is 303(d)-listed for fecal coliform bacteria and temperature downstream of the study area.

In 1982, an NPDES permit was issued to move the outfall of the Renton Wastewater Treatment Plant from the Green River to Puget Sound. This project was completed in early 1987. Prior to the project, the treatment plant was a major source of pollution in the Green River, causing increased temperature, low dissolved oxygen, and ammonia toxicity. In 1992, the EPA approved a TMDL issued by Ecology. The Green River TMDL does not allow discharge of ammonia-nitrogen into the river. No other TMDLs have been developed for the waterbodies in the surface water study area.

Wetlands

Wetland resources in the watersheds have declined over time because of the construction of homes, retail centers, industrial facilities, public infrastructure, and the loss of natural landscapes associated with population increases. While environmental awareness has increased through the passage of legislation, the number, size, and function of wetlands have declined. However, the rate of decline has decreased and that trend is likely to continue. The goal of No Net Loss (at least as many acres of wetlands created as lost/filled) and improved avoidance, mitigation, and compensation measures are helping to restore wetland areas. Advanced scientific studies, refined regulatory requirements and programs, and use of adaptive management procedures will further enhance the restoration trend.

Aquatic Resources

Over time, the rivers and streams in the study area have been highly altered from their natural states to accommodate residential, commercial, and industrial land uses. This alteration has included bank hardening, such as installing riprap and placing streams in pipes and concrete channels; reducing or removing streamside vegetation; straightening stream channels; and removing in-stream habitat. These alterations have resulted in the loss of historic floodplains associated with most of the waterbodies. Substantial changes have also occurred in the vegetation surrounding the waterbodies; what was once predominantly mature native vegetation has been replaced by a mix of immature native vegetation and non-native invasive plant species.

The Lower Green River subbasin has dramatically changed over the last 130 years, but still performs a vital role for the

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

The NPDES permit program was established under Section 402 of the CWA, which prohibits the unauthorized discharge of pollutants from a point source (pipe, ditch, well, etc.) to U.S. waters, including municipal, commercial, and industrial wastewater discharges and discharges from large animal feeding operations. Permittees must verify compliance with permit requirements by monitoring their effluent, maintaining records, and filing periodic reports.

salmon in the watershed. The Lower Green River is a vital migration corridor for fish moving between the Middle Green and the Duwamish estuary. It also provides limited rearing habitat for fish produced upstream.¹⁶

The Renton Reach of the Cedar River is entirely artificial. It is completely constrained between levees and revetments, and was regularly dredged to prevent flooding (from its completion in 1912 until the mid-1970s). Portions of this reach were again dredged in 1999 for the first time since the mid-1970s. This reach is essentially one long riffle with little habitat complexity. It is affected by urban and industrial uses along the river that contribute to local water quality problems and eliminate the potential for connection with a natural floodplain. These uses also prevent riparian corridors from becoming established, which can provide large woody debris in the channel. Much of the river's sediment is deposited in this reach.

How will construction of this project contribute to cumulative effects?

Air Quality

The Tukwila to Renton Project is expected to produce temporary effects on air quality that are characteristic of the construction of large roadway projects. These effects could include:

- Increases in particulate emissions depending on the level and type of activity, soil characteristics, weather, and equipment employed.
- CO and oxides of nitrogen in the exhaust of construction equipment powered by gasoline and diesel engines.
- Increases in the levels of CO and oxides of nitrogen emitted from vehicles that are delayed while traveling through the work areas.
- Odors associated with the use of asphalt.

Construction-related cumulative effects on air quality due to the Tukwila to Renton Project and other projects should be localized, temporary, and of low magnitude with the

¹⁶ KCDNR 2004

proposed mitigation measures in place. This is due to the distance between the projects and their respective schedules, duration, characteristics, and size.

Surface Water

The project will be built in accordance with federal and state technical guidance, permit conditions, and WSDOT project specifications that will require the use of BMPs to control the rate of runoff and, where practical, retain runoff on the site. Therefore, any changes to runoff volumes will be localized, temporary, and of low magnitude. Assuming that similar mitigation measures will be followed for the other projects in the vicinity, construction-related cumulative effects on surface water should also be temporary and of low magnitude.

Wetlands

The Tukwila to Renton Project and several other projects in the area will affect wetlands by permanently or temporarily filling part or all of some wetlands. These projects will also create or enhance more acres of wetlands than are filled or permanently affected. They may also utilize mitigation credits associated with the Springbrook Creek Wetland and Habitat Mitigation Bank. In the long-term, the cumulative effect of these projects will be to create more wetlands that are higher in quality than what will be filled by the projects.

Aquatic Resources

Some losses and degradation of aquatic habitat and short-term decreases in water quality could occur due to construction of the Tukwila to Renton Project and the added lanes for the Renton Nickel Improvement Project and SR 167 HOT Lanes Pilot Project. The Renton to Bellevue Project will similarly directly affect aquatic resources and may also involve in-water work for bridging across May Creek and Coal Creek. These construction effects (for example, loss of riparian vegetation, temporary increased sedimentation, changes in the stream flows, and stream course modifications) will be minimized through the use of BMPs, compliance with permit conditions and in-water work windows set by the fish and wildlife agencies, and by avoidance measures included in the project design. Construction of the other projects considered in the cumulative effects analysis is not expected to affect aquatic resources with the exception of the Springbrook Creek

Wetland and Habitat Mitigation Bank, which will result in improved aquatic habitat.

How will the completed project contribute to cumulative effects?

Air Quality

National Ambient Air Quality Standards

The Tukwila to Renton Project and other transportation projects included in the cumulative effects analysis will not cause or contribute to exceedences of the National Ambient Air Quality Standards. This is because these projects will improve the transportation system's efficiency. These benefits should be realized through 2030.¹⁷

Greenhouse gas emissions

Accurate quantitative modeling tools to evaluate greenhouse gas emissions at the project level are not available at this time. They are in development with the EPA, FHWA, and others. However, traffic improvements proposed by this project contribute toward reduced greenhouse gas emissions.

With the additional capacity and roadway changes described in the project description, the Tukwila to Renton Project strives to create more efficient driving conditions by minimizing stop and go conditions and promoting more consistent moderate-speed driving. This proposed project will enable travel speeds to increase an average of 20 mph and provide better movement of vehicles in 2014 for the study area intersections and the mainline, thereby reducing traffic congestion and collisions. Decreased vehicle delay with the direct-connector ramps at the I-405/SR 167 interchange will further reduce collisions and promote more efficient driving.

Surface Water

The Tukwila to Renton Project and the Renton to Bellevue Project on I-405 will improve water quality because both of these projects will retrofit currently untreated pavement. Other projects in the area will, at a minimum, be required to comply with surface water management regulations. To the

¹⁷ WSDOT 2007b

extent those projects also provide enhanced and/or retrofitted treatment, water quality in the area should improve.

Wetlands

The Springbrook Creek Wetland and Habitat Mitigation Bank will provide safe, high-quality wildlife habitat away from roadside dangers. Other projects considered in this analysis that mitigate effects appropriately could also positively affect wetlands. Operation of the Tukwila to Renton Project and the Renton to Bellevue Project may result in a positive cumulative effect to wetlands receiving runoff as a result of the projects retrofitting water quality treatment for impervious surface, as well as enhanced treatment of discharges from the new impervious surfaces.

Aquatic Resources

WSDOT will address fish passage at seven culverts in the project area per the Memorandum of Agreement between WSDOT and WDFW. Where possible and practicable, other highway projects will also replace existing fish barriers with fish passable structures. By opening up previously inaccessible habitat, fish will be able to return to spawning, rearing, migrating, and refuge habitat.

What would happen if WSDOT did not build this project?

If the Tukwila to Renton Project is not built, no construction would occur and, therefore, none of the improvements associated with the project would be realized. Air quality across the region would likely continue to improve due to improvements in automotive technology. Improvements in water quality would be less because surface waters in the area would continue to receive untreated highway runoff. The existing wetlands near the project would remain intact with no new wetland area created. Improvements to fish passage would also not occur. Assuming the other projects considered in the cumulative effects analysis are constructed, the benefits from these projects would still be realized.

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CHAPTER 6 MEASURES TO AVOID OR MINIMIZE EFFECTS

The following sections present the measures that will be used to avoid or minimize effects due to the Tukwila to Renton Project. This section does not address those elements of the environment that did not have project effects as detailed in Chapter 5. The project design itself will incorporate many best management practices (BMPs) that are standard practice for WSDOT.

What measures will be taken to avoid or minimize effects?

Transportation

WSDOT will coordinate with the local agencies and other projects to prepare a Traffic Management Plan prior to making any changes to the traffic flow or closing lanes. Local agencies, the public, school districts, emergency service providers, and transit agencies will be informed of the changes in advance through a public information process. Pedestrian and bicycle circulation will be maintained as much as possible during construction.

Transportation demand management strategies will be an important part of the construction management program. The transportation demand management strategies in the Tukwila to Renton Project area will be implemented prior to construction to increase public awareness and participation in HOV travel. The major focus will be on expanding vanpooling and vanshare opportunities.

Noise

To reduce construction noise at nearby receptors, WSDOT will incorporate the following activities where practicable:

- Limit the noisiest construction activities (e.g., pile driving) to between 7 a.m. and 10 p.m., to reduce construction noise levels during sensitive nighttime hours.
- Equip construction equipment engines with adequate mufflers, intake silencers, and engine enclosures to reduce their noise.

- Turn off construction equipment during prolonged periods of nonuse to eliminate noise.
- Where possible, locate stationary equipment away from residences to decrease noise.
- Construct temporary noise barriers or curtains around stationary equipment that must be located near residences, to decrease noise levels at nearby sensitive receptors.
- Require use of Occupational Safety and Health Administration approved ambient sound-sensing backup alarms, to reduce disturbances from backup alarms during quiet periods.

Two new noise barriers are planned for construction with the Tukwila to Renton Project. Noise Barrier 8, will be constructed in front of the Berkshire Apartments as shown in Exhibit 5-3. Noise Barrier 8 will be 20 feet high and roughly 1,100 feet long. Noise Barrier 10, a system of two walls, will be in front of the Renton Hill Neighborhood as shown in Exhibit 5-4. Noise Barrier 10 separates at Cedar Avenue S and becomes Noise Barrier 10A to the north and Noise Barrier 10B to the south. Noise Barrier 10A sits at the top of the stacked structure and overlaps with Noise Barrier 10B where the upper and lower roadway structure begins. Noise Barrier 10B follows Mill Avenue to the bottom of the new stacked road structure. Noise Barrier 10 will be 14 to 20 feet and 20 feet respectively for walls 10A and 10B. Noise Barrier 10 has a total length of roughly 2,500 feet. Other noise calming options may be considered for use on this project if appropriate.

Communities, Businesses, and Public Services

To avoid and/or minimize effects to communities, businesses, and public services, WSDOT will:

- Continue active public involvement and work with neighborhood associations and public services.
- Coordinate with any affected resident or business owner to provide them relocation assistance, in compliance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
- Coordinate with business owners and the local jurisdictions to ensure that parking losses are mitigated at an appropriate level.

- Maintain access to businesses throughout the construction period and provide reasonable access during business hours. Access measures will be prepared as part of the traffic management plan and included in the contract specifications.
- Post appropriate signs that communicate revised access information to potential customers.

Impacts to existing utilities will be avoided through project design when feasible. Where avoidance is not feasible, utilities will be relocated or protected in place.

Recreational and Cultural Resources

During final design, WSDOT will meet with staff from the Renton and Tukwila Parks and Public Works Departments to coordinate temporary trail closures and detours related to the project. If it is not possible to maintain trail traffic during construction, then the team will identify appropriate, safe detours for use by cyclists and/or pedestrians. WSDOT will develop signs explaining the temporary closure timing and detour routes.

Temporary disturbances to landscaping for recreational and cultural resources will be restored following protocols in the *I-405 Context-Sensitive Solutions Master Plan*.¹⁸ Specific measures to mitigate project effects are described below:

- **Duwamish-Green River Trail/Christensen Greenbelt.**
During construction, a segment of the Duwamish-Green River Trail/Christensen Greenbelt where it crosses beneath the Southcenter Boulevard bridge, the I-405 bridges, and the Tukwila Parkway bridge will be closed for public safety reasons. A signed detour will be provided during the closure and notices will be posted to keep the public informed about the construction.

As noted in Chapter 5.4, the Duwamish-Green River Trail/Christensen Greenbelt is a Section 6(f) resource. As such, the RCO will review the conversion approval request for permanent direct use effects once this portion of the project is funded for construction. WSDOT, in consultation with the City of Tukwila, will identify

¹⁸ WSDOT 2006

proposed replacement property. This replacement property can be conveyed in a variety of forms, such as:

- Acquisition of property that can be added to the existing trail corridor;
- Acquisition of property within the City of Tukwila that can be used for public outdoor recreation;
- Monetary compensation to the City of Tukwila for the fair market value of the affected property. The City must use these funds to acquire outdoor recreation property within the city limits.

An appraisal will be completed to establish the fair market value of the trail and of the proposed replacement property. The fair market value of the replacement property must be at least equal to the outdoor recreation property to be converted. The replacement property must also be of reasonably equal recreational value before approval will be granted.

- **Duwamish-Green River Trail Trailhead.** During construction, the trailhead will be closed for public safety reasons. Notices will be posted to keep the public informed about the construction. The trailhead will be restored by replacing existing picnic tables, signs, trash receptacles, and landscaping. WSDOT proposes to replace the lost parking adjacent to the proposed stormwater detention site immediately west of the existing parking.
- **Tri-Park complex.** As discussed in Section 5.4, WSDOT has worked with the City of Renton, through a design charrette, to develop the Tri-Park Master Plan incorporating Liberty Park, Cedar River Park, Cedar River Trail, and the Narco property into one large recreational complex. This plan resolves several conflicts that arise from having a water supply system, recreational facilities, and a widened state highway all within a confined space. WSDOT will continue to coordinate with the City of Renton so that the timing of the Tri-Park Master Plan and the Tukwila to Renton Project coincide.

Both the City and WSDOT will have distinct scope and funding responsibilities to implement the agreed approach in the Tri-Park area. However, neither the City nor WSDOT has secured its funding to implement their

portions of the shared plan. The lack of funding and presumed timing of funding poses a complication in mitigation. It is WSDOT's desire to implement the Section 4(f) mitigation during construction of the project. However, if the City's own funding and timeline for implementation makes this impractical, then the City and WSDOT will work together to develop a strategy to effectively implement both parties' responsibilities.

- **James Nelsen House.** During construction, fencing will be placed to establish the limits of construction and ensure there will be no encroachment near the historic structure. Retaining walls to minimize the footprint and avoid the historic structure are an integral component in the Tukwila Parkway design. The property subject to temporary disturbance, including landscaping, will be restored in kind.

If archaeological sites are discovered in the currently unfunded and inaccessible portions of the APE during future work, the I-405 Programmatic Agreement affirms that avoidance and minimization are the preferred options where possible. If unavoidable adverse effects to archaeological sites are discovered during future work, the I-405 Programmatic Agreement provides for the development of mitigation measures in consultation with DAHP and interested and affected Indian tribes (see Appendix C).

WSDOT will also follow their Unanticipated Discovery Plan in the event that archaeological artifacts are found during construction.

Visual Quality

Guidelines from the WSDOT Roadside Classification Plan (RCP) and the Urban Design Criteria (UDC) for the I-405 corridor will be applied to mitigate for unavoidable negative visual effects caused by this project. For improvement projects such as this, the RCP requires roadside restoration within the right-of-way throughout the project limits. For this project, disturbed areas will be restored to a treatment level 2 per the 1996 RCP, with the following guidelines applied where appropriate and practicable:

- Minimize site disturbances to protect native plant communities and specimen trees.

- Restore roadside character with trees (conifers up to 4 feet in height and deciduous trees up to 1 inch in diameter) and shrub seedlings.
- Locate plantings to enhance views of natural features.
- Select vegetation and design planting density to achieve blending with adjacent land use.

If areas are expected to be disturbed by future corridor improvements within 10 years after project completion, temporary erosion control type plantings will be used. In other areas within the project construction limits, additional plantings may be installed where future corridor improvements will not affect the plantings within 10 years.

The UDC implements context-sensitive solutions policy for the I-405 corridor and provides another layer of compensation for unavoidable negative effects caused by the project. In some instances, the UDC guidelines are redundant with those found in the RCP. The major project elements will have the following UDC guidelines applied where appropriate and practicable:

- Ensure visual unity and consistency throughout the I-405 corridor. This includes defining the appearance and style of built elements, such as lighting, paving, railings, signs, bridges, structures (and associated elements), and walls around bridges. The guidelines address the use of aesthetic treatments in the corridor, including the process for selecting and locating architectural treatments.
- Enhance the architectural design of project features such as retaining walls by including terracing to reduce apparent height, using a consistent design theme throughout the corridor, applying texture to the concrete surfaces to reduce apparent scale, and applying pigmented sealer for uniform color and to limit the effects of graffiti and to reduce reflective glare.
- Shield roadway light fixtures to minimize glare and ambient light spillover into adjacent residential areas.
- Minimize clearing for construction, preserving existing stands of mature trees where possible.
- Screen views of the roadway, elevated structures, retaining walls, noise walls, and other project features from areas with high viewer sensitivity where possible.

- Grade slopes to blend with the natural topography by softening slope transitions.
- Follow the guidelines in the RCP to blend the project into the adjacent land uses, while creating a unified experience for the freeway traveler.

For this project, the UDC guidelines will be applied to local street bridges over I-405 at (from south to north): 66th Avenue, Lind Avenue, and Renton Avenue. UDC guidelines will also be applied to I-405 bridges over (from south to north): SR 181, Talbot Road, Lower Mill Avenue, and SR 169. Additional structures that the UDC guidelines will be applied to include the new Tukwila Parkway Bridge over the Green River, the new ramps at the SR 181 interchanges, the new ramps and frontage roads associated with the SR 167 interchange improvements, and the two new noise walls.

Water Resources

Surface Water

Peak and base flow rates to streams and rivers will not be negatively altered during project construction because detention ponds will be constructed prior to the highway widening. These ponds may be used for temporary erosion and sedimentation control. WSDOT will provide routine maintenance for these facilities throughout construction.

Stormwater facilities for this project will maintain the peak flow rate of stormwater runoff at baseline present day conditions or better as mandated by the HRM for a range of storms from 50 percent of the 2-year up through the 50-year recurrent storm event. WSDOT will provide routine maintenance for these facilities.

The area of the project that is within 10,000 feet of the Renton Municipal Airport will require measures to minimize hazards associated with wildlife attraction to stormwater detention ponds. The following are guidelines that will be considered for stormwater management facilities sited near the airport:

- Design system to minimize the frequency and duration of open water to acceptable levels. Water that is detained by the 2-year design storm should completely drain or fall to a level that is covered by a net or solid cover within 24 hours after the end of the storm event.

- Minimize the size of open water ponds within the FAA 10,000-foot-radius wildlife hazard management zone to minimize aircraft-wildlife interactions.
- Use steep side slopes and deep pond depths to minimize shallow water areas and minimize the total water surface area.
- Slope the pond bottom to allow quick drainage and reduce the potential for standing water.
- Eliminate the potential for wetland vegetation growth on the pond bottom and side slopes by lining the pond with riprap or quarry spalls. Alternatively, plants that provide minimal habitat to wildlife can be used. Dense brush and small trees that will be perceived by waterfowl as hiding places for predators are a good choice. Avoid closely mowed grass, which is preferred by waterfowl.
- Break up possible flight lines by planting trees, setting up poles and or fences, which do not allow most water fowl clear landing or takeoff room on the pond surface.
- Introduce islands within open water areas as needed to support scrub-shrub vegetation cover within wetpools with emergent aquatic planting areas.
- Cover or net all permanent open water surfaces if water fowl use becomes an issue at the site.

What is an erosion-control fence?

An erosion-control fence consists of a temporary sediment barrier made of synthetic fabric stretched between posts, with a shallow trench located upslope. The erosion-control fence is “keyed” into the ground to prevent water from running under the fence.

What is a sediment trap?

A sediment trap consists of a temporary ponding area formed by an earthen embankment or an excavation. Both silt fences and sediment traps are designed to slow the flow of water, allowing sediment to settle out.

Water Quality

The primary means of avoiding and reducing potential effects from this project are to use standard BMPs during construction. WSDOT makes the following commitments to protect water quality during construction of I-405 projects:

- Where construction must occur within stream channels, such construction will occur “in the dry” whereby stream flow is temporarily diverted around the work site, where practicable to prevent turbidity.
- Construction disturbances will be limited to the minimum area needed, the shortest duration, and an appropriate distance away from waterbodies as practical. Seasonal work windows will be identified and implemented.
- BMPs such as erosion-control fencing, landscaping, erosion matting, hydro mulching, soil imprinting, straw bales, detention/sediment trap basins, and vegetated

fringes as described in the HRM will be used as appropriate.

- Stormwater chemical treatment following Ecology's guideline may be used as a contingency measure and if approved by WSDOT.
- A scour analysis will be conducted on any highway-related structures that are over river or creek crossings or below the OHWM of these water bodies. Appropriate measures such as fish-friendly stream bank protection or bridge modifications will be implemented if the scour analysis identifies needs.
- Construction mitigation measures such as use of non-hazardous chemicals and establishment of special hazardous materials storage and handling areas will be implemented to reduce the use, transfer, and storage of hazardous materials in sensitive areas.
- WSDOT will prepare and implement a Temporary Erosion and Sedimentation Control (TESC) Plan. The TESC Plan will consist of operational and structural measures to control the transport of sediment. Operational measures will consist of good housekeeping practices, such as removing mud and dirt from trucks before they leave the site, covering fill stockpiles or disturbed areas, or avoiding unnecessary vegetation clearing. Structural measures will consist of the construction of temporary structures to reduce the transport of sediment, such as silt fences or sediment traps. Should any BMP or other operation not function as intended, WSDOT will take additional action to minimize erosion and maintain water quality.
- Fuel and chemical storage and fueling operations for construction vehicles and equipment will be located within secondary containment areas during construction whenever practicable. A Spill Prevention Control and Countermeasures (SPCC) Plan will be established for construction activities and will also detail the procedures that will be followed in the event of a spill to prevent or minimize effects. The SPCC Plan will specifically address potential fuel spills from vehicles and potential spills of chemicals that are commonly used during construction. Spill response equipment will be located at regular and

specified intervals within the construction zones to minimize countermeasure response times.

- WSDOT will identify and develop staging areas for equipment repair and maintenance away from all drainage courses except in areas that are already paved and where no excavation will occur within the staging area. WSDOT will require that washout from concrete trucks not be dumped into storm drains or onto soil or pavement that carries stormwater runoff. During work on the site, thinners and solvents will not be used to wash oil, grease, or similar substances from heavy machinery or machine parts within the construction areas. WSDOT will designate a washdown area for equipment and concrete trucks.
- WSDOT will obtain a NPDES (National Pollutant Discharge Elimination System) construction permit. WSDOT will ensure that water meets the standards specified in the NPDES permit prior to discharge from the construction site. If necessary, water quality will be improved by using such BMPs as sediment ponds to allow sediment to settle out prior to discharge.

BMPs for this project will remove pollutants from runoff generated by the project. With these BMPs, the runoff is expected to meet Washington State water quality standards listed in WAC 173-201(A). According to Ecology, projects meeting the Ecology guidelines or equivalent standards, such as the HRM, are presumed to meet federal and state water quality requirements. WSDOT will provide routine maintenance for these facilities.

Floodplains

Plans for compensatory floodplain storage for temporary and permanent fill will be developed after the project is funded but before construction begins. Mitigation will compensate for fill by volume. Excavation for mitigation will be done in the same floodplain as the fill and at the same one-foot elevation. For fill in the Springbrook Creek floodplain, excavation from the construction of the Springbrook Creek Wetland and Habitat Mitigation Bank may be used as compensatory storage. WSDOT will analyze the effectiveness of the proposed fill mitigation to confirm that the 100-year floodplain elevation will have no rise due to the project.

In addition to providing compensatory floodplain storage, stormwater detention will also be provided in the Green River and Springbrook basins for drainage from new impervious surfaces. Detaining stormwater will help minimize changes to flow patterns of inlet sources to the floodplain.

Bridge piers placed within the floodplain will be designed to minimize hydraulic disturbance to flow. This may be achieved by designing piers that are all the same size and placed in lines parallel to the flow path.

Groundwater

Several construction mitigation measures have been identified by WSDOT, in consultation with the City of Renton and include the following:

- WSDOT will protect groundwater quality during construction by implementing TESC and SPCC Plans to prevent erosion, sedimentation, and spills.
- WSDOT will provide an independent construction environmental coordinator to monitor groundwater quality, storage of hazardous substances, chemical use practices, containment of hazardous materials, and to develop an emergency response and recovery plan for the sole-source aquifer.
- WSDOT will develop an environmental protection plan for the City's review prior to construction. This will include additional investigation of the support structures and mitigation for the increase in impervious surfaces, including a monitoring plan.
- WSDOT will identify and locate staging areas away from all drainage courses except in areas that are already paved and where no excavation will occur within the staging area. Washout from concrete trucks will not be dumped into storm drains or onto soils or pavement that carries stormwater runoff. During work on the site, thinners and solvents will not be used to wash oil, grease, or similar substances from heavy machinery or machine parts within the construction areas. WSDOT will designate a wash down area for equipment and concrete trucks.
- WSDOT will ensure that fuel and chemical storage is located within secondary containment areas. These areas

will be surfaced with an impermeable material and sized to contain the volume of stored fuel and/or chemicals.

- WSDOT will conduct construction within the City of Renton's Aquifer Protection Zones 1 and 2, in compliance with State of Washington Wellhead Protection Requirements outlined in WAC 246-290-135(4) and the City of Renton Municipal Code RICA-9. The storage of fuel and construction chemicals and refueling operations will not be allowed within the City of Renton's Aquifer Protection Zone 1. Every effort will be taken to minimize the storage of fuels and chemicals within Renton's Aquifer Protection Zone 2. Emergency countermeasures equipment will be specified in the SPCC Plan and will be dedicated and maintained at designated locations within Renton's Aquifer Protection Zones 1 and 2 for rapid and effective response to a fuel spill from a vehicle or chemical spill.
- WSDOT will conduct groundwater monitoring during construction to monitor for spills that can affect the sole source aquifer. If necessary, existing City of Renton monitoring wells can be supplemented with additional monitoring wells at key locations and used to monitor water quality during construction activities in Aquifer Protection Zone 1.
- WSDOT will take added measures for stormwater control and conveyance during construction within Renton's Aquifer Protection Zones 1 and 2 to protect aquifers. Within Aquifer Protection Zones 1 and 2, WSDOT will construct either a lined or piped stormwater conveyance system. Stormwater will go through an existing lined detention pond, or WSDOT will construct a new lined detention pond.
- WSDOT will construct new roadway that is located over Aquifer Protection Zone 1 with an impervious liner underneath the pavement for additional protection from spills escaping the stormwater collection system.
- WSDOT will avoid placement of imported contaminated fill during construction. Imported fill must meet the state's Model Toxics Control Act (MTCA) Method A or B soil cleanup standards (WAC 173-340-740) for unrestricted

use. A fill evaluation and testing plan will be developed prior to commencing construction activities.

- For any fill over 50 cubic yards in quantity to be placed over Renton's Aquifer Protection Zone 1, a professional engineer or geologist will certify that the soils meet MTCA cleanup standards (City of Renton Municipal Code RMC 4-9). A plan will be developed that establishes criteria for evaluating fill sources. Analytical testing protocol for sources that may contain suspect fill materials shall be specified in the plan to ensure MTCA Cleanup Method A or B soil cleanup standards are met. If analytical testing is required, imported fill soils will be analyzed before arriving at the construction site. The fill testing plan will also apply to suspect excavated soils encountered during construction. All sampling will be performed by a professional engineer or geologist.
- WSDOT will avoid drawdown of nearby wells during construction. These effects can be avoided by the use of recharge wells and/or cut-off walls, if necessary.
- WSDOT will implement good construction management, safety precautions, and safety enforcements near the City of Renton's well field to avoid a construction-related traffic accident, which could damage and disrupt these wells.
- WSDOT will locate areas where permanent drainage will be required by site conditions for cut slopes. If local private groundwater users or downgradient wetlands and spring water right holders could become affected by drawdown of the groundwater table from these drain systems, these effects shall be avoided on a site-specific basis by designing the permanent drainage system to recharge or replenish the downgradient water table.
- WSDOT will locate concrete structures away from production wells and use non-hazardous concrete curing chemicals.
- WSDOT will use steel piles when structures are within 50 feet of production wells and locate new embankments at least 50 feet away from production wells.
- WSDOT will minimize ground vibration and settlement within 50 feet of production wells.

- WSDOT acknowledges that existing structures in the production well area use spread-footing foundations. After further geotechnical study, spread-footing foundations may be used that do not substantially penetrate the Cedar Valley sole-source aquifer for the reconstructed bridges over the Cedar River.
- WSDOT will use two ponds for highway spill containment to protect the sole-source aquifer.

WSDOT will further minimize effects by using BMPs from WSDOT's Geotechnical Design Manual and Bridge Design Manual.

Several operational mitigation measures have been identified by WSDOT, in consultation with the City of Renton, and include the following:

- WSDOT will operate stormwater facilities to minimize leakage within Aquifer Protection Zone 1.
- WSDOT will use two ponds for highway spill containment to protect the sole source aquifer.
- WSDOT will capture fuel and chemical spills from vehicles using the stormwater collection and detention system. Any new stormwater systems installed for the project will include a shut-off capability for containing a spill or release. WSDOT will establish a plan to contain, clean-up, and minimize potential effects from vehicular accidents.
- A higher level of protection is needed for the City of Renton's Aquifer Protection Zones 1 and 2. To protect the aquifer protection zones, WSDOT will establish a plan in compliance with Washington State Wellhead Protection Requirements outlined in WAC 246-290-135(4) and the City of Renton Municipal Code RMC 4-9. The roadway and access ramps over Renton's Aquifer Protection Zone 1 will have curbs and gutters or berms to collect and route major spills to the stormwater collection system. The system will be constructed in accordance with City of Renton requirements for sanitary sewage facilities in Aquifer Protection Zone 1 and will be sized to contain a liquid spill from a double tanker truck.
- WSDOT will routinely inspect the roadway for cracks or openings that would permit leakage and escape of a major spill from the stormwater collection system within Aquifer

Protection Zone 1. Patching of observed cracks/openings will be within a short time after discovery. Emergency counter measures equipment will be dedicated and maintained at a designated location within Renton's Aquifer Protection Zone 1 for rapid response to a fuel spill from a vehicle or chemical spill occurring during use. Procedures will be specified for emergency containment, control, and cleanup of minor and major spills.

The Green-Duwamish Alluvial Aquifer near the study area is not used for domestic water supply or irrigation purposes and will be protected during operation by WSDOT maintenance following standard pollution control practices.

Ecosystems

All in-water work will be restricted to authorized construction periods when juvenile salmon are not likely to be present in substantial numbers. Adherence to designated work windows, as defined by appropriate permitting agencies (Washington State Department of Fish and Wildlife, NMFS, and the USFWS), will also eliminate or reduce in-water interference during periods when juvenile and adult salmon are likely to be present.

WSDOT will restore temporarily cleared areas to preconstruction grades and replant the areas with appropriate native vegetation. This applies to both wetland and upland areas.

Wetlands

WSDOT, in partnership with the City of Renton, is currently developing a wetland mitigation bank called the Springbrook Creek Wetland and Habitat Mitigation Bank (Bank). WSDOT intends to debit credits from this Bank to mitigate for permanent effects to wetlands resulting from project construction. Mitigation banking is one early-action approach identified in the *I-405 Corridor Program Final Environmental Impact Statement* and the Bank is part of WSDOT's watershed approach to wetland mitigation. By consolidating mitigation into one large site, we have created mitigation that specifically contributes aquatic ecosystem functions that are lacking in the local watershed while providing safe, high-quality wildlife habitat away from the dangers of a roadside location.

Aquatic Resources

Temporary construction effects will be reduced or avoided by the use of standard construction BMPs.

Aquatic resource effects will be mitigated by implementing either the Panther Creek Watershed Rehabilitation Plan,¹⁹ or performing on-site, in-kind mitigation (such as planting native trees near where trees have to be removed to construct the project), or off-site mitigation to improve habitat conditions in areas away from the project where mitigation might be more beneficial. Specific mitigation plans will be included in the permit applications for construction of the Tukwila to Renton Project. In any of the mitigation scenarios, WSDOT will address over-water, in-stream, and stream buffer effects to satisfy the requirements of the local critical areas regulations, the Hydraulic Code, and ESA to enhance in-stream fish habitat to the maximum extent practicable.

The Panther Creek Watershed Rehabilitation Plan is an I-405 Water Resource Initiative that proposes stream mitigation for the Panther Creek system. The plan will provide phased stream mitigation (concurrent and/or advance) at a watershed level for effects from improvements in the I-405/SR 167 vicinity that affect the Panther Creek and lower Springbrook Creek subbasins. This plan also evaluates highway drainage and how it could be cost-effectively managed to complement the stream mitigation work. Additional mitigation will be provided for effects to aquatic resources in other basins.

The benefits of implementing this conceptual plan include:

- Providing stream mitigation to address limiting factors at a watershed level.
- Providing fish habitat improvements via stream flow management to: 1) provide more reliable stream base flows; 2) create stream flow changes that are compatible with wetland floodplain enhancement; and 3) manage stream flows to be compatible with downstream flood control needs.
- Preserving high quality forested wetlands within the contiguous Panther Creek wetland complex.

¹⁹ *WSDOT 2007q*

- Providing a direct discharge of treated highway stormwater into the Panther Creek wetland complex to provide additional project benefits that are compatible with the mitigation proposal.

If the Panther Creek Watershed Rehabilitation Plan is not implemented, WSDOT, in cooperation with resource agencies and tribes, will develop alternative plans for habitat improvement, restoration, or construction to mitigate the effects of roadway widening and the increased width of stream crossings.

The I-405 Team will conduct further evaluation on the seven culverts that are fish passage barriers to determine which ones will be retrofitted or replaced as part of the project. The determination of which culverts will be retrofitted or replaced will occur during the project's permitting phase.

Wildlife and Vegetation

Mitigation measures to offset construction effects will include the revegetation of all temporarily disturbed soils resulting from construction activities. Planted shrubs and tree species will be maintained for a period to ensure the revegetation of target cover types. Planting will occur in areas that provide connectivity to existing wildlife habitat but still meet safety and maintenance standards set forth by WSDOT.

No measures are necessary to mitigate for operational effects to wildlife habitat.

Cumulative Effects

No additional measures beyond those already listed in this section will be necessary during construction and operation of the Tukwila to Renton Project to avoid or minimize substantial adverse cumulative effects.

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I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
ENVIRONMENTAL ASSESSMENT

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I-405, TUKWILA TO RENTON IMPROVEMENT PROJECT (I-5 TO SR 169 - PHASE 2)
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CHAPTER 8 REFERENCES

GIS sources

Exhibit 1-1

All data from the base data referenced below.

Exhibit 2-1

All data from the base data referenced below.

Exhibits 4-1, 4-2, 4-4 to 4-7, and 4-11 to 4-12

All data from the base data referenced below.

WSDOT.

2007 Tukwila to Renton Project channelization layer.

2007 Tukwila to Renton Project pavement layer.

2007 Stormwater Flow Control Facilities.

Exhibit 5-3

All data from the base data referenced below.

Exhibits 5-5 through 5-12

WSDOT.

2007 I-405 Staff; right-of-way acquisitions, potential impact area.

Exhibits 5-14 and 5-15

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2007 Historic Sites, Study Area Boundary.

2006 – 2007 I-405 Staff for Osborn Pacific Group Inc.

2006 – 2007 I-405 Staff. Project Limits.

Exhibit 5-19

David Evans and Associates, Inc.

2007 I-405 viewshed.

King County.

2003 LiDAR Digital Elevation Model. Hillshade.

WSDOT.

2006 I-405 Staff; project limits.

Exhibit 5-23

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Water and Land Division.

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Exhibit 5-24

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1996 Floodway, 100-year Floodplain and 500-year
Floodplain.

Exhibit 5-25

United States Environmental Protection Agency (EPA).

1995 Sole Source Aquifer.

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Exhibit 5-26

WSDOT.

2007 Stormwater Flow Control Facilities.

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Exhibit 5-28

Renton, City of.

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Exhibit 5-29 through 5-31

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Base Data

All GIS exhibits contain one or more of the following as base
layers:

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- 2006 Parks in King County. Data updated by I-405 staff to match data from cities of Renton and Tukwila.
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<http://dnr.metrokc.gov/Wrias/9/LowerGreen.htm>,
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- 2006 Listing Endangered and Threatened Species and Designating Critical Habitat: 12-Month Finding on Petition to List Puget Sound Steelhead as an Endangered or Threatened Species under the Endangered Species Act. Federal Register 71(60):15666-15680. (National Marine Fisheries Service). March 29, 2006.
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Prepared by Parsons Brinkerhoff.
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Memorandum. Prepared by David Evans and
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Prepared by Anchor Environmental, LLC.
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- 2005f I-405, I-5 to SR 169 Renton Nickel Improvement Project. Environmental Justice Discipline Report. Prepared by Parametrix.
- 2005g I-405, I-5 to SR 169 Renton Nickel Improvement Project. Fisheries and Aquatic Resources Discipline Report. Prepared by Anchor Environmental, LLC.
- 2005h I-405, I-5 to SR 169 Renton Nickel Improvement Project. Floodplains Discipline Report. Prepared by DMJM Harris.
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- 2005j I-405, I-5 to SR 169 Renton Nickel Improvement Project. Land Use Patterns Discipline Report. Prepared by DMJM Harris.
- 2005k I-405, I-5 to SR 169 Renton Nickel Improvement Project. Land Use Plans and Policies Discipline Report. Prepared by Jones & Stokes.
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APPENDIX A PROJECT BENEFITS

The Tukwila to Renton Project will provide city-wide and regional benefits. These benefits include reduced congestion at the areas currently considered chokepoints in the study area, such as the I-405/SR 167 interchange; shorter periods of congestion during peak commuter travel hours; and improved freight movement. With the improvements in place, average freeway speeds will increase in 2014 by roughly 10 to 15 miles per hour over speeds without the project. The increase in speed and capacity will enhance the ability of emergency response teams to reach destinations via I-405 and SR 167. The new HOV direct-connector ramps within the I-405/SR 167 interchange will save travel time for transit and HOVs and improve the efficiency of the HOV lanes as those using the lanes will not be required to merge back into general-purpose traffic to travel between the two highways.

A major benefit will be the improvements in safety realized by this project. With the added capacity, congestion-related accidents will be reduced. The project also improves roadway geometrics and reduces the number of conflict points at the interchanges along this section of I-405. Since these improvements address many of the issues that currently result in accidents, it is expected that this section of freeway will no longer be considered a High Accident Corridor. The project will also improve safety by reducing the frequency and severity of accidents related to merging into the HOV lanes. This is accomplished by limiting access to the HOV lanes to defined merge points and adding a four-foot-wide striped buffer that separates the HOV lanes from the general-purpose lanes. In addition, with the HOV direct-connector ramps at the I-405/SR 167 interchange, HOV traffic will not have to cross general-purpose traffic to reach exits to travel between I-405 and SR 167.

An additional benefit will be an improvement in surface water management and water quality. Although the project will add impervious surfaces, the project will build treatment for more than twice the added area. With these systems in place, flow rates in streams and rivers are expected to improve, benefiting overall surface water management. The additional stormwater treatment will also improve surface water quality.

The Tukwila to Renton Project will directly affect ecosystems. However, some of these effects are beneficial. The ecosystems will benefit from the stormwater treatment facilities and from the mitigation provided for affected areas. The proposed mitigation will improve the quality of the environment over present conditions.

The project will benefit the community by creating a new pedestrian facility that will run from the Renton Hill Neighborhood down to the Cedar River. The new facility will be east of I-405, across from the existing Freeway Park, and will improve access to the Tri-Park area for residents of the Renton Hill Neighborhood.

This project will also benefit the community by building two noise barriers along the I-405 corridor in Renton. One of these barriers will be in front of the Berkshire Apartments and the other will be in front of the Renton Hill Neighborhood. These barriers will reduce the level of freeway noise for the people living in these areas.

Another benefit of this project is that it will apply the context-sensitive solutions design choices made by the communities within the I-405 corridor. These guidelines will help the project fit aesthetically within the landscape.

APPENDIX B AGENCY AND TRIBAL CORRESPONDENCE

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February 13, 2008

Bruce Fletcher
Parks Director
City of Tukwila
6300 Southcenter Boulevard
Tukwila, WA 98188

Re: Tukwila to Renton Improvement Project Section 4(f) Consultation Summary for Duwamish-Green River Trail/Christensen Greenbelt, Duwamish-Green River Trail Trailhead, and Interurban Trail

Dear Mr. Fletcher:

The I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 - Phase 2) will widen or construct six bridges over the Green River and reconstruct the I-405 / SR 181 interchange in the City of Tukwila (the City). These improvements will have an effect upon three recreational resources owned or maintained by the City.

This letter summarizes the consultation between Rick Still, Deputy Director, Tukwila Parks and Recreation, and Linda Osborn, I-405 Project Team. The I-405 Project Team completed a Section 4(f) evaluation for each of the resources. We prepared the evaluations based on guidance contained in the FHWA Section 4(f) Policy Paper issued March 1, 2005; Title 2 of the Code of Federal Regulations, Section 771.135 (Section 4(f)); and the WSDOT *Environmental Procedures Manual* published March 2005. The consultation concluded the following:

1) Duwamish-Green River Trail/Christensen Greenbelt

This property was purchased using the Land and Water Conservation Fund Act funds, making it both a Section 6(f) and a Section 4(f) resource. While no direct use will result from the Project, a new bridge crossing over the trail will infringe upon approximately 2,000 square feet of air rights. WSDOT will coordinate with the City, the Washington State Recreation and Conservation Office, and the National Park Service to complete the Section 6(f) process once project funding is secured. No Section 4(f) lands will be permanently acquired from this trail. There will be temporary occupancy during construction. The occupancy is temporary because:

- The disruption to the trail will require less time than the construction period for the entire project;



- There will be no change in ownership;
- The nature and the magnitude of the changes to the Section 4(f) resource are minimal;
- There are no anticipated permanent adverse physical impacts and there will be no interference with the activities or purpose of the resource, on either a temporary or permanent basis; and
- The land being used will be restored to a condition which is at least as good as that prior to the project.

WSDOT will also work with the City of Tukwila to determine appropriate detour routes and signage during construction.

2) Duwamish-Green River Trailhead

The construction of Tukwila Parkway over the Green River will result in a direct use of approximately 36,600 square feet of land and displace approximately 13 parking spaces at the trailhead. WSDOT will replace any park land lost with in-kind mitigation at a location to be agreed upon by the City and WSDOT at the time the Project is funded. WSDOT and the City agree to no net loss of parking spaces at the trailhead. WSDOT and the City also agree to relocate an overlook on the Green River if the constructed Project conflicts with the current location of the overlook. WSDOT will replace existing park amenities, including landscaping, upon the conclusion of the Project.

3) Interurban Trail

This trail currently crosses under I-405 along SR 181. WSDOT will relocate the trail to the east from its current location as part of reconstructing the I-405 / SR 181 Interchange. The trail will be routed to cross under I-405 adjacent to the Union Pacific and the Burlington Northern Santa Fe railroad right-of-way. No Section 4(f) lands will be permanently acquired from this trail. There will be temporary occupancy during construction. The occupancy is temporary because:

- The disruption to the trail will require less time than the construction period for the entire project;
- There will be no change in ownership;
- The nature and the magnitude of the changes to the Section 4(f) resource are minimal;
- There are no anticipated permanent adverse physical impacts and there will be no interference with the activities or purpose of the resource, on either a temporary or permanent basis; and

Mr. Bruce Fletcher
Page 3
February 13, 2008

- The land being used will be restored to a condition which is at least as good as that prior to the project.

WSDOT will also work with the City of Tukwila to determine appropriate detour routes and signage during construction.

Please confirm the City's concurrence with the three points above by returning a copy of this letter signed by the City's designated representative.

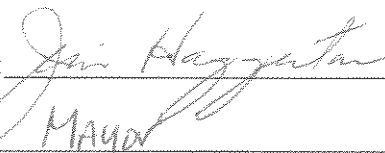
Sincerely,



Stacy Trussler, Deputy Project Director
WSDOT, I-405 Project
425.456.8563
trussler@wsdot.wa.gov

Concurrence by City of Tukwila:

Name:



Title:

MAYOR

Date:

2/13/08

BT



STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

January 15, 2008

Ms. Connie Walker Gray
Cultural Resource Specialist
WSDOT Urban Corridors Office
401 2nd Ave. South
Suite 400
Seattle, Washington 98104

In future correspondence please refer to:

Log: 112206-10-FHWA

Property: I-405 Tukwila to Renton Improvement (I-5 to SR 169-Phase 2)(TRIP)

Re: Archaeology - No Historic Properties

Dear Ms. Walker Gray:

Thank you for contacting our office and providing a copy of the cultural resources survey report. We concur with the professional recommendations put forward in the report and your finding of No Historic Properties Effected.

The report indicates that three archaeological resources were identified within the funded portion of the project: the Renton Civic Dump, the Renton Coal Mine, and the Talbot Road Dam and Retaining Wall site. The report also indicates that one archaeological resource, the Puget Sound and Shore railroad grade was identified outside of the funded portion of the project. We concur with your determination that none of these resources are eligible for listing in the National Register of Historic Places (NRHP).

We understand that two NRHP-eligible sites exist within the area of potential effect, the Renton Historic Museum and the James Nelson House, but that neither property will be affected by the present undertaking. We further agree with the recommendation made in the technical report that none of the 80 historic properties identified in Appendix B of the report are eligible for listing in the NRHP.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).



These comments are based on the information available at the time of this review and on the behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800.

Should additional information become available, our assessment may be revised. In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity must stop, the area secured, and this office and the concerned tribes notified.

Sincerely,



Matthew Sterner, M.A., RPA
Transportation Archaeologist
(360) 586-3082
matthew.sterner@dahp.wa.gov



RECEIVED

600 - 108th Avenue NE, Suite 405
Bellevue, WA 98004
Main 425-456-8500
Fax 425-456-8600
MS: NB82-250

AN 2 2 2008

TRANS CORRIDORS OFFICE

January 9, 2008

COPY

Terry Higashiyama, Community Services Administrator
City of Renton
1055 Grady Way
Renton, WA 98055

Re: **I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 - Phase 2)**
Liberty Park, Cedar River Park, Cedar River Trail, and the Narco Property

Dear Ms. Higashiyama:

The City of Renton (the City) and WSDOT began a collaborative process in 2005 with a design charette. This charette was in response to the anticipated effects that may result from the proposed expansion of I-405 through the area of the Tri-Parks. The charette resulted in several design concepts that were refined until both the City and WSDOT agreed on the project footprint. The results are now being carried forward in the Tukwila to Renton Improvement Project's (the Project) Section 4(f) Evaluation.

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) prohibits the Federal Highway Administration from approving a transportation project that uses land from a significant park, recreation area, wildlife or waterfowl refuge, or land of a historic site of national, state, or local significance, unless there is no feasible and prudent alternative, and the project includes all possible planning to minimize harm to the property.

This letter summarizes the consultation between Leslie Betlach, Director, Renton Parks, and Linda Osborn, I-405 Project Team on October 25, 2007. The I-405 Project Team completed a Section 4(f) evaluation for each of the resources. We prepared the evaluations based on guidance contained in the FHWA Section 4(f) Policy Paper issued March 1, 2005; Title 2 of the Code of Federal Regulations, Section 771.135 (Section 4(f)); and the WSDOT *Environmental Procedures Manual* published March, 2005.

There will be no land acquired, either permanently or temporarily from Liberty Park, Cedar River Trail, and the Narco property. Permanent acquisition of Section 4(f) protected resources at Cedar River Park includes 35,752 square feet or 0.82 acres to construct the northbound off-ramp from I-405 to SR 169.

Ms. Higashiyama

January 9, 2008

Page 2 of 2

While the direct effects can be measured and expressed in a quantifiable area, both WSDOT and the City of Renton concur that the Tukwila to Renton Project imposes other, even though less quantifiable, effects to the recreation environments at Liberty Park, Cedar River Park, Cedar River Trail, and the Narco property. The design charrette ferreted out these effects. Through this process, WSDOT joined with the City to develop a master plan concept that works in conjunction with the proposed I-405 corridor improvements. WSDOT and the City arrived at a consensus on necessary and desirable park improvements and further concurred on whether each park improvement would be considered mitigation for effects as a result of the I-405 project or would be city-desired recreation improvements. The outcome of this charette was incorporated into the City of Renton Tri-Park Master Plan, which was adopted by the Renton City Council on September 25, 2006.

The purpose of this letter is to document for the purposes of Section 4(f) compliance that the City concurs with the following:

- 1) The City and WSDOT agree on each party's responsibilities for the Tri-Park elements, as documented in the Project's Section 4(f) Evaluation, based on the magnitude of anticipated impacts by the Project.
- 2) WSDOT and the City agree that mitigation for the impacts will be implemented after the Project improvements are funded.
- 3) WSDOT's desire is to implement the Section 4(f) mitigation during construction of the Project. However, if the City's own funding and timeline for implementation makes this not practical, then the City and WSDOT will develop a plan for mitigating the Project impacts for which WSDOT is responsible.

Please confirm the City's concurrence with the three points above by returning a copy of this letter signed by the City's designated representative.

Sincerely,



Stacy Trussler, Deputy Project Director
WSDOT, I-405 Project
425.456.8563
trussler@wsdot.wa.gov

Concurrence by City of Renton:

Name: David Law

Title: Mayor, City of Renton

Date: 1/17/08

cc: Gregg Zimmerman
Leslie Betlach
Ross Fenton
Jason McKinney



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

December 12, 2007

Andrea Rogers
Legal Council
Snoqualmie Tribe
PO Box 969
Snoqualmie, WA 98065

**RE: I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 Phase 2),
King County – Cultural Resource Technical Memorandum**

Dear Ms. Rogers:

Per provisions of 36CFR800, The I-405 Team is continuing consultation for the above project. Enclosed, please find a copy of the Cultural, Historic, and Archaeological Technical Memorandum (dated December 2007), which summarizes the cultural resources assessment conducted by Washington State Department of Transportation Cultural Resource Staff and Landau and Associates for the above project. The Area of Potential Effect (APE) for this project includes all known areas of ground disturbance—including demolition, construction, staging, equipment storage locations, stormwater management facilities, and known stream mitigation sites. Investigations include primary and secondary source background research, reconnaissance survey, subsurface archaeological investigations, and recordation of all historic resources 50 years old and older.

As noted in the report, the project will have no adverse effects on historic structures. There are two known historic structures potentially eligible for the National Register of Historic Preservation (NRHP)- Renton Historical Museum (45KI242) and James Nelson House (45KI596) within the APE. Neither resource will be directly affected by the project. There are also four known archaeological sites that occur in the unfunded portion of the APE. These sites are: the Green River shell midden (45KI6); the Henry Moses Aquatic Center site (45KI686); the Puget Sound and Shore Railroad grade (45KI768), and an unnamed historic debris scatter (45KI452). Work in the funded and accessible portion will have no adverse effects on NRHP-eligible archaeological sites. Work in the remainder of the APE will be evaluated under the terms of the I-405 Programmatic Agreement.

In summary, although historic or potentially historic properties are located within the APE, there will be no effect to these properties as a result of this undertaking. If you have comments on the attached document, we request that you please submit them by January 18, 2008.

If you have knowledge of traditional cultural properties in or near the proposed project area, or should you have questions regarding the project, you may contact me at 425.456.8647 or William.jordan@i405.wsdot.wa.gov. Alternatively, you may reach Ken Juell, UCO's Cultural Resources Specialist at 206.464.1236 or JuellK@wsdot.wa.gov.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read 'W. Jordan', with a long horizontal flourish extending to the right.

William Jordan
I-405 Corridor Environmental Manager

Enclosure

cc: Steve Boch, FHWA
Ken Juell, WSDOT - UCO
Colleen Jollie, WSDOT



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

December 12, 2007

Kate Valdez
Cultural Resources Manager
Yakama Nation
PO Box 151
Toppenish, WA 98948

**RE: I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 Phase 2),
King County – Cultural Resource Technical Memorandum**

Dear Ms. Valdez:

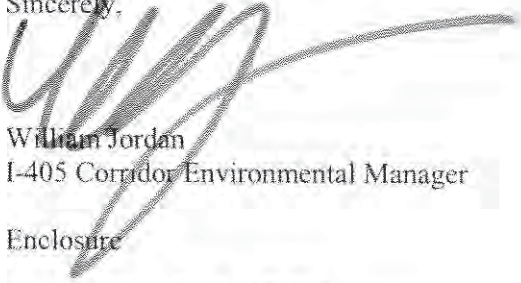
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Sincerely,

A handwritten signature in black ink, appearing to read 'William Jordan', is written over the typed name and title.

William Jordan
I-405 Corridor Environmental Manager

Enclosure

cc: Steve Boch, FHWA
Ken Juell, WSDOT - UCO
Colleen Jollie, WSDOT



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

December 12, 2007

Laura Murphy, Cultural Resources
Muckleshoot Indian Tribe
39015 172nd Avenue SE
Auburn, WA 98092

**RE: I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 Phase 2),
King County – Cultural Resource Technical Memorandum**

Dear Ms. Murphy:

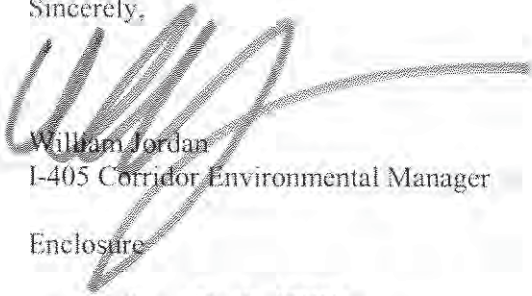
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Sincerely,

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William Jordan
I-405 Corridor Environmental Manager

Enclosure

cc: Steve Boch, FHWA
Ken Juell, WSDOT - UCO
Colleen Jollie, WSDOT



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

December 12, 2007

Honorable Cecile Hansen, Chair
Duwamish Tribe
4717 West Marginal Way SW
Seattle, WA 98106

**RE: I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 Phase 2),
King County – Cultural Resource Technical Memorandum**

Dear Ms. Hansen:

Per provisions of 36CFR800, The I-405 Team is continuing consultation for the above project. Enclosed, please find a copy of the Cultural, Historic, and Archaeological Technical Memorandum (dated December 2007), which summarizes the cultural resources assessment conducted by Washington State Department of Transportation Cultural Resource Staff and Landau and Associates for the above project. The Area of Potential Effect (APE) for this project includes all known areas of ground disturbance—including demolition, construction, staging, equipment storage locations, stormwater management facilities, and known stream mitigation sites. Investigations include primary and secondary source background research, reconnaissance survey, subsurface archaeological investigations, and recordation of all historic resources 50 years old and older.

As noted in the report, the project will have no adverse effects on historic structures. There are two known historic structures potentially eligible for the National Register of Historic Preservation (NRHP)- Renton Historical Museum (45KI242) and James Nelson House (45KI596) within the APE. Neither resource will be directly affected by the project. There are also four known archaeological sites that occur in the unfunded portion of the APE. These sites are: the Green River shell midden (45KI6); the Henry Moses Aquatic Center site (45KI686); the Puget Sound and Shore Railroad grade (45KI768), and an unnamed historic debris scatter (45KI452). Work in the funded and accessible portion will have no adverse effects on NRHP-eligible archaeological sites. Work in the remainder of the APE will be evaluated under the terms of the I-405 Programmatic Agreement.

In summary, although historic or potentially historic properties are located within the APE, there will be no effect to these properties as a result of this undertaking. If you have comments on the attached document, we request that you please submit them by January 18, 2008.

If you have knowledge of traditional cultural properties in or near the proposed project area, or should you have questions regarding the project, you may contact me at 425.456.8647 or William.jordan@i405.wsdot.wa.gov. Alternatively, you may reach Ken Juell, UCO's Cultural Resources Specialist at 206.464.1236 or JuellK@wsdot.wa.gov.

Sincerely,



William Jordan
I-405 Corridor Environmental Manager

Enclosure

cc: Steve Boch, FHWA
Ken Juell, WSDOT - UCO
Colleen Jollie, WSDOT



Washington State
Department of Transportation

Northwest Washington Division
Urban Corridors Office
401 Second Avenue South, Suite 560
Seattle, WA 98104
206-464-1221/Fax 206-464-1189
www.wsdot.wa.gov

RECEIVED

NOV 09 2006

November 6, 2006

URBAN CORRIDORS OFFICE

Allyson Brooks, Ph.D.
State Historic Preservation Officer
Office of Archaeology and Historic Preservation
P.O. Box 48343
Olympia, WA 98504-8343

Re: I-405 Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2)

Dear Dr. Brooks:

Per provisions of 36 CFR 800, we are initiating consultation for the above project. Please review the enclosed Areas of Potential Effect (APE) maps.

Project Description

The Tukwila to Renton Improvement Project expands on the Renton Nickel Improvement Project, and adds one lane in both directions on I-405 between I-5 and SR 167 and between SR 167 and SR 169, extends the southbound high-occupancy vehicle (HOV) lane on SR 167 north to I-405, and adds one lane southbound on SR 167 between I-405 and SW 41st Street. The project extends approximately four miles along I-405, from I-5 to SR 169, and approximately 1.5 miles along SR 167, from I-405 to South 180th Street. The project adds approximately \$1.2 billion of improvements to the I-405 corridor. The improvements from west to east (north) are as follows:

I-5 to East of SR 181

- Realign I-405 near the Westfield Shoppingtown Mall to accommodate improvements near the Green River and SR 181.
- Reconstruct the south half of the SR 181 interchange, including extending Tukwila Parkway east to SR 181 over the Green River and constructing a new on-ramp from Tukwila Parkway to northbound I-405.
- Improve the north half of the SR 181 interchange and local arterials within the interchange area.
- Construct or modify six bridges over the Green River, lower the Green River Trail, and realign the Interurban Trail.

East of SR 181 to North of SR 169

- Construct one additional lane in both directions on I-405 from SR 181 through SR 167.
- Construct a new split-diamond interchange at Lind Avenue and at SR 515 (Talbot Road), with connecting northbound and southbound frontage roads.

- Replace I-405 bridges at Lind Avenue and at SR 515.
- Construct a general-purpose direct-connector ramp between southbound I-405 and southbound SR 167.
- Construct exterior ramps from northbound I-405 to and from SR 167.
- Reconstruct East Valley Road between SW 16th Street and SW 23rd Street.
- Construct two additional lanes in both directions on I-405 from SR 167 through SR 169.
- Construct an auxiliary lane on northbound SR 167 from South 180th Street to I-405.
- Replace/construct four bridges over the Cedar River. These bridges are northbound and southbound I-405, the Burlington Northern Santa Fe Railroad, and a pedestrian bridge.
- Replace the two local street accesses to Renton Hill.
- Close Houser Way and reroute traffic to re-striped Bronson Way.

HOV Direct Connectors between I-405 and SR 167

- Construct HOV direct-connector ramps in both directions between the south leg and east leg of the I-405/SR 167 interchange (i.e. from southbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405).

Definition of the Project Area of Potential Effects (APE)

The Project APE includes areas where archaeological resources may be encountered and areas where historic structures may be directly or indirectly affected. Potential effects to archaeological sites may occur where ground disturbance will take place. Project activities and structures that will produce ground disturbance include grading, pilings for new bridge structures, retaining walls, noise walls, detention ponds, conveyances, and ecology embankments, which are shown on the attached plan sheets. This area is confined largely to the existing I-405 right-of-way, SR 167, and SR 515, but also includes intersections that provide access to I-405 and some properties adjacent to the I-405 right-of-way.

Historic structures may be affected in the area adjacent to I-405 and SR 167 rights-of-way, and the intersections where improvements are scheduled. The APE boundary encompasses either one tax lot on each side of the I-405 and SR 167 rights-of-way and the feeder intersections and connector streets or 200 feet from their margins, whichever is less. This definition was chosen for several reasons:

- The project area vicinity is an extensively developed commercial and industrial zone where proposed improvements (four lanes to six lanes of elevated structures and deeply bedded road grade, and adding dedicated left-turn lanes to existing feeder intersections) will not substantially change views in this highly urbanized area.
- Many residential lots along SR 167 and commercial lots along I-405 in this industrialized area are large, with the existing structure located a considerable distance from the roadway. The planned work thus would not have an effect on character of the viewshed, noise level, or vibration level for properties more than 200 feet away from the right of way. Many structures along SR 167 have views to the roadways blocked by established vegetation.

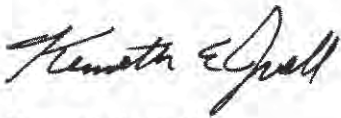
The project APE is shown as the red line on the enclosed aerial photo-based maps.

The Tukwila to Renton Improvement Project will be a design-build project. As such, many project structures, such as pile locations for river crossings won't be known until a design-build contractor is selected. At this time only a portion of the current project footprint has funding. A funding timeline is currently unknown for the remainder of the project. Because the project may not be fully funded until 2015, all existing historic structures built in 1965 and earlier (50 years or greater) will be recorded and evaluated. As additional construction funding becomes available, a design-build contractor may be selected. At that time, design will proceed and properties may be acquired.

Since this is primarily an unfunded, design-build project, it will not be possible to conduct a full archaeological survey prior to completion of the environmental review process. We anticipate working with your office and the Federal Highway Administration to develop a project specific programmatic agreement that would create a process for phasing cultural resource investigations as the project develops.

We look forward to your concurrence with the project APE. It may be beneficial for us to meet with you, Mr. Sterner, and Mr. Holter to discuss the I-405 Tukwila to Renton Improvement Project specifically, and how it fits into the broader I-405 Congestion Relief and Bus Rapid Transit projects. Please contact me at 360-570-2448, email at BundyB@wsdot.wa.gov, or Ken Juell at 206-464-1236, email at juellk@wsdot.wa.gov. All official correspondence should go to Ken Juell at the Urban Corridors Office.

Sincerely,



Kenneth E. Juell
Cultural Resources Specialist
WSDOT Urban Corridors Office
401 2nd Avenue South, Suite 560
Seattle, WA 98104

Enclosures

cc: Sharon Love, FHWA, w/o enclosures
Allison Ray, WSDOT I-405 Office, w/o enclosures
Sasha Visconty, WSDOT UCO, w/o enclosures
Barbara Bundy, WSDOT HQ, w/o enclosures
Jason McKinney, WSDOT I-405 Office, w/o enclosures



STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

November 22, 2006

Mr. Ken Juell
Cultural Resource Specialist
Washington State Department of Transportation
Northwest Washington Division
Urban Corridors Office
401 Second Avenue South, Suite 560
Seattle, Washington 98104-3850

In future correspondence please refer to:

Log: 112206-10-FHWA
Property: I-405 Tukwila to Renton Improvement (I-5 to SR 169-Phase 2)
Re: Archaeology - APE Concur

Dear Mr. Juell:

We have reviewed the materials forwarded to our office for the I-405 Tukwila to Renton Improvement (I-5 to SR 169-Phase 2) project. Thank you for your description of the area of potential effect (APE) for the project. We concur with the definition of the APE. We look forward to the results of your cultural resources survey efforts, your consultation with the concerned tribes, and receiving the survey report. We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4) and the survey report when it is available. We would be happy to meet with you regarding those aspects of the project discussed in your letter. Please contact us at your convenience to arrange for a mutually convenient time and location.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Please note that DAHP has developed a set of cultural resource reporting guidelines. You can obtain a copy of these guidelines from our Web site. Thank you for the opportunity to review and comment. If you have any questions, please feel free to contact me.

Sincerely,

Matthew Sterner, M.A., RPA
Transportation Archaeologist
(360) 586-3082
matthew.sterner@dahp.wa.gov





Corridor Program

Congestion Relief & Bus Rapid Transit Projects

November 8, 2006

Honorable Cecile Hansen, Chair
Duwamish Tribe
4717 West Marginal Way SW
Seattle, WA 98106

Re: I-405 Tukwila to Renton Improvement Project (I-5 to SR 169, Phase 2)

Dear Chairperson Hansen:

The Federal Highway Administration (FHWA) and Washington State Department of Transportation (WSDOT) are preparing an Environmental Assessment (EA) to document the environmental consequences and possible mitigation measures for the I-405 Tukwila to Renton Improvement Project within the existing Interstate 405 (I-405) corridor located in Tukwila and Renton, WA.

Project Description

The Tukwila to Renton Improvement Project expands on the Renton Nickel Improvement Project, and adds one lane in both directions on I-405 between I-5 and SR 167 and between SR 167 and SR 169, extends the southbound high-occupancy vehicle (HOV) lane on SR 167 north to I-405, and adds one lane southbound on SR 167 between I-405 and SW 41st Street.

The Tukwila to Renton Improvement Project extends approximately four miles along I-405, from I-5 to SR 169, and approximately 1.5 miles along SR 167, from I-405 to South 180th Street. The project adds approximately \$1.2 billion of improvements to the I-405 corridor. The improvements from west to east (north) are as follows:

I-5 to East of SR 181

- Realign I-405 near the Westfield Shoppingtown Mall to accommodate improvements near the Green River and SR 181.
- Reconstruct the south half of the SR 181 interchange, including extending Tukwila Parkway east to SR 181 over the Green River and constructing a new on-ramp from Tukwila Parkway to northbound I-405.
- Improve the north half of the SR 181 interchange and local arterials within the interchange area.
- Construct or modify six bridges over the Green River, lower the Green River Trail, and realign the Interurban Trail.

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- Construct one additional lane in both directions on I-405 from SR 181 through SR 167.
- Construct a new split-diamond interchange at Lind Avenue and at SR 515 (Talbot Road), with connecting northbound and southbound frontage roads.
- Replace I-405 bridges at Lind Avenue and at SR 515.
- Construct a general-purpose direct-connector ramp between southbound I-405 and southbound SR 167.
- Construct exterior ramps from northbound I-405 to and from SR 167.
- Reconstruct East Valley Road between SW 16th Street and SW 23rd Street.
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- Construct an auxiliary lane on northbound SR 167 from South 180th Street to I-405.
- Replace/construct four bridges over the Cedar River. These bridges are northbound and southbound I-405, the Burlington Northern Santa Fe Railroad, and a pedestrian bridge.
- Replace the two local street accesses to Renton Hill.
- Close Houser Way and reroute traffic to restriped Bronson Way.

HOV Direct Connectors between I-405 and SR 167

- Construct HOV direct-connector ramps in both directions between the south leg and east leg of the I-405/SR 167 interchange (i.e. from southbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405).

Definition of the Project Area of Potential Effects (APE)

The Project APE includes an Archaeological APE and a Historic Structures APE. The Archaeological APE is defined as the area within which all ground disturbance will take place, and thus where potential effects to archaeological remains may occur. Project activities and structures that will produce ground disturbance include grading, pilings for new bridge structures, retaining walls, noise walls, detention ponds, conveyances, and ecology embankments, which are shown on the attached plan sheets. The archaeological APE is confined largely to the existing I-405 right-of-way, SR 167 and SR 515, but also includes intersections that provide access to I-405 and some properties adjacent to the I-405 right-of-way.

The historic structures APE is defined as the area adjacent to I-405 and SR 167 rights-of-way, and the intersections where improvements are scheduled, where there is a possibility of indirect effects to historic structures. The historic structures APE boundary

encompasses either one tax lot on each side of the I-405 and SR 167 rights-of-way and the feeder intersections and connector streets or 200 feet from their margins, whichever is less. This definition was chosen for several reasons:

- The project area vicinity is an extensively developed commercial and industrial zone where proposed improvements (four lanes to six lanes of elevated structures and deeply bedded road grade, and adding dedicated left-turn lanes to existing feeder intersections) will not substantially change viewsapes in this highly urbanized area.
- Many residential lots along SR 167 and commercial lots along I-405 in this industrialized area are large, with the existing structure located a considerable distance from the roadway. The planned work thus would not have an effect on character of the viewshed, noise level, or vibration level for properties more than 200 feet away from the right of way. Many homes along SR 167 have views to the roadways blocked by established vegetation.

The project APE is shown as the red line on the enclosed aerial photo-based maps.

To ensure that we take into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, WSDOT is initiating formal Section 106 consultation pursuant to 36 CFR 800.2(c)(4). Recognizing the government-to-government relationship that the FHWA has with the tribe, they will continue to play a key role in this undertaking as the responsible Federal agency. However, since the WSDOT has been delegated the authority from FHWA to initiate consultation and we will be directly managing the cultural resources studies and carrying out this undertaking, you may contact us for assistance with the process and/or undertaking.

Separate from the Section 106 consultation process we would also like to have your feedback on how the project might affect natural resources important to your tribe. We also invite you to comment on the project's proposed Area of Potential Effect as shown on the attached maps.

Please respond to this letter with a letter or e-mail acknowledging your interest in participating in this undertaking as a consulting party and identifying key tribal contacts for both cultural resources and natural resources. We request your response and comments by **December 10, 2006**. Should you have any questions about this project, you may contact me at 425.450.8610 or rayalli@wsdot.wa.gov

If you have any questions about the Section 106 process, you may contact Ken Juell, WSDOT-Urban Corridor's Office Cultural Resource Specialist at 206-464-1236 or JuellK@wsdot.wa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Allison Ray". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Allison Ray
I-405 Environmental Manager

Enclosures

cc: Steve Boch, FHWA, w/o enclosures
Ken Juell, WSDOT UCO, w/o enclosures
Barbara Bundy, WSDOT UCO, w/o enclosures
Sandie Turner, WSDOT HQ, w/o enclosures
Colleen Jollie, WSDOT HQ, w/o enclosure



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

November 8, 2006

Honorable John Daniels Jr., Chair
Muckleshoot Tribe
39015 172nd Ave SE
Auburn, WA 98092

Re: I-405 Tukwila to Renton Improvement Project (I-5 to SR 169, Phase 2)

Dear Chairperson Daniels:

The Federal Highway Administration (FHWA) and Washington State Department of Transportation (WSDOT) are preparing an Environmental Assessment (EA) to document the environmental consequences and possible mitigation measures for the I-405 Tukwila to Renton Improvement Project within the existing Interstate 405 (I-405) corridor located in Tukwila and Renton, WA.

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encompasses either one tax lot on each side of the I-405 and SR 167 rights-of-way and the feeder intersections and connector streets or 200 feet from their margins, whichever is less. This definition was chosen for several reasons:

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The project APE is shown as the red line on the enclosed aerial photo-based maps.

To ensure that we take into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, WSDOT is initiating formal Section 106 consultation pursuant to 36 CFR 800.2(c)(4). Recognizing the government-to-government relationship that the FHWA has with the tribe, they will continue to play a key role in this undertaking as the responsible Federal agency. However, since the WSDOT has been delegated the authority from FHWA to initiate consultation and we will be directly managing the cultural resources studies and carrying out this undertaking, you may contact us for assistance with the process and/or undertaking.

Separate from the Section 106 consultation process we would also like to have your feedback on how the project might affect natural resources important to your tribe. We also invite you to comment on the project's proposed Area of Potential Effect as shown on the attached maps.

Please respond to this letter with a letter or e-mail acknowledging your interest in participating in this undertaking as a consulting party and identifying key tribal contacts for both cultural resources and natural resources. We request your response and comments by **December 10, 2006**. Should you have any questions about this project, you may contact me at 425.450.8610 or rayalli@wsdot.wa.gov

If you have any questions about the Section 106 process, you may contact Ken Juell, WSDOT-Urban Corridor's Office Cultural Resource Specialist at 206-464-1236 or JuellK@wsdot.wa.gov.

Sincerely,

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Allison Ray
I-405 Environmental Manager

Enclosures

- cc: Karen Walter, Muckleshoot Natural Resources, w/o enclosures
Laura Murphy, Muckleshoot Cultural Resources, w/o enclosures
Steve Boch, FHWA, w/o enclosures
Ken Juell, WSDOT UCO, w/o enclosures
Barbara Bundy, WSDOT UCO, w/o enclosures
Sandie Turner, WSDOT HQ, w/o enclosures
Colleen Jollie, WSDOT HQ, w/o enclosure



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

November 8, 2006

Honorable Bill Sweet, Chair
Snoqualmie Tribe
PO Box 969
Snoqualmie, WA 98065

Re: I-405 Tukwila to Renton Improvement Project (I-5 to SR 169, Phase 2)

Dear Chairperson Sweet:

The Federal Highway Administration (FHWA) and Washington State Department of Transportation (WSDOT) are preparing an Environmental Assessment (EA) to document the environmental consequences and possible mitigation measures for the I-405 Tukwila to Renton Improvement Project within the existing Interstate 405 (I-405) corridor located in Tukwila and Renton, WA.

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Sincerely,

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Allison Ray
I-405 Environmental Manager

Enclosures

cc: Andrea Rodgers, Snoqualmie Tribe Transportation, w/o enclosures
Steve Boch, FHWA, w/o enclosures
Ken Juell, WSDOT UCO, w/o enclosures
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Corridor Program

Congestion Relief & Bus Rapid Transit Projects

November 8, 2006

Honorable Lavina Washines, Chair
Yakama Nation
PO Box 151
Toppenish, WA 98948

Re: I-405 Tukwila to Renton Improvement Project (I-5 to SR 169, Phase 2)

Dear Chairperson Washines:

The Federal Highway Administration (FHWA) and Washington State Department of Transportation (WSDOT) are preparing an Environmental Assessment (EA) to document the environmental consequences and possible mitigation measures for the I-405 Tukwila to Renton Improvement Project within the existing Interstate 405 (I-405) corridor located in Tukwila and Renton, WA.

Project Description

The Tukwila to Renton Improvement Project expands on the Renton Nickel Improvement Project, and adds one lane in both directions on I-405 between I-5 and SR 167 and between SR 167 and SR 169, extends the southbound high-occupancy vehicle (HOV) lane on SR 167 north to I-405, and adds one lane southbound on SR 167 between I-405 and SW 41st Street.

The Tukwila to Renton Improvement Project extends approximately four miles along I-405, from I-5 to SR 169, and approximately 1.5 miles along SR 167, from I-405 to South 180th Street. The project adds approximately \$1.2 billion of improvements to the I-405 corridor. The improvements from west to east (north) are as follows:

I-5 to East of SR 181

- Realign I-405 near the Westfield Shoppingtown Mall to accommodate improvements near the Green River and SR 181.
- Reconstruct the south half of the SR 181 interchange, including extending Tukwila Parkway east to SR 181 over the Green River and constructing a new on-ramp from Tukwila Parkway to northbound I-405.
- Improve the north half of the SR 181 interchange and local arterials within the interchange area.
- Construct or modify six bridges over the Green River, lower the Green River Trail, and realign the Interurban Trail.

East of SR 181 to North of SR 169

- Construct one additional lane in both directions on I-405 from SR 181 through SR 167.
- Construct a new split-diamond interchange at Lind Avenue and at SR 515 (Talbot Road), with connecting northbound and southbound frontage roads.
- Replace I-405 bridges at Lind Avenue and at SR 515.
- Construct a general-purpose direct-connector ramp between southbound I-405 and southbound SR 167.
- Construct exterior ramps from northbound I-405 to and from SR 167.
- Reconstruct East Valley Road between SW 16th Street and SW 23rd Street.
- Construct two additional lanes in both directions on I-405 from SR 167 through SR 169.
- Construct an auxiliary lane on northbound SR 167 from South 180th Street to I-405.
- Replace/construct four bridges over the Cedar River. These bridges are northbound and southbound I-405, the Burlington Northern Santa Fe Railroad, and a pedestrian bridge.
- Replace the two local street accesses to Renton Hill.
- Close Houser Way and reroute traffic to restriped Bronson Way.

HOV Direct Connectors between I-405 and SR 167

- Construct HOV direct-connector ramps in both directions between the south leg and east leg of the I-405/SR 167 interchange (i.e. from southbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405).

Definition of the Project Area of Potential Effects (APE)

The Project APE includes an Archaeological APE and a Historic Structures APE. The Archaeological APE is defined as the area within which all ground disturbance will take place, and thus where potential effects to archaeological remains may occur. Project activities and structures that will produce ground disturbance include grading, pilings for new bridge structures, retaining walls, noise walls, detention ponds, conveyances, and ecology embankments, which are shown on the attached plan sheets. The archaeological APE is confined largely to the existing I-405 right-of-way, SR 167 and SR 515, but also includes intersections that provide access to I-405 and some properties adjacent to the I-405 right-of-way.

The historic structures APE is defined as the area adjacent to I-405 and SR 167 rights-of-way, and the intersections where improvements are scheduled, where there is a possibility of indirect effects to historic structures. The historic structures APE boundary

encompasses either one tax lot on each side of the I-405 and SR 167 rights-of-way and the feeder intersections and connector streets or 200 feet from their margins, whichever is less. This definition was chosen for several reasons:

- The project area vicinity is an extensively developed commercial and industrial zone where proposed improvements (four lanes to six lanes of elevated structures and deeply bedded road grade, and adding dedicated left-turn lanes to existing feeder intersections) will not substantially change viewscales in this highly urbanized area.
- Many residential lots along SR 167 and commercial lots along I-405 in this industrialized area are large, with the existing structure located a considerable distance from the roadway. The planned work thus would not have an effect on character of the viewshed, noise level, or vibration level for properties more than 200 feet away from the right of way. Many homes along SR 167 have views to the roadways blocked by established vegetation.

The project APE is shown as the red line on the enclosed aerial photo-based maps.

To ensure that we take into account the effects of this undertaking on properties listed in or eligible for listing in the National Register of Historic Places, WSDOT is initiating formal Section 106 consultation pursuant to 36 CFR 800.2(c)(4). Recognizing the government-to-government relationship that the FHWA has with the tribe, they will continue to play a key role in this undertaking as the responsible Federal agency. However, since the WSDOT has been delegated the authority from FHWA to initiate consultation and we will be directly managing the cultural resources studies and carrying out this undertaking, you may contact us for assistance with the process and/or undertaking.

Separate from the Section 106 consultation process we would also like to have your feedback on how the project might affect natural resources important to your tribe. We also invite you to comment on the project's proposed Area of Potential Effect as shown on the attached maps.

Please respond to this letter with a letter or e-mail acknowledging your interest in participating in this undertaking as a consulting party and identifying key tribal contacts for both cultural resources and natural resources. We request your response and comments by **December 10, 2006**. Should you have any questions about this project, you may contact me at 425.450.8610 or rayalli@wsdot.wa.gov

If you have any questions about the Section 106 process, you may contact Ken Juell, WSDOT-Urban Corridor's Office Cultural Resource Specialist at 206-464-1236 or JuellK@wsdot.wa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Allison Ray". The signature is fluid and cursive, with the first name "Allison" written in a larger, more prominent script than the last name "Ray".

Allison Ray
I-405 Environmental Manager

Enclosures

cc: Andrea Spencer, Yakama Natural Resources, w/o enclosures
Kate Valdez, Yakama Cultural Resources, w/o enclosures
Steve Boch, FHWA, w/o enclosures
Ken Juell, WSDOT UCO, w/o enclosures
Barbara Bundy, WSDOT UCO, w/o enclosures
Sandie Turner, WSDOT HQ, w/o enclosures
Colleen Jollie, WSDOT HQ, w/o enclosure

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APPENDIX C SECTION 106 PROGRAMMATIC AGREEMENT

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PROGRAMMATIC AGREEMENT
Pursuant to Section 106 of the National Historic Preservation Act of 1966

Among

**The Federal Highway Administration,
The Washington State Historic Preservation Officer,
The Washington State Department of Transportation,
The Muckleshoot Indian Tribe, and
The Snoqualmie Indian Tribe**

**For Improvements to Interstate 405 (I-405) Corridor,
King County and Snohomish County, Washington**

WHEREAS, the U.S. Department of Transportation, Federal Highway Administration (FHWA), may provide assistance to the Washington State Department of Transportation (WSDOT) to make improvements to Interstate Highway 405 Corridor in King County and Snohomish County, Washington (the program), to provide multi-modal congestion relief; and

WHEREAS, FHWA issued a corridor level Record of Decision (ROD) under the National Environmental Policy Act (NEPA) for the program on October 9, 2002, covering the Selected Alternative, as identified in the ROD, which attempts to substantially improve mobility options for all travel modes and to provide a high capacity transit system throughout the study area, as described in the final environmental impact statement (FEIS) issued by the FHWA as FHWA-WA-EIS-01-01-F, approved on June 10, 2002 and issued on June 28, 2002; and

WHEREAS, the improvements within the I-405 Corridor program have been divided into individual projects for design and funding purposes; and

WHEREAS, some of the projects are not yet fully funded, meaning that some properties which are planned to be purchased are not currently available and/or may be inaccessible for study; and

WHEREAS, the projects may be implemented using a design-build procurement process, which integrates the final design and construction phases; and

WHEREAS, the design-build process requires flexibility in the location of certain ground-disturbing elements, including but not limited to stormwater detention ponds and ecology embankments, meaning that the location of some ground-disturbing elements may not be known until immediately prior to construction; and

WHEREAS, a NEPA environmental analysis which, among other things, considers impacts to historic properties in coordination with provisions of the NHPA, will be conducted for each individual project; and

WHEREAS, according to 36 CFR § 800.16 (l) historic property “means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria;” and

WHEREAS, FHWA and WSDOT, in consultation with the Washington State Historic Preservation Officer (SHPO) and affected and interested Indian tribes, will conduct cultural resource studies for each individual project to identify and evaluate historic properties located within the project’s Area of Potential Effects (APE) which are listed in or eligible for listing in the National Register of Historic Places (National Register); and

WHEREAS, FHWA and WSDOT have determined that the design-build process and phased funding for the projects means that some of the project effects upon historic properties can not be determined until property is acquired or the design is completed by the design/build contractor, and that this Agreement is authorized by 36 C.F.R. § 800.14(b)(1)(ii); and

WHEREAS, FHWA and WSDOT have determined, in consultation with SHPO, that the APE for the projects, as defined in 36 CFR § 800.16(d) of the Council’s regulations, are defined as (1) all areas where ground disturbance is planned, including but not limited to: clearing and grubbing, grading, bridge foundations, retaining walls, noise walls, detention ponds, conveyances, and ecology embankments, creation or enhancement of wetland mitigation sites, and staging and stockpiling areas, and (2) historic properties located either one tax lot on each side of the affected rights-of-way or 200 feet from their margins, whichever is less; and

WHEREAS, the Advisory Council on Historic Preservation has been invited to participate in the development of this Agreement, and has declined to participate; and

WHEREAS, the following parties have been consulted and invited to concur with this Agreement: Muckleshoot Indian Tribe, Snoqualmie Tribe, Tulalip Tribes, Yakama Nation, and Duwamish Tribe; and

WHEREAS, the Muckleshoot Indian Tribe and Snoqualmie Indian Tribe have agreed to be concurring parties to this Agreement, and

WHEREAS, the Yakama Nation, the Duwamish Tribe, and the Tulalip Indian Tribes have chosen to not participate in this Agreement; and

WHEREAS, pursuant to 36 CFR § 800.2(c)(4) FHWA has authorized WSDOT to initiate consultation with SHPO, but still retains legal responsibility for all findings and determinations of eligibility and effect; and

WHEREAS, pursuant to 36 CFR § 800.13, FHWA WSDOT, and SHPO have developed procedures in this Agreement to ensure that the identification and evaluation of historic properties, assessment of effects, and development of treatment and mitigation plans for

unforeseen effects to previously identified historic properties and/or historic properties discovered during implementation of the projects are properly coordinated with all phases of the design and construction of the projects; and

NOW, THEREFORE, FHWA, WSDOT and SHPO agree that the projects shall be implemented in accordance with the following stipulations in order to take into account foreseen and unforeseen future effects to historic properties.

STIPULATIONS

FHWA, in coordination with WSDOT, will ensure that the following measures are carried out.

I. GENERAL PROCESS FOR CONSIDERATION OF HISTORIC PROPERTIES

- A. Prior to concluding the project-specific NEPA process, FHWA and WSDOT shall conduct a cultural resources survey to identify and evaluate historic properties in areas where project effects can be predicted prior to final design or purchase. For some of the I-405 projects, these surveys are already underway. For each survey:
 - 1. Consulting parties will have the opportunity to review and comment on the project's Area of Potential Effects.
 - 2. All potentially historic above-ground structures will be evaluated in the survey report. Level of evaluation may vary and will be determined in consultation with DAHP.
 - 3. Archaeological survey will be conducted in known and accessible areas of proposed ground disturbance within funded portions of the project.
 - 4. Consulting parties will be notified of any archaeological finds, and offered the opportunity to comment on evaluation methods and observe fieldwork.
 - 5. All consulting parties will be afforded the opportunity to review and comment on the results of the survey, and on the historic properties determinations made by FHWA, per 36 CFR § 800.4.
- B. After design of project elements, or after purchase of property, whichever is appropriate depending on the level of design detail needed, FHWA and WSDOT will conduct studies as described in Stipulations III and IV for project elements that were not previously considered as described in Stipulation I.A.
- C. FHWA and WSDOT will ensure that all work under this Agreement is performed by or under the direct supervision of a qualified individual(s) in the appropriate historic preservation discipline who meets, at a minimum, the Secretary of Interior's Professional Qualification Standards as set forth in 36 CFR § 61. Under certain circumstances it may be appropriate to have a tribal monitor (who is not required to meet the Secretary of Interior's Professional Qualification Standards) involved in the work being performed.

- D. FHWA and WSDOT affirm that avoidance of adverse effects to historic properties remains the preferred course of action and that design activities may include the shifting of project elements if feasible to avoid adverse effects to historic properties.
- E. If adverse effects to historic properties cannot be avoided, FHWA and WSDOT will seek to resolve the adverse effect in consultation with the signatories, consulting parties, and the public, as described in 36 CFR § 800.6 and further explained in Stipulation VI.
- F. FHWA and WSDOT will ensure that the design-build contractor is aware of, understands, and complies with the requirements of this Agreement. The design-build contractor shall ensure that its sub-contractors comply with the requirements of this Agreement. Compliance with this Agreement shall be required as part of the project contract and will be included in the project contract.

II. PUBLIC PARTICIPATION

- A. FHWA and WSDOT will ensure opportunities for public participation for Section 106-related activities conducted after the project-specific NEPA process is complete. Modified versions of reports on historic properties (locational information removed as appropriate, in accordance with state and federal laws) will be made available for review to the general public at the I-405 Project Office, or on the WSDOT website, or through other reasonable means. The views of interested parties and the general public will be considered by FHWA and WSDOT with respect to the terms of this Agreement.
- B. To the extent required by Section 304 of the NHPA and Section 9 of the Archaeological Resources Protection Act of 1979 (ARPA) (16 U.S.C. 470hh), the signatories and participating concurring parties to this Agreement will withhold from disclosure to the public information about the location, character, or ownership of a historic property until the Secretary of the Interior can determine whether disclosure may (1) cause a significant invasion of privacy, (2) risk harm to a historic property, or (3) impact the significance or use of a traditional religious site by practitioners. To the extent authorized by state and federal law, information will also be withheld from disclosure at the owner's request.

III. POST-NEPA CONSIDERATION OF PREVIOUSLY INACCESSIBLE PROPERTY

- A. In certain circumstances, cultural resource investigations are not possible or practicable at the time of the NEPA analysis due to private ownership or physical inaccessibility. In these cases, cultural resource investigations may be deferred until the property has been acquired by WSDOT.
- B. Once properties have been acquired by WSDOT, and sufficient design detail is available to know where ground disturbance will occur, FHWA and WSDOT, will work together to determine whether proposed activity at the property has the potential to affect historic

properties. This determination may be made using the terrain map described in Stipulation IV.C. WSDOT will notify SHPO and the concurring parties of the determination via email and telephone. SHPO and the concurring parties will review the documentation and respond within thirty (30) calendar days.

- C. FHWA and WSDOT, in consultation with SHPO and the concurring parties, may determine that further study is necessary. This may require fieldwork, including pedestrian survey and subsurface testing.
- D. If subsurface testing is required to determine whether archaeological resources are present, WSDOT will obtain the concurrence of FHWA prior to notifying the design-build contractor, if under contract. The maximum extent of construction-related ground disturbance will be defined and flagged by the design-build contractor, if under contract, or by WSDOT.
- E. WSDOT will arrange to have the fieldwork conducted by a qualified professional, consistent with Stipulation I.C.
- F. Testing must be consistent with the I-405 Corridor Program Cultural Resources Assessment Guidelines (Appendix A).

IV. DESIGN-BUILD PROCEDURES

- A. Due to the nature of the design-build process, the exact location of some ground disturbing project elements, such as support columns, detention ponds, or stormwater conveyance alignments, will be designed by the design-build contractor. The interval between the design of an element and its construction may be too short to perform standard Section 106 identification, evaluation, and assessment of effects on an historic property.
- B. Adverse effects on archaeological historic properties will be prevented or minimized in two ways: a phased series of terrain surveys to identify completely disturbed, covered-by-fill, and relatively lightly disturbed areas, assuming that disturbance is the largest factor affecting archaeological potential (Stipulation IV.C.); and development of streamlined protocol for resource review and resolution of adverse effects (Stipulations V and VI.A.).
- C. The archaeological potential of specific terrain areas within the I-405 project areas, based on extent and type of previous ground disturbance, will be established using the following methods:
 - 1. Within each project area, WSDOT Cultural Resources Specialists (CRS) will determine the archaeological potential of specific zones based on the locations of the original cut-and-fill lines and corresponding extent of disturbance for the construction of I-405 using low-elevation aerial photographs, as-built maps, recent topographic

- maps produced by I-405 program, previous archaeological studies, and ground reconnaissance.
2. The CRS will verify existing terrain conditions by windshield survey, pedestrian survey, and shovel/auger/probe testing as necessary. Specific terrain zones will be delineated precisely on a map.
 3. Zones where Holocene era native surfaces and post-glacial soils and sediments have been removed entirely will be considered “Unrestricted.” The design-builder may locate any ground-disturbing project element in an Unrestricted Zone without any further cultural resources review.
 4. Zones identified as having deep fill, where native soils and possibly buried surfaces still may be present under the fill will be classified as “Fill Zones.” Each fill zone will be labeled on the map with a number indicating estimated depth of fill. The design-builder may locate any ground-disturbing project element in a Fill Zone when design indicates disturbance will not exceed three-quarters (3/4) the fill depth (to account for over-excavation).
 5. Zones identified as having little to no previous ground disturbance, where native sediments and buried surfaces are likely to be present will be classified as “Restricted Zones.” The design-builder may NOT locate any ground-disturbing project element, regardless of the depth of the projected ground disturbance, in a Restricted Zone until it is reviewed and approved (in email or letter) by the WSDOT in consultation with interested and affected tribes and SHPO (see Stipulation IV.D).
 6. WSDOT will provide a printed map showing the locations of Unrestricted, Fill, and Restricted Zones, and an electronic data file of the map, to the interested and affected tribes and SHPO.
 7. Tribes and SHPO will have thirty (30) calendar days to review the map and associated documentation.
 8. WSDOT CRS will amend the map based on tribal and SHPO comments, if necessary, and provide a final paper map and electronic file to the Tribes, SHPO, FHWA, and the design-build contractor.
- D. If the design-build contractor wishes to change the location of a ground-disturbing project element within a Restricted Zone or to a Restricted Zone, the contractor must notify WSDOT 15 days prior to scheduled ground disturbance. WSDOT CRS will review the project element description and location.
1. The WSDOT CRS will determine, in consultation with interested and affected tribes and SHPO, whether a cultural resources survey is required. Survey will only be required if the area has not already been adequately investigated or characterized. If a

survey is required, it must be consistent with the I-405 Corridor Program Cultural Resources Assessment Guidelines (Appendix A).

2. If a survey is required, WSDOT will notify FHWA prior to notifying the design-build contractor, if under contract. The maximum extent of construction-related ground disturbance will be defined and flagged by the design-build contractor, if under contract, or by WSDOT. WSDOT will arrange to have the archaeological work conducted by a qualified professional, consistent with Stipulation I.C.
 3. DAHP and the interested and affected tribes will have ten (10) calendar days to review the survey results and either concur with the findings, or notify WSDOT and FHWA that DAHP does not concur.
 4. WSDOT will ensure that no more than two (2) project elements are under review at any time by DAHP and the interested and affected tribes.
 5. Work will not proceed until a survey has been completed, tribes have been consulted, and SHPO has concurred with the findings of the survey, per provisions of 36 CFR § 800.
- E. Staging, parking, or material storage areas, or temporary buildings (hereafter, “staging areas”), may be located on any paved or prepared gravel surface, provided that the use will not require penetrating the pavement or gravel surface. For staging areas not on paved or prepared gravel surfaces, or penetrating through those surfaces:
1. Within the right-of-way, the contractor may locate staging areas in an unrestricted zone regardless of planned ground disturbance, or in a fill zone as long as planned ground disturbance is less than 3/4 of the known depth of the fill. In a restricted zone, the staging area must be reviewed as in Stipulation IV.D.
 2. Outside the right-of-way, any staging, parking, or material storage areas, or temporary buildings not located on pavement or prepared gravel surfaces must be reviewed as in Stipulation IV.D.

V. COORDINATION OF REVIEWS

- A. Consulting parties and SHPO will have a review period of thirty (30) calendar days for commenting on all documents, resource evaluations of significance, treatment plans and specifications under the terms of this Agreement, except as described in Stipulation IV. D.3. If multiple historic properties are involved, the review time may be extended, as appropriate, by FHWA.
- B. SHPO and the other consulting parties recognize the time-sensitive nature of the project work and will attempt to expedite comments or concurrence when requested, if possible. If SHPO or other consulting parties fail to provide comments within the designated

review period, FHWA will assume their concurrence and proceed with the proposed action or activity.

VI. POST-NEPA AND POST-REVIEW DISCOVERIES

- A. If an archaeological resource is identified in a Fill or Restricted Zone during subsurface testing associated with design-build project elements, and cannot be avoided by project redesign, it will be considered eligible for listing in the National Register of Historic Places and subjected to mitigation measures (including but not necessarily limited to data recovery), following procedures outlined in 36 CFR § 800.13(b) and § 800.13(c). Mitigation measures will be determined in consultation with the consulting parties.
- B. If WSDOT or FHWA, in consultation with DAHP and interested and affected tribes, determines that an archaeological resource is not eligible for listing in the National Register of Historic Places, work may proceed with no further cultural resources investigation.
- C. If previously unidentified archaeological resources are identified during ground-disturbing activities during the construction or during post-construction maintenance or improvement, such activities shall cease in the immediate area of the discovery and the WSDOT I-405 Environmental Manager will follow the procedures outlined in the I-405 Corridor Unanticipated Archaeological Discovery Plan (Appendix B) .

VII. DISPUTE RESOLUTION

- A. Should any consulting party object, in writing, within five (5) calendar days to the implementation of the terms of this Agreement, FHWA and WSDOT shall work with the disputing party to resolve the dispute. If FHWA determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council) and request that the Council comment.
- B. Any Council comment provided in response to such request shall be taken into account by the FHWA in accordance with 36 CFR § 800.7(c)(4) with reference only to the subject of the dispute. The FHWA responsibility to carry out all other actions and activities under this Agreement that are not the subject of the dispute remain unchanged.

VIII. AMENDMENTS AND NONCOMPLIANCE.

- A. If FHWA, WSDOT, or SHPO determines that the terms of this Agreement will not or cannot be carried out or that an amendment to its terms must be made, that party shall provide a written explanation for such a determination to all signatories and immediately consult with the other signatories to develop an amendment to this Agreement. The

amendment will be effective on the date a copy is signed by FHWA, SHPO, and WSDOT.

- B. If the signatories cannot agree to appropriate terms to amend this Agreement, any one of these parties unilaterally may terminate the agreement in accordance with Stipulation X, below.

IX. EMERGENCY SITUATIONS

Should an emergency situation occur which represents an imminent threat to public health or safety, or creates a hazardous condition, the FHWA and WSDOT shall immediately notify SHPO and consulting parties of the situation and the measures taken to respond to the emergency or hazardous condition. Should SHPO or consulting parties desire to comment or provide technical assistance to the WSDOT, they shall immediately notify WSDOT via email and telephone of their intent to submit comments and shall submit the comments within five (5) calendar days of WSDOT's initial notification, if the nature of the emergency or hazardous condition allows for such coordination.

X. TERMINATION

- A. If FHWA or WSDOT determines that it cannot implement the terms of this Agreement, or if SHPO determines that this Agreement is not being properly implemented, FHWA, WSDOT, or SHPO may propose to the other parties that the Agreement be terminated.
- B. The party proposing to terminate this Agreement shall notify all parties to this Agreement accordingly in writing, explaining the reasons for termination and affording them at least thirty (30) days to consult and seek alternatives to termination.
- C. Should such consultation fail and this Agreement is terminated, the FHWA shall either:
 - 1. Consult in accordance with 36 CFR § 800.6 to develop a new Agreement; or
 - 2. Request the comments of the Council pursuant to 36 CFR § 800.7 and take into account such comments in accordance with such section prior to continuing the project.

By:

Federal Highway Administration, Division Administrator

Daniel M. Mathis

Date

Washington State Department of Transportation, Urban Corridors Office, Deputy Administrator

Craig Stone

Date

Washington State Historic Preservation Officer

Allyson Brooks

Date

Concur:

Muckleshoot Indian Tribe, Chairperson

Charlotte Williams

Date

Snoqualmie Tribe, Chairperson

Bill Sweet

Date

Appendices:

Appendix A: I-405 Corridor Program Cultural Resources Assessment Guidelines

Appendix B: I-405 Corridor Program Unanticipated Archaeological Discovery Plan

APPENDIX D SR 515 (TALBOT ROAD) INTERCHANGE PROJECT

Introduction

The SR 515 (Talbot Road) Interchange Project will be the next stage towards building the Tukwila to Renton Project. The SR 515 Interchange Project is funded through the 2005 Transportation Partnership Account and is scheduled to be completed in 2011. The Tukwila to Renton Project is very expensive and will be constructed in stages as funding becomes available.

As part of the I-405 Corridor Program, the SR 515 Interchange Project will construct a half-diamond interchange on I-405 at SR 515. This interchange will allow access from SR 515 to northbound I-405, and from southbound I-405 to SR 515. The new interchange will improve access to and from Renton, and relieve congestion at the I-405 interchanges at SR 167 and SR 169, and the SR 167/SW 43rd Street interchange.

Transportation Analysis

Current Configuration

Currently, there is no access to I-405 via SR 515. Vehicles destined to northbound I-405 from SR 515 must use local streets to travel to the I-405 interchanges at SR 167 and SR 169, or the SR 167/SW 43rd Street interchange. southbound I-405 vehicles traveling to SR 515 currently exit at one of these three interchanges, and use local streets to travel to SR 515.

At the intersection of SR 515 and S Puget Drive, southbound SR 515 has an exclusive left-turn lane and a shared through and left-turn lane.

Proposed Configuration

The proposed improvements include:

- Adding a new on-ramp from SR 515 to northbound I-405.
- Adding a new off-ramp from southbound I-405 to SR 515.
- Improving SR 515 between S Puget Drive and S Renton Village Place with a slight realignment of S Renton Village Place to align with the new off-ramp.

With the new SR 515 ramps, vehicles coming from neighborhoods along SR 515 will have a direct connection to northbound I-405. southbound I-405 vehicles traveling to the areas along SR 515 will have a shorter trip with the new off-ramp.

Traffic Analysis

Traffic analyses were conducted to compare future I-405 operations and local street operations with and without the proposed SR 515 half-diamond interchange in 2014 and 2030. These analyses determined that I-405 will perform similarly with and without the SR 515 Project. The proposed SR 515 interchange will not change the number of drivers on I-405, but will change where some drivers access the freeway. The SR 515 interchange will reduce traffic volumes and improve local street operations at the I-405 interchanges at SR 167 and SR 169, and the

SR 167/SW 43rd Street interchange, as well as the local streets around these interchanges. The SR 515 interchange will reduce traffic volumes at the I-405/SR 169 interchange by 350 to 500 vehicles during the 2014 morning and afternoon peak hours. The SR 515 interchange will also reduce traffic at the I-405/SR 167 and SR 167/SW 43rd Street interchanges by 200 to 350 vehicles during the 2014 morning and afternoon peak hours.

The proposed SR 515 interchange will move more traffic through the local streets with little change in intersection delay. With the project, all intersections on SR 515 will operate at level of service (LOS) D or better in both 2014 and 2030. The SR 515 intersection with S Puget Drive will perform better with the SR 515 interchange because of improvements to the intersection. Exhibit D-1 shows the LOS for intersections along SR 515, with and without the interchange project, during the 2014 and 2030 morning and afternoon peak hour.

Exhibit D-1: SR 515 Intersection Peak-Hour Level of Service with and without the SR 515 Interchange

SR 515 Intersections	2014 without SR 515 Interchange		2014 with SR 515 Interchange		2030 without SR 515 Interchange		2030 with SR 515 Interchange	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
S Grady Way	C	C	D	C	D	C	D	C
SB I-405 Off-ramp/ S Renton Village Place	A	B	B	B	A	B	B	B
NB I-405 On-ramp	N/A	N/A	A	A	N/A	N/A	A	A
S Puget Drive	E	C	C	B	E	D	D	C

Safety Review

A crash analysis was done on I-405 in the vicinity of the proposed SR 515 interchange for the three years from October 1, 2003 to September 30, 2006. A total of 567 crashes were reported on I-405 between SR 167 and SR 169, none of which were fatalities. This section of I-405 has an average crash rate of 2.21 crashes per million vehicle miles of travel, which is higher than the average for the whole I-405 corridor and the northwest region of Washington State.

Congestion-related crashes (rear-ends and sideswipes) account for 78 percent of the total crashes on this section of I-405.

With the SR 515 interchange, an increased possibility of crashes will occur where drivers will need to merge to enter or exit I-405 at SR 515. However, the vehicles making these maneuvers will be shifted from the I-405 interchanges at SR 167 and SR 169, and the SR 167/ SW 43rd Street interchange; no new vehicles will be making these maneuvers. So, while crashes are expected to increase around the new SR 515 interchange, crashes are anticipated to decrease at the I-405 interchanges at SR 167 and SR 169, and the SR 167/SW 43rd Street interchange. Six of the I-405 ramps at the SR 167 and SR 169 interchanges are High Accident Locations (HALs). The SR 515 Project will decrease traffic volumes on three of these ramps and should reduce the crashes at these locations:

- southbound I-405 off-ramp to northbound SR 167;
- northbound I-405 on-ramp from northbound SR 167; and
- northbound I-405 on-ramp from northbound SR 169.

A crash analysis was performed on SR 515 between S Puget Drive and S Grady Way (0.45 miles) and showed a total of 66 crashes in the last three years; 32 were rear-end crashes, and none were fatal accidents. The intersection at SR 515 and S Grady Way had the highest concentration of crashes, with a total of 34 crashes, including 14 rear-end and 12 angle/left-turn crashes. The addition of the I-405 ramps will introduce one new intersection in this area, increasing the possibility of crashes at that location. However, this slight increase should be offset by the likely reduction of crashes at the I-405 interchanges at SR 167 and SR 169, and the SR 167/SW 43rd Street interchange.

Summary of Traffic Effects

The SR 515 Interchange Project is one step in implementing the Tukwila to Renton Project and the I-405 master plan for this section of freeway. The SR 515 interchange will improve access to the City of Renton and will divert traffic volumes from the congested I-405 interchanges at SR 167 and SR 169, and the SR 167/SW 43rd Street interchange, improving operations at these three interchanges.

Stormwater Analysis

To accommodate the SR 515 Interchange Project a temporary stormwater detention pond (as shown in sidebar exhibit) needs to be built that is not shown in the body of this EA. Until the remainder of the Tukwila to Renton Project is built, this pond will treat stormwater from the SR 515 half-diamond interchange and discharge treated water into Rolling Hills Creek. This pond will be removed when other parts of the project are completed. We do not anticipate that discharge from the temporary detention pond will have any effects on Rolling Hills Creek.

Water quality facilities will be constructed to operate in conjunction with this stormwater pond; however, the water quality facilities will remain as part of the overall Tukwila to Renton Project and will not be removed with the pond.

To construct this pond, it will be necessary to acquire one home. WSDOT currently plans to acquire this property to build the Tukwila to Renton Project northbound frontage road connecting Talbot Road and Lind Avenue. Therefore, construction of this pond does not add to the right-of-way acquisition or the relocations that are discussed in the Tukwila to Renton Project Environmental Assessment.

Noise Analysis

This noise analysis evaluated project effects on communities located near design modifications for the SR 515/I-405 half-diamond interchange. The noise levels experienced by residences located behind Noise Barrier East 5B (located southeast of the I-405/SR 167 interchange), Noise Barrier 8 (located near the Berkshire Apartments, east of the SR 515/I-405 interchange), and Noise Barrier 9 (located near the Defoor Property, east of I-405 along Renton Hill) were evaluated in these areas.

Renton Nickel Noise Barrier East 5B Modification

Noise Barrier East 5 is planned for construction as part of the Renton Nickel Improvement Project. The SR 515/I-405 interchange improvements make modifications to Noise Barrier East 5 necessary. The modified Noise Barrier East 5 is renamed Noise Barrier East 5B. Noise Barrier East 5B is located along the southern right-of-way of I-405 along S 14th Street beginning approximately 250 feet west of SR 515 to the east and ending west of the S 14th Street/S 15th Street intersection atop Talbot Hill (see Exhibit D-2 below). Noise levels in the vicinity of Noise Barrier East 5B were predicted to range between 66 and 72 dBA without a noise barrier.

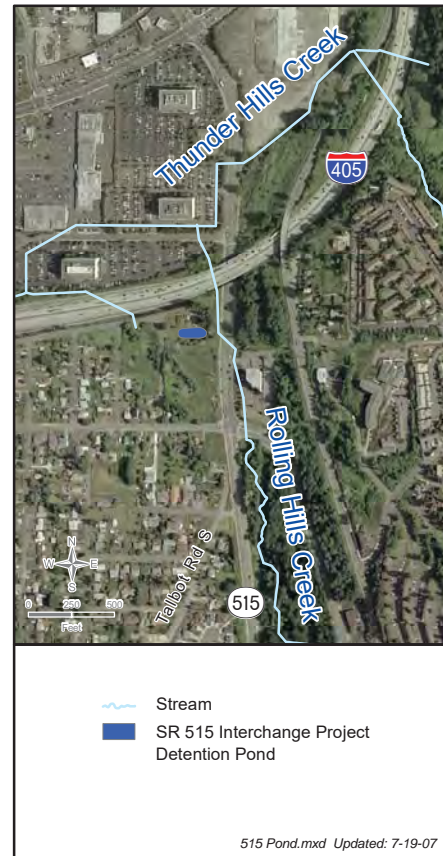


Exhibit D-2: Renton Nickel Noise Barrier East 5B Modification



In accordance with WSDOT perpetuity standards, Noise Barrier East 5B must be relocated to a position that provides residences in the Talbot Hill area with shielding effects that are comparable to those of Noise Barrier East 5 in its original position. Noise Barrier East 5B will have the same 18-foot height as it was originally designed. However, it will be approximately 300 feet shorter in length because the two potentially noise-sensitive residences in the area to the east of the old Smithers Avenue S will be acquired for an interim construction stage. The length of Noise Barrier East 5B will be approximately 1,860 feet and it will remain at a height of 18 feet.

Shortening the length by 300 feet off the eastern end of Noise Barrier 5B does not change noise reductions initially provided by Noise Barrier 5 at the remaining residences located behind Noise Barrier 5B.

Increasing the height of Noise Barrier 5B from 18 feet to 24 feet provided a maximum reduction of 2 dBA for the 21 residences represented by Modeled Sites 24, 28, and 29. This modification to Noise Barrier East 5B will not provide a 7 dBA reduction in I-405 traffic noise levels for any of the residences represented by Modeled Sites 23, 24, 27, 28, and 29. For this reason, an upgrade to Noise Barrier East 5B is not feasible.

The modification of Renton Nickel Noise Barrier East 5B was not considered feasible because increasing its height from 18 feet to 24 feet will not provide a 7 dBA reduction in I-405 traffic noise levels for any of the residences represented by Modeled Sites 23, 24, 27, 28, and 29, as shown in Exhibit D-3.

Exhibit D-3: Noise Barrier East 5B – 24 feet tall

Modeled Site	Residences Represented	Leq (dBA)	Allowed Barrier Area (ft ²)	Noise Level with Barrier Modification	Reduction (dBA)
23	5	63	0	61	2
24	6	63	0	62	1
27	6	63	0	62	1
28	8	64	0	63	1
29	7	63	0	61	2
Total Barrier Area (ft²)			0	43,526	
Planning-Level Cost (\$)			\$0	\$2,324,288	

Noise Barrier 8 (Feasible, Reasonable)

The area just east of Benson Road S and continuing atop the hillside adjacent to the Berkshire Apartments was evaluated for a noise barrier (see Exhibit D-4). This noise barrier was evaluated along the new WSDOT right-of-way line from Benson Road S, continuing north to approximately 200 feet beyond the Berkshire Apartment property. The placement of Noise Barrier 8 in this evaluation differs from what was included in the I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2) analysis, because the previous analysis evaluated Noise Barrier 8 along the shoulder of northbound I-405 lanes. Noise levels in the area of Noise Barrier 8 range from 54 dBA to 71 dBA.

It is important to note that acquisitions are anticipated for the design of the SR 515/I-405 half-diamond interchange. Planned acquisitions include two apartment buildings within the Berkshire Apartment complex and full or partial acquisitions of several single-family residential parcels, including some residential structures along I-405 and Benson Road S.

Exhibit D-4: Location of Noise Barrier 8



At a height of 20 feet, Noise Barrier 8 provides a maximum noise reduction of 12 dBA for four second-floor residences represented by Modeled Site 33A(2). Modeled Sites 32A, 33A, and 33D represent all nine first-row residences, which experience a reduction of 5 dBA or more. Receptors 33A(2), 33D(2), 33F, 33F(2), 33G, and 33G(2)—which represent 21 ground-floor and second-floor residences—are predicted to achieve reductions that range from 3 dBA to 12 dBA.

Noise Barrier 8 meets WSDOT feasibility criteria at a height of 20 feet, because a 7 dBA reduction is achieved and a reduction of 5 dBA or greater is provided at most first-row residences. An area of approximately 21,911 square feet and a length of 1,096 feet are required for Noise Barrier 8 at this height. Noise Barrier 8 would force utility line relocation in the area north of the Berkshire Apartments. Utility relocation costs of \$40,000 are included in the evaluation of reasonableness shown in Exhibit D-5. Based on the WSDOT mitigation allowance, the allowable area that the residences in the vicinity of Noise Barrier 8 can receive is 24,406 square feet, as shown in Exhibit D-5. The optimal barrier height for Noise Barrier 8 is 20 feet.

Exhibit D-5: Allowed Barrier Area for Noise Barrier 8 – 20 feet tall

Modeled Site	Residences Represented	L_{eq} (dBA)	Allowed Barrier Area (ft ²)	Noise Level with Barrier (dBA)	Reduction (dBA)
32A	2	71	2,080	66	5
32B	3	69	0	67	2
33A	4	66	2,800	57	9
33A(2)	4	71	4,160	59	12
33B	4	54	0	52	2
33B(2)	4	54	0	53	1
33C	3	56	0	55	1
33C(2)	3	58	0	56	2
33D	3	65	2,100	56	9
33D(2)	3	69	2,712	61	8
33E	3	55	0	54	1
33E(2)	3	57	0	55	2
33F	3	64	2,100	59	5
33F(2)	3	67	2,304	62	5
33G	4	66	2,800	63	3
33G(2)	4	68	3,344	65	3
TOTAL Barrier Area (ft²)			24,400	21,911	
Utility Relocation Cost (\$)			--	40,000	
Planning-Level Cost (\$)			\$1,302,960	\$1,170,047 + \$40,000 = \$1,210,047	

Additional barrier heights were evaluated to determine the optimal barrier height and potential noise reduction. At a height of 12 feet, Noise Barrier 8 provides a maximum noise reduction of 8 dBA for four ground-floor residences represented by Modeled Site 33A. Modeled Sites 32A and 33D represent the remaining five first-row residences, which all experience a reduction of 5 dBA or more. Receptors 33A(2), 33D(2), 33F, and 33F(2)—which represent 13 ground-floor and second-floor residences—are predicted to achieve reductions that range from 3 dBA to 7 dBA.

Noise Barrier 8 meets WSDOT feasibility criteria at a height of 12 feet, because a 7 dBA reduction is achieved and a reduction of 5 dBA or greater is provided at most first-row residences. An area of approximately 13,147 square feet and a length of 1,096 feet are required for Noise Barrier 8 at this height. Utility relocation costs of \$40,000 are including in the evaluation of reasonableness shown in Exhibit D-6. Based on the WSDOT mitigation allowance, the allowable area that the residences in the vicinity of Noise Barrier 8 can receive is 18,256 square feet, as shown in Exhibit D-6. The large amount of allowable wall area that remains available at the height of 12 feet indicates that additional noise reduction may be available by increasing the height of the barrier.

Exhibit D-6: Allowed Barrier Area for Noise Barrier 8 – 12 feet tall

Modeled Site	Residences Represented	L_{eq} (dBA)	Allowed Barrier Area (ft ²)	Noise Level with Barrier (dBA)	Reduction (dBA)
32A	2	71	2,080	68	3
32B	3	69	0	68	1
33A	4	66	2,800	58	8
33A(2)	4	71	4,160	64	7
33B	4	54	0	53	1
33B(2)	4	54	0	53	1
33C	3	56	0	55	1
33C(2)	3	58	0	58	0
33D	3	65	2,100	60	5
33D(2)	3	69	2,712	64	5
33E	3	55	0	54	1
33E(2)	3	57	0	57	0
33F	3	64	2,100	61	3
33F(2)	3	67	2,304	64	3
33G	4	66	0	64	2
33G(2)	4	68	0	66	2
TOTAL Barrier Area (ft²)			18,256	13,147	
Utility Relocation Cost (\$)			--	40,000	
Planning-Level Cost (\$)			\$974,870	\$702,050 + \$40,000 = \$742,050	

As shown in Exhibit D-7, Noise Barrier 8 was also evaluated at a height of 24 feet. As shown in Exhibit D-7, Noise Barrier 8 meets WSDOT criteria for feasibility at a height of 24 feet, because a 7 dBA noise reduction is experienced at several modeled sites and because all nine of the first-row residences represented by Modeled Sites 32A, 33A, and 33D achieve at least a 5 dBA noise reduction.

At a height of 24 feet, an area of approximately 26,293 square feet and a length of 1,096 feet are required for Noise Barrier 8. Utility relocation costs of \$40,000 are included in the evaluation of reasonableness shown in Exhibit D-7. Based on the WSDOT mitigation allowance, the allowable area that the residences in the vicinity of Noise Barrier 8 can receive is 24,406 square feet. Because the allowable area is less than the area needed for a 24-foot-tall barrier, the 24-foot height is not considered reasonable for Noise Barrier 8. A 0 dBA to 1 dBA reduction is predicted per benefited receiver with the 24-foot barrier design, compared to the 20-foot barrier design. Only two additional residences experience noise levels below the NAC when comparing the 24-foot height to the 20-foot height.

Exhibit D-7: Allowed Barrier Area for Noise Barrier 8 – 24 feet tall

Modeled Site	Residences Represented	L _{eq} (dBA)	Allowed Barrier Area (ft ²)	Noise Level with Barrier (dBA)	Reduction (dBA)
32A	2	71	2,080	65	6
32B	3	69	0	67	2
33A	4	66	3,072	56	10
33A(2)	4	71	4,160	58	13
33B	4	54	0	52	2
33B(2)	4	54	0	53	1
33C	3	56	0	55	1
33C(2)	3	58	0	56	2
33D	3	65	2,100	55	10
33D(2)	3	69	2,712	58	9
33E	3	55	0	54	1
33E(2)	3	57	0	55	2
33F	3	64	2,100	57	7
33F(2)	3	67	2,304	61	6
33G	4	66	2,800	62	4
33G(2)	4	68	3,344	64	4
TOTAL Barrier Area (ft²)			24,400	26,293	
Utility Relocation Cost (\$)			--	40,000	
Planning-Level Cost (\$)			\$1,302,960	\$1,404,046 + \$40,000 = \$1,444,046	

Noise Barrier 9 (Feasible, Not Reasonable)

A pocket of single-family residences located on Renton Avenue S, southeast of the southern limit of Mill Avenue S, were evaluated for a noise barrier. This noise barrier was evaluated along the WSDOT right-of-way line east of I-405. The residences in this area are located at a much higher elevation than the I-405 lanes. Noise levels predicted at the sensitive receptor sites in this area range from 65 to 71 dBA without a barrier.

The maximum reduction provided by Noise Barrier 9 was 8 dBA for the three residences represented by Modeled Site 35D. As shown in Exhibit D-8, Noise Barrier 9 meets WSDOT feasibility criteria at a height of 16 feet, because a 7 dBA noise reduction is experienced at Modeled Sites 35B and 35D and 9 of the 12 first-row residences represented by Modeled Sites 35B, 35C, and 35D achieve at least a 5 dBA noise reduction. At a height of 16 feet, an area of approximately 11,584 square feet and a length of 724 feet is required for Noise Barrier 9. Based on the WSDOT mitigation allowance, the allowable area that residences in the vicinity of Noise Barrier 9 can receive is 10,236 square feet. Because the allowable area is less than the area needed for the shortest barrier in both height (16 feet) and length (724 feet), Noise Barrier 9 is not considered to be reasonable.

Exhibit D-8: Noise Barrier 9 – 16 feet tall

Modeled Site	Residences Represented	Leq (dBA)	Allowed Barrier Area (ft ²)	Noise Level with Barrier	Reduction (dBA)
35A	3	65	2,100	62	3
35B	3	66	2,100	59	7
35C	3	71	3,120	66	5
35D	3	70	2,916	62	8
Total Barrier Area (ft²)			10,236	11,584	
Planning-Level Cost (\$)			\$546,602	\$618,586	

*Planning-level cost based on typical construction techniques and engineering for noise barriers with a maximum height of 24 feet.