

I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project (MP 0.0 to 11.9)

Attachment F: Visual Impact Assessment Discipline Report





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SUMMARY

The Washington State Department of Transportation (WSDOT) is proposing to construct the I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project (MP 0.0 to 11.9) (the Project) to improve traffic operations and safety on Interstate 405 (I-405) through Tukwila, Renton, and Bellevue.

The Project is part of a comprehensive strategy identified in the 2002 *I-405 Corridor Program Final Environmental Impact Statement* (EIS) and subsequent *Record of Decision* (ROD) to reduce traffic congestion and improve mobility along the state's second-busiest highway. The Project is needed because travelers on I-405 face one of the most congested routes in the state, particularly during peak travel times. This Project is one of several projects now being advanced as part of a phased implementation of the Selected Alternative. The 2015 Connecting Washington funding package passed by the state legislature provides funding for constructing the Project.

The Project proposes to make several roadway, structural, drainage, transit, and high-occupancy vehicle (HOV) improvements to the I-405 corridor. In general, the Project proposes to add one lane to I-405 in each direction for about 8 miles beginning on I-405 near State Route (SR) 167 and continuing approximately 1 mile north of Interstate 90 (I-90). The Project would also add a general purpose (GP) auxiliary lane to southbound I-405 between milepost (MP) 6.7 and 7.1 and MP 9.4 to 10.5. The existing HOV lane on I-405 and the additional lane would be operated as a two-lane express toll lane (ETL) system. This Project would link with other systems to create a 40-mile tolled system between Auburn on SR 167 and Lynnwood on I-405, thus providing, a more reliable trip throughout the region.

This visual impact assessment discipline report was prepared in support of the *I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Environmental Assessment* and documents the visual effects of the Project for both I-405 users and neighbors.

What is the purpose of this discipline report?

Visual quality is an important component of environmental quality that transportation projects can affect. Perceived visual effects often strongly influence community acceptance of any

transportation project. Because of the public nature and visual importance of transportation projects to both travelers and neighbors of the proposed facility, changes to the visual environment must be understood and addressed during project development.

A visual impact assessment evaluates the effects of the project on views both to and from the transportation facility and categorizes these impacts as beneficial, adverse, or neutral based on viewer preferences and sensitivity, as was identified during the public input phase of project development.

What is our study approach?

To evaluate the Project's effects on visual quality during construction and operation, the I-405 team used the methodology described in the Federal Highway Administration's (FHWA's) publication, *Guidelines for Visual Impact Assessment of Highway Projects* (FHWA 2015). This publication provides guidance that WSDOT follows to ensure that its projects comply with local, state, and federal laws and regulations pertaining to visual quality. The analysis determined visual quality effects for both I-405 users and neighbors.

What are existing conditions?

Existing conditions in the study area consist of highly visible urban areas where industrial and commercial elements dominate the views, as well as suburban neighborhoods, which are largely screened from I-405 by topography, noise walls, and existing vegetation. Where there is no screening, it is possible to glimpse Lake Washington to the west with Mercer Island in the background. To the east, unblocked views reveal wooded hillsides and residential neighborhoods.

How would the Project affect visual quality?

The Project would result in minor changes in visual quality experienced by I-405 users and neighbors. At several interchanges, such as 112th Avenue SE and NE 44th Street, freeway users would experience increased complexity due to increased development and encroachment—such as more pavement, traffic lanes, signs, walls, inline transit stations, and other transportation-related structures—thereby decreasing natural harmony and cultural order. Project coherence would

increase with the replacement of older structures with new structures that include the aesthetic treatments described in the *I-405 Urban Design Criteria* (WSDOT 2016). Although WSDOT would clear vegetation in select locations for construction access, the amount of clearing would be minimal and typically adjacent to the existing pavement, so that most vegetation along the right of way would be preserved. In most cases, except where vegetation is cleared to add new ETLs or structures, WSDOT would restore areas cleared for access with native vegetation to minimize impacts on natural harmony and cultural order over time.

For pedestrians and cyclists on the Lake Washington Loop Trail, the Project would enhance visual quality by relocating the trail to the Eastside Rail Corridor, thus, limiting exposure to and awareness of highway traffic, lights, and glare on I-405. In addition, the Project would construct a new trail under I-405 and restore May Creek to a meandering channel with native vegetation on either side of the new I-405 bridge overhead.

What measures will WSDOT use to avoid or minimize the Project's effects?

The Project is being planned, developed, and designed in accordance with Context Sensitive Solutions guidelines. These guidelines provide an approach that incorporates community values while meeting local, regional, and national requirements for the safe, efficient, and effective movement of people and goods. Context Sensitive Solutions consider the elements of mobility, safety, environment, and aesthetics throughout all phases of the project. Adhering to these guidelines, as encapsulated in the *I-405, Urban Design Criteria*, ensures that the project fits with its physical surroundings while preserving desirable visual quality to the greatest extent feasible.

What would happen if the Project is not built?

The No-Build Alternative is WSDOT's continued routine maintenance. These activities include short-term minor construction necessary for continued operation of existing I-405 facility and minor safety improvements, as required, within the project limits. With the No-Build Alternative, trees would remain and pavement width would remain the same,

but traffic is projected to slow down, allowing for longer glimpses of Lake Washington and the adjacent neighborhoods. In addition, safety improvements can include removing hazard trees that are not required to be replaced and any tree removal without planned replacements could impact sensitive viewers in the homes adjacent to the facility.

SECTION 1 INTRODUCTION

This visual impact assessment discipline report was prepared in support of the *I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project* (MP 0.0 to 11.9) (the Project) *Environmental Assessment* (EA). The Project proposes to make several roadway, structural, drainage, and transit improvements to the Interstate 405 (I-405) corridor.

The Project is part of a comprehensive strategy identified in the 2002 *I-405 Corridor Program Final Environmental Impact Statement* (EIS) and subsequent *Record of Decision* (ROD) to reduce traffic congestion and improve mobility along the state's second-busiest highway. The Project is needed because travelers on I-405 face one of the most congested routes in the state, particularly during peak travel times.

SECTION 2 PROJECT DESCRIPTION

What improvements are proposed with the Project?

Exhibit 2-1 describes in detail the improvements proposed with the Project. Exhibit 2-2, sheets 1 through 8, show the proposed improvements on a series of maps. In general, the Project proposes to add one lane to I-405 in each direction for about 9 miles beginning on I-405 near SR 167 and continuing approximately 1 mile north of I-90. The Project would also add a general purpose (GP) (auxiliary) lane to southbound I-405 between MP 6.7 (north of N 30th Street) and 7.1 (south of NE 44th Street) and MP 9.4 (north of 112th Avenue SE) to 10.5 (north of Coal Creek Parkway). The existing high-occupancy vehicle (HOV) lane on I-405 and the additional lane would be operated as a two-lane express toll lane (ETL) system. Additional details describing the ETLs are provided in the next question, "How would the express toll lanes work?"

Exhibit 2-1. Improvements Proposed with the I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project

Project Element	I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project
I-405/I-5 Interchange Exhibit 2-2, Sheet 1	<ul style="list-style-type: none"> – Extend the southbound left lane at the I-5 interchange west for approximately 500 feet to provide additional merge distance.
I-405 Lanes and Shoulders from SR 167 to north of I-90 Exhibit 2-2, Sheets 2 through 8	<ul style="list-style-type: none"> – Create a dual ETL system from MP 2.9 (northeast of the I-405/SR 167 interchange) and MP 11.9 (north of the I-405/I-90 interchange) by adding one new lane in each direction and converting the existing HOV lane to an ETL. – Convert the existing HOV lane to a single ETL from MP 2.4 (at the I-405/SR 167 interchange) to MP 2.9 on northbound I-405 and from MP 1.6 (in Renton over Springbrook Creek) to MP 2.9 on southbound I-405. – Add an additional GP (auxiliary) lane on southbound I-405 between MP 6.7 (north of 30th Street) and MP 7.1 (south of NE 44th Street) and MP 9.4 (north of 112th Avenue SE) to MP 10.5 (north of Coal Creek Parkway). – Bring I-405 up to current freeway standards where feasible.
I-405 Tolling from SR 167 to north of I-90 Exhibit 2-2, Sheets 2 through 8	<ul style="list-style-type: none"> – Construct tolling gantries to collect the tolls for the ETL system (see description in the row above).
Cedar Avenue Exhibit 2-2, Sheet 4	<ul style="list-style-type: none"> – Reconstruct the bridge over I-405 to widen southbound I-405.
Renton Avenue Exhibit 2-2, Sheet 4	<ul style="list-style-type: none"> – Reconstruct the bridge over I-405 to widen southbound I-405.
Cedar River Bridge Exhibit 2-2, Sheet 4	<ul style="list-style-type: none"> – Widen the southbound I-405 bridge over the Cedar River.
Sunset Boulevard N Interchange Area Exhibit 2-2, Sheet 4	<ul style="list-style-type: none"> – Widen the I-405 northbound and southbound bridges over Sunset Boulevard N.
NE Park Drive Interchange Area Exhibit 2-2, Sheet 5	<ul style="list-style-type: none"> – Widen the I-405 southbound bridge over NE Park Drive.
N 30th Street Interchange Area Exhibit 2-2, Sheet 5	<ul style="list-style-type: none"> – Replace the local road overpass abutment slopes with retaining walls on both sides of I-405 and lower the southbound I-405 roadway by approximately one foot.
NE 44th Street Interchange Area Exhibit 2-2, Sheet 6	<ul style="list-style-type: none"> – Replace the northbound and southbound I-405 bridges over May Creek with two new single span bridges and provide habitat improvements. – Replace the NE 44th Street bridge over I-405. Construct new direct access ramps and two inline transit stations (one in each direction) in the I-405 median. Transit stations would include station platforms, signage, artwork, lighting, fare machines (ORCA), and site furnishings such as shelters, lean rails, benches, bollards, bicycle parking, and trash receptacles. – Realign and reconstruct the northbound access to I-405 from a loop ramp to a new on-ramp from Lake Washington Boulevard NE. – Build four roundabouts along local arterials. – Construct an at-grade park-and-ride lot at Lake Washington Boulevard N and N 43rd Street with a minimum of 200 parking stalls and a roundabout (improvements would be built, but may be built by Sound Transit or others).

Exhibit 2-1. Improvements Proposed with the I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project

Project Element	I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project
112th Avenue SE Interchange Area Exhibit 2-2, Sheet 7	<ul style="list-style-type: none"> – Replace the 112th Avenue SE bridge over I-405. – Construct new direct access ramps, two inline transit stations (one in each direction) in the I-405 median. Transit stations would include station platforms, signage, artwork, lighting, fare machines (ORCA), and site furnishings such as shelters, lean rails, benches, bollards, bicycle parking, and trash receptacles. – Construct a roundabout on 112th Avenue SE. – Reconfigure the Newport Hills Park-and-Ride.
Coal Creek Parkway Interchange Area Exhibit 2-2, Sheet 7	<ul style="list-style-type: none"> – Construct a new southbound I-405 bridge on a new alignment. Convert the existing southbound I-405 bridge to northbound ETLs. – Convert the four local road intersections on Coal Creek Parkway SE to roundabouts.
I-405/I-90 Interchange Area Exhibit 2-2, Sheet 8	<ul style="list-style-type: none"> – Reconfigure the I-405 southbound to I-90 eastbound ramp from one to two lanes. – Realign the I-405 northbound to I-90 eastbound ramp. As part of this work, construct two new bridges over the eastbound I-90 ramp to Factoria Boulevard and over Factoria Boulevard.
Fish Passage Exhibit 2-2, Sheet 6	<ul style="list-style-type: none"> – Construct four fish passage crossings for unnamed tributary (UNT) 08.LW.0283 (formerly Gypsy Creek). – Construct a fish passage crossing under I-405 mainline for Stream UNT 08.LW.7.7A.^a – Construct a fish passage crossing under I-405 mainline for Stream UNT 08.LW.7.8.^a
Lake Washington Trail Exhibit 2-2, Sheets 6 and 7	<ul style="list-style-type: none"> – Realign and reconstruct the existing trail west of its current location to reside in the King County’s Eastside Rail Corridor property between Ripley Lane in Renton (MP 7.7) and Coal Creek Parkway in Bellevue (MP 10.2). As part of this work, widen a portion of the King County’s Eastside Rail Corridor Regional Trail.
Noise Walls Exhibit 2-2, Sheets 4, 6, 7 and 8	<ul style="list-style-type: none"> – Construct 4 new noise walls. – Relocate 2 existing noise walls.
Stormwater Management Exhibit 2-2, Sheets 1 through 8	<ul style="list-style-type: none"> – Add 46.92 acres of new PGIS and 5.7 acres of non-PGIS. – Provide enhanced treatment for 100% of new impervious surfaces. – Retrofit 51 percent (111.5 acres) of existing untreated PGIS and continue to treat stormwater from the 21.27 acres of PGIS that currently receives treatment. – Treat a total of 179.69 acres of PGIS.
Construction Duration	<ul style="list-style-type: none"> – 5 years of construction is expected from 2019 through 2024. – The direct access ramps and associated transit improvements at 112th Avenue SE, reconfiguring the Newport Hills Park-and-Ride lot, and building four roundabouts on Coal Creek Parkway SE may be constructed after 2024, depending on when allocated funds for these elements become available.

ETL = express toll lane; GP = general purpose; HOV = high-occupancy vehicle; MP = milepost; PGIS = pollutant generating impervious surface

^aFor these culverts, a restrictor plate will be put in place to prevent flooding until a downstream barrier is removed, at which time the restrictor plate will be removed.

How would the express toll lanes work?

At this time, the Washington State Transportation Commission (WSTC) has not established operational hours, user exemptions, occupancy requirements, and operating parameters for the ETLs proposed with the Project. The WSTC would set operational requirements for the ETLs prior to opening day. For this analysis, we assumed the requirements for the current I-405, Bellevue to Lynnwood ETL system would be used for this project. These assumptions, listed below, represent the most recent operating guidance from the WSTC for ETLs:

- **Limited Access** – The system would have designated entry and exit points, with a buffer between the ETLs and the GP lanes. These access points would vary in length, depending on the location.
- **Dynamic and Destination Pricing** – The I-405 ETL system would use both dynamic and destination pricing to determine a driver’s toll at the time they enter the ETL. With *dynamic pricing*, toll rates vary based on congestion within the corridor to maintain performance. Electronic signs would be used to communicate the current toll rate for drivers. Toll rates are updated every few minutes, but the driver’s price is set when they enter the system. With *destination pricing*, the toll is based on the driver’s destination. Toll signs would show up to three toll rates for different toll zones, or destinations. Drivers would pay the rate they see upon entering the ETLs to reach their destination, even if they see a different toll rate for their destination further down the road. When both of these pricing approaches are used together, it means that the toll that drivers pay is based both on the congestion in the corridor and the distance they are traveling.
- **Operating Hours and Good To Go! Passes** – The ETL system is expected to operate from 5 a.m. to 7 p.m. on weekdays, with the system toll-free and open to all at other hours and on major holidays. Transit, HOVs, and motorcycles would need to have a *Good To Go!* pass to use the ETLs for free during operating hours. Eligible HOV users would be required to set the *Good To Go!* pass to the HOV mode to avoid charges. Single-occupant vehicles (SOVs) could choose to pay a toll to

How does dynamic pricing work?

Electronic monitors along the roadway measure real-time information on the speed, congestion, and number of vehicles in the ETLs. This information is used to determine whether tolls go up or down to optimize lane use.

As the ETLs become congested, toll rates increase, and as congestion decreases, toll rates decrease. The use of dynamic pricing allows the lanes to operate with high volumes but avoid becoming congested.

When would tolls be charged to use the ETLs?

It is assumed the ETLs would operate from 5 a.m. to 7 p.m. on weekdays. At all other times and major holidays, the lanes would be free and open to all without a *Good To Go!* pass.

During operating hours:

- **SOVs** would pay a toll to use the lanes.
 - **Transit, HOV 3+, and Motorcycles** would travel for free with a *Good To Go!* pass.
 - **HOV 2+** would travel for free from 9 a.m. to 3 p.m. with a *Good to Go!* pass. From 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m. HOV2+ would pay a toll to use the ETLs with or without a *Good To Go!* pass.
 - **Large vehicles** over 10,000 pounds gross vehicle weight would not be able to use the ETLs at any time.
-

use the ETLs during operating hours with or without a *Good To Go!* pass.

- Occupancy Requirements** – During the peak periods (weekdays from 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m.), transit vehicles and carpools with three or more persons (HOV 3+) would be able to use the lanes for free with a *Good To Go!* pass. From 9 a.m. to 3 p.m., the system would be open toll-free to those with two or more passengers (HOV2+) with a *Good To Go!* pass. Motorcycles ride toll-free in the ETLs with a *Good To Go!* pass. During non-operating hours, SOVs will not be permitted to enter the ETLs from ramps where access is provided directly from local streets. SOV access would only be permitted from freeway GP entry and exit points.
- Vehicle Weight** – Vehicles over 10,000 pounds gross vehicle weight will be prohibited, which is consistent with HOV lane restrictions throughout Washington.
- Electronic Tolling** – Payments would be made via electronic tolling with a *Good To Go!* pass. For drivers who choose not to use a *Good To Go!* Pass, WSDOT offers optional photo billing (pay by mail) for an extra fee.

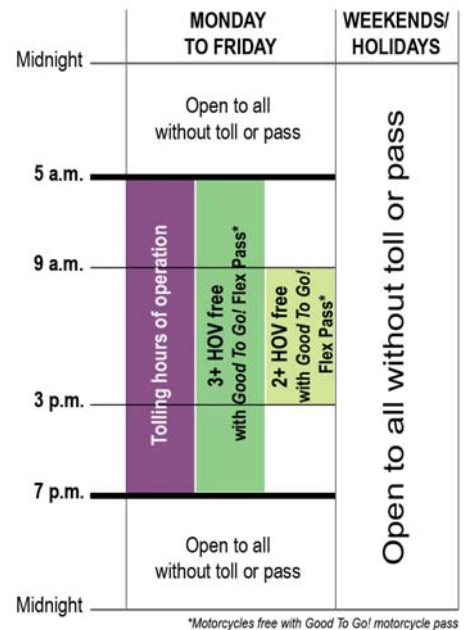
How would the Project be constructed?

WSDOT expects to construct the Project using a design-build contract. Design-build is a method of project delivery in which WSDOT executes a single contract with one entity for design and construction services to provide a finished product. With design-build projects, contractors have the flexibility to offer innovative and cost-effective alternatives to deliver the Project, improve project performance, and reduce project effects. Some design modifications that the contractor may propose could affect the Project footprint and design details described in this EA; however, if the contractor proposes modifications not covered by this EA, environmental review would be conducted as needed.

Construction work would include the removal of existing asphalt and concrete surfaces, clearing and grading adjacent areas, laying the aggregate roadway foundation, and placing of asphalt and concrete surfaces. Changing the vertical and

What is a *Good to Go!* Account?

A *Good To Go!* account is the cheapest and easiest way to pay tolls in Washington. With an account, your tolls will be paid automatically without having to stop at a toll booth or worry about bills in the mail. For more information please go to: <http://www.wsdot.wa.gov/GoodToGo/default.htm>



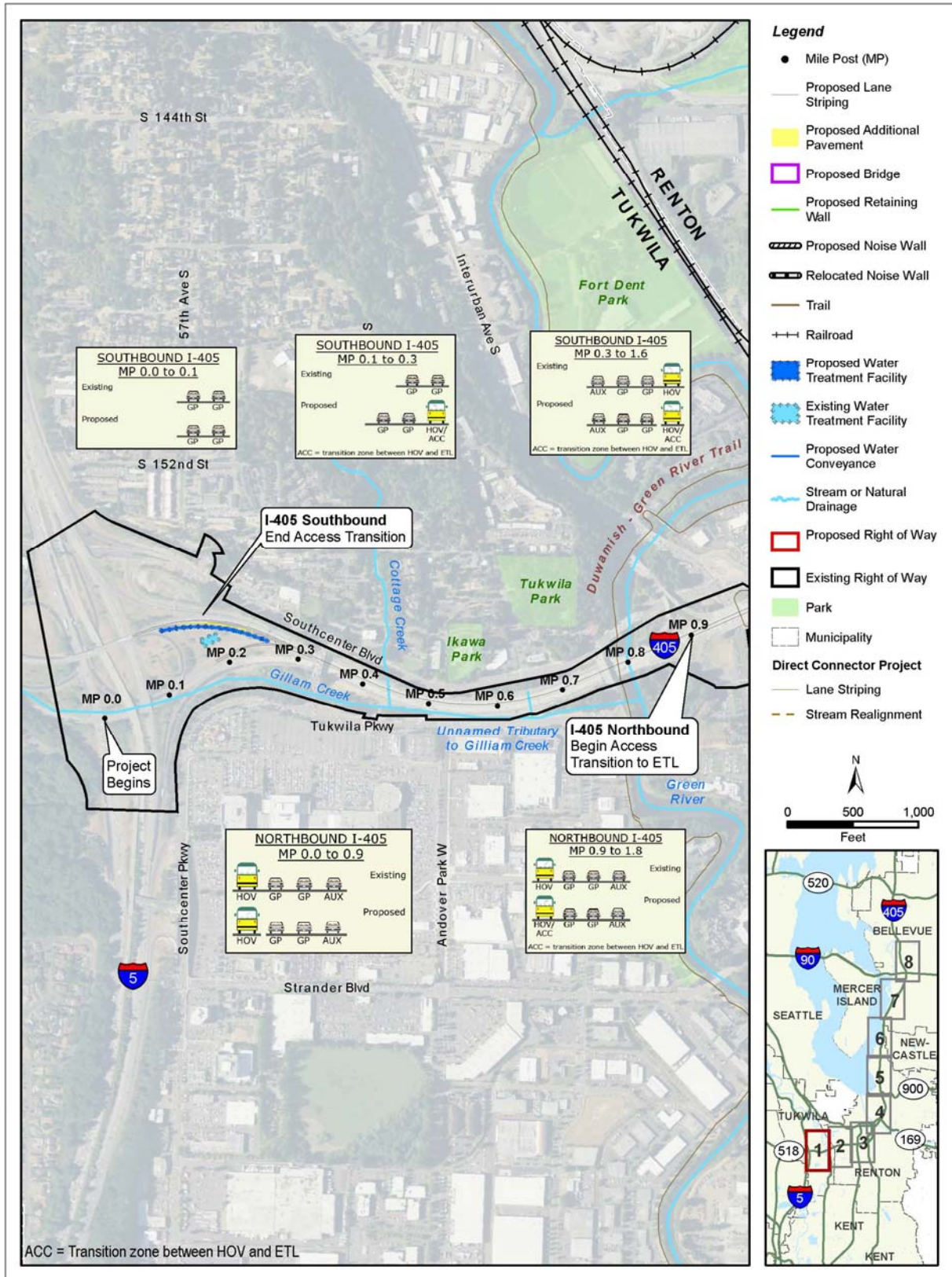
horizontal alignments of the I-405 mainline would require earthwork, with approximately 780,000 cubic yards of excavation and approximately 700,000 cubic yards of fill.

Construction equipment such as backhoes, excavators, front loaders, pavement grinders, jack hammers, pile drivers, trucks, as well as grading and paving equipment would be used. Equipment used for construction would include cranes, pile drivers, drilling rigs and augers, backhoes and excavators, jack hammers, concrete pumping equipment, and slurry processing equipment.

Staging areas in unused right of way would provide room for employee parking, large equipment storage, and material stockpiles. The contractor may also find other locations for construction staging.

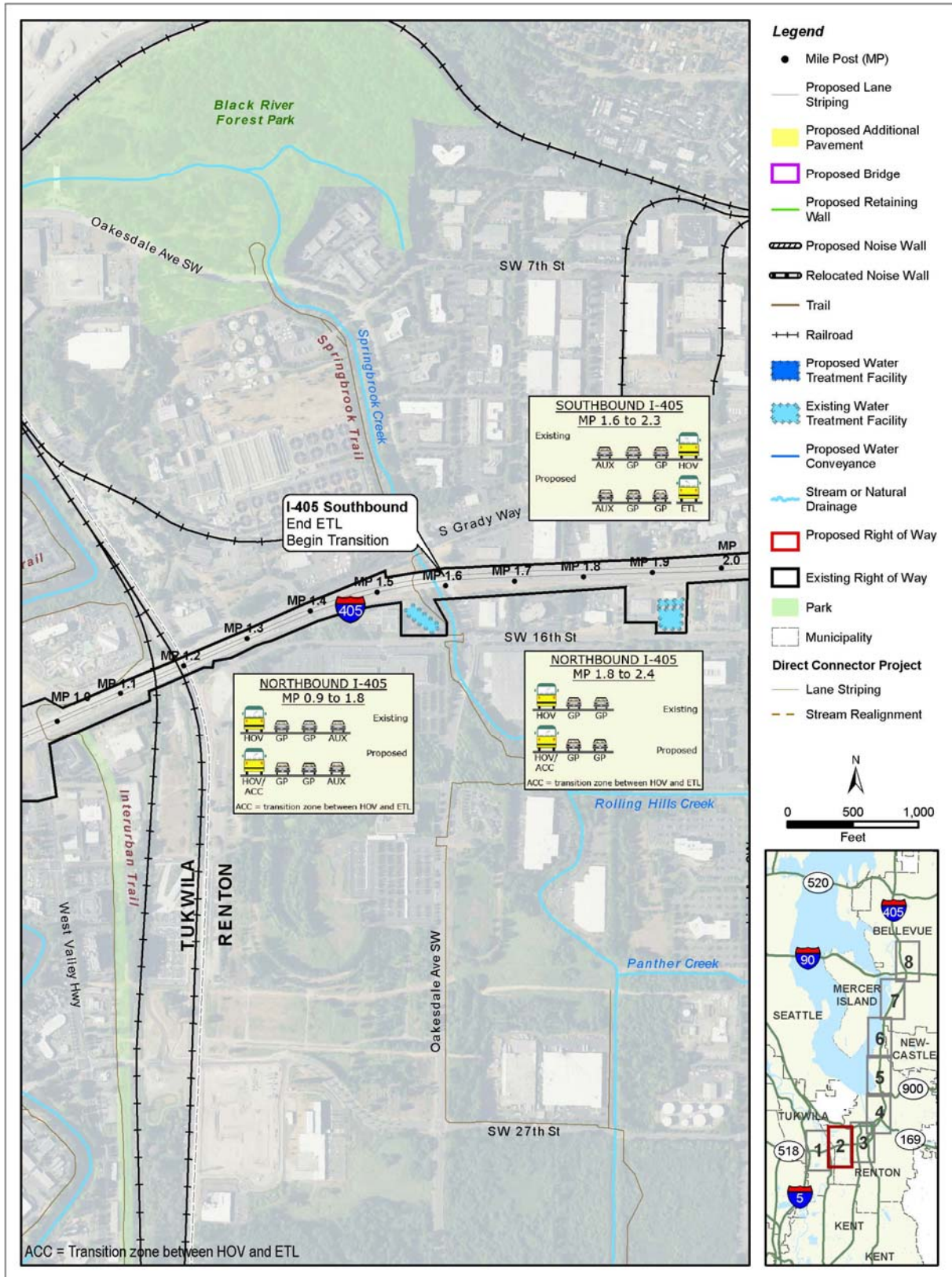
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 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-2. I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Improvements, Sheet 1 of 8



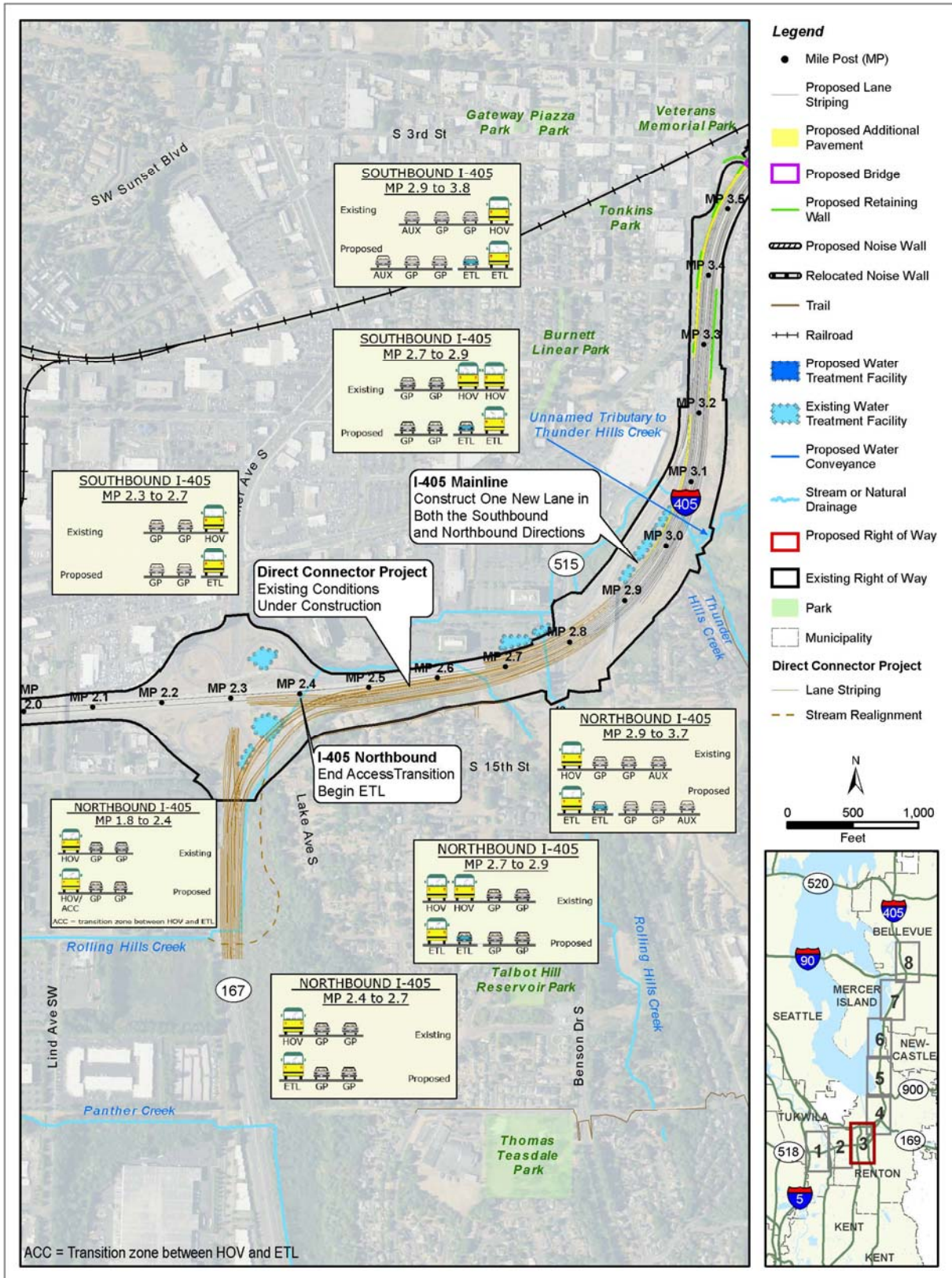
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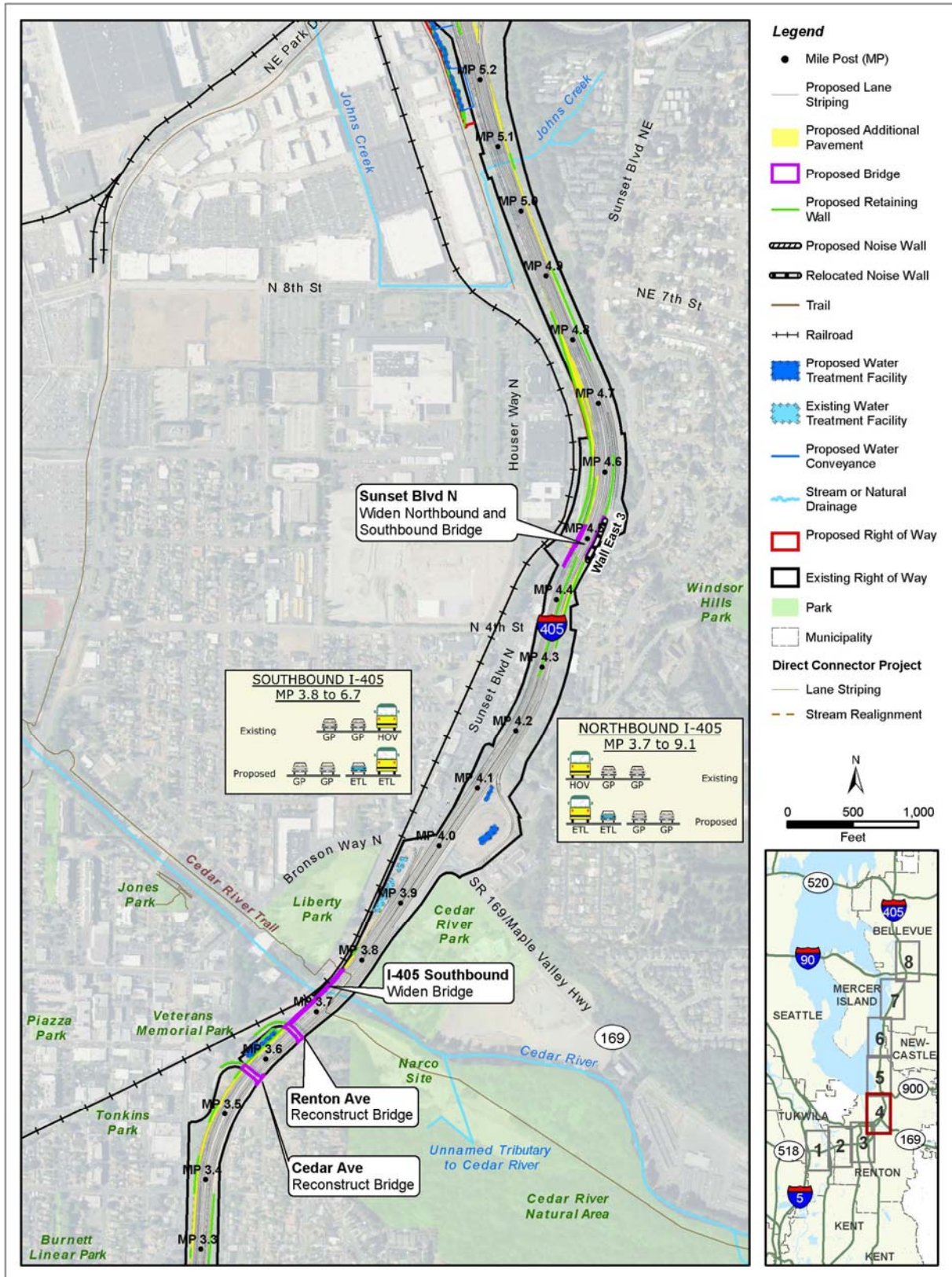
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 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-2. I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Improvements, Sheet 3 of 8



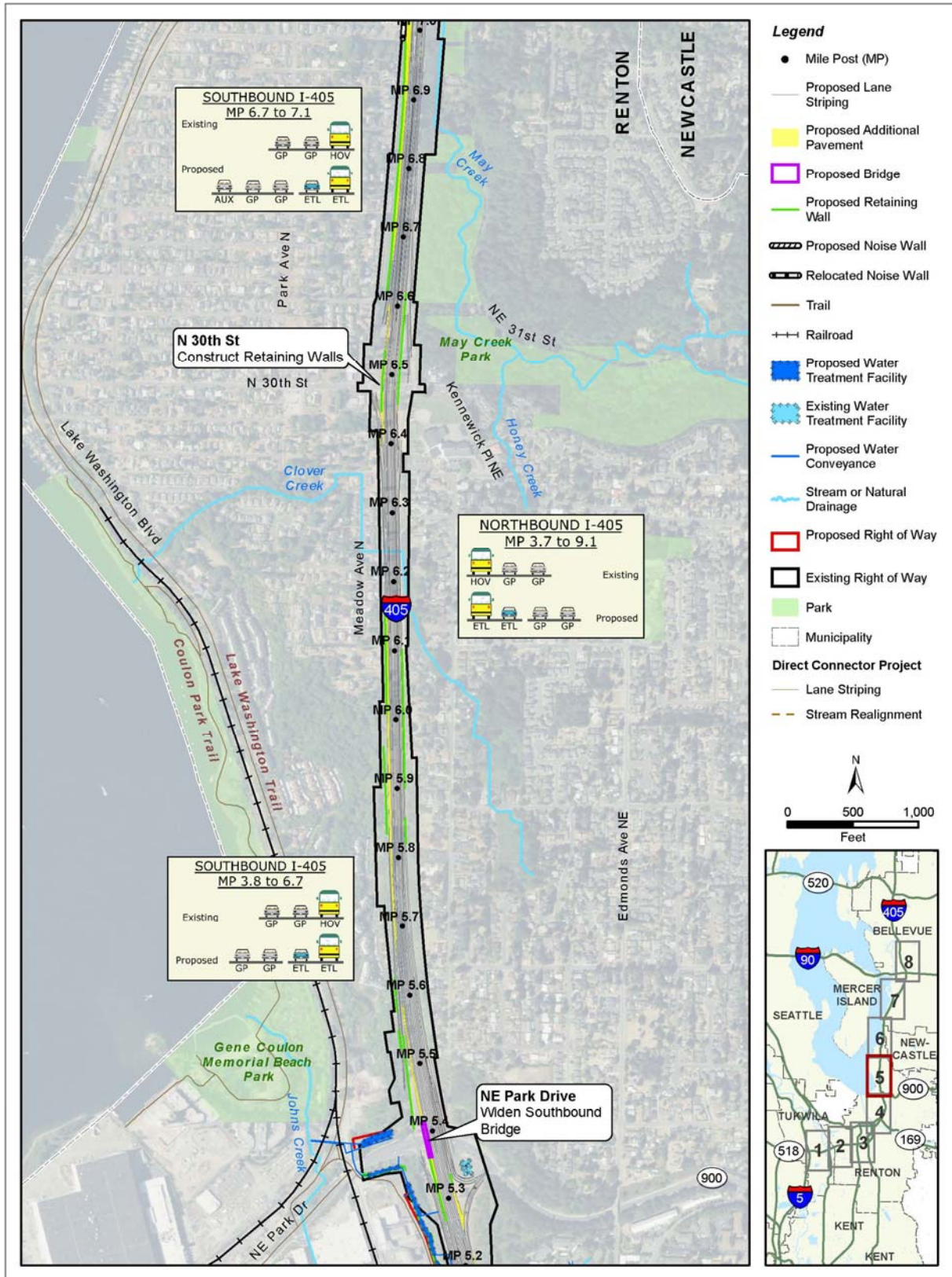
I-405, TUKWILA TO I-90 VICINITY EXPRESS TOLL LANES PROJECT (MP 0.0 TO 11.9)
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-2. I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Improvements, Sheet 4 of 8



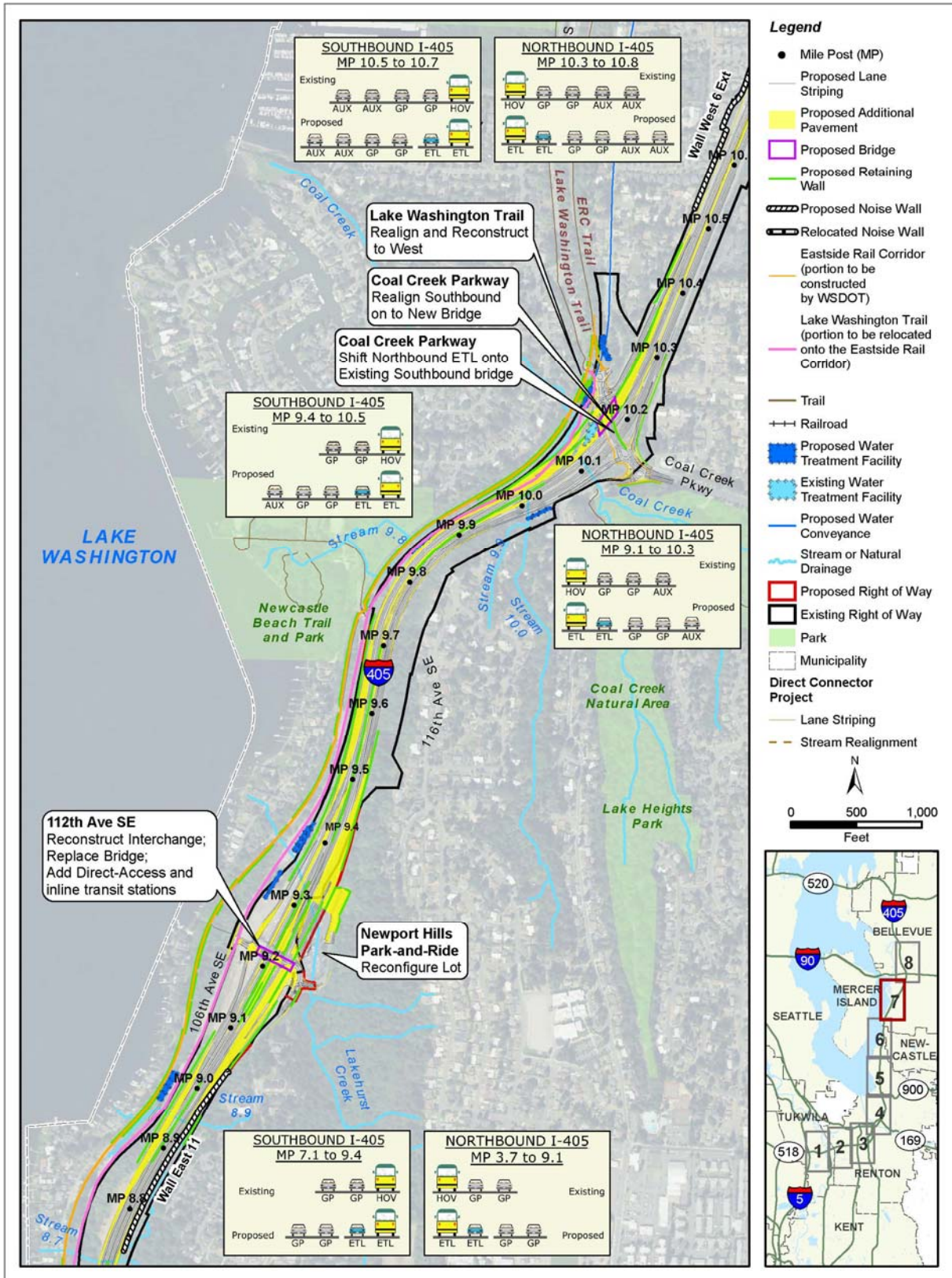
I-405, TUKWILA TO I-90 VICINITY EXPRESS TOLL LANES PROJECT (MP 0.0 TO 11.9)
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-2. I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Improvements, Sheet 5 of 8



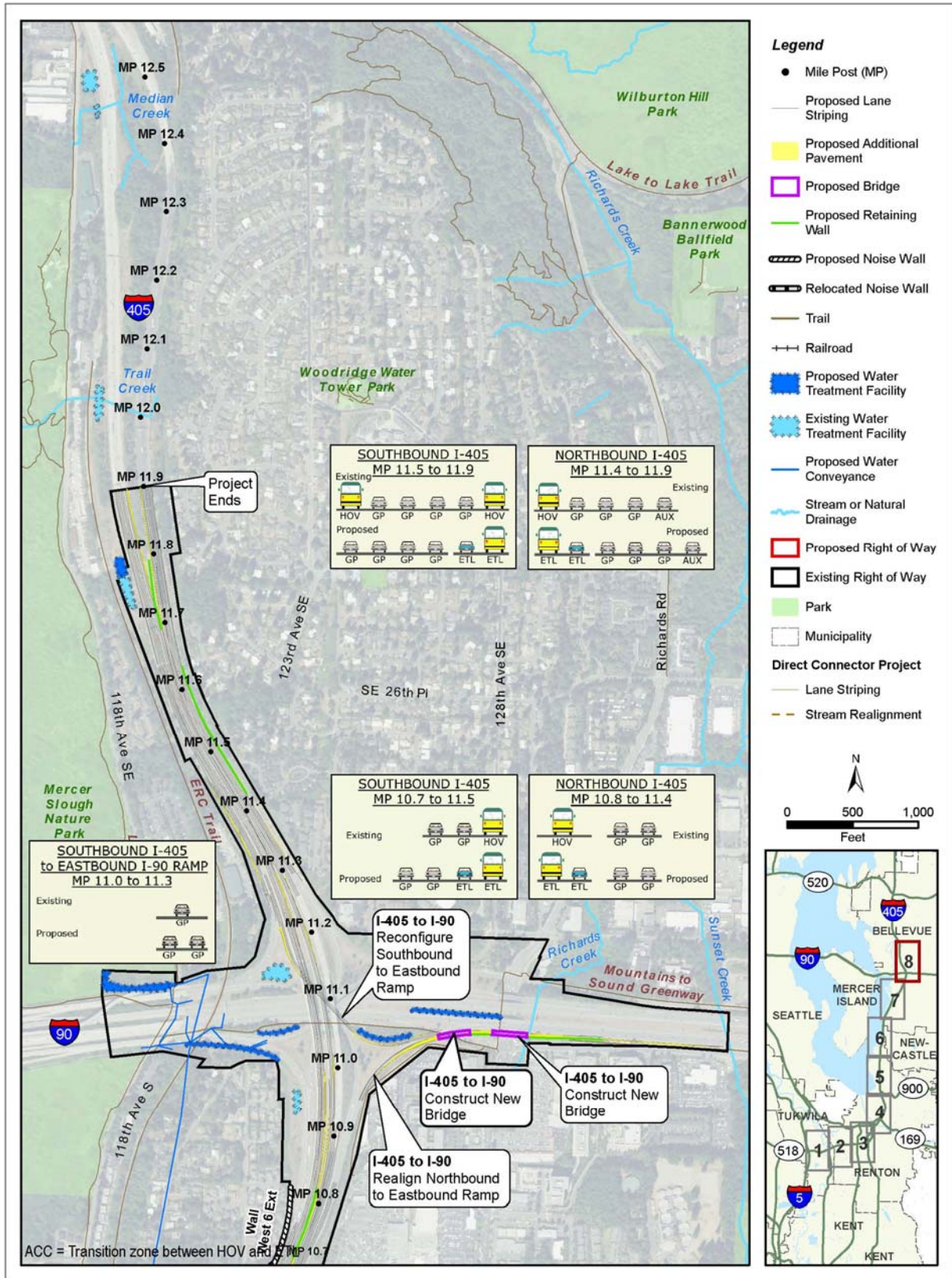
I-405, TUKWILA TO I-90 VICINITY EXPRESS TOLL LANES PROJECT (MP 0.0 TO 11.9)
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-2. I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Improvements, Sheet 7 of 8



I-405, TUKWILA TO I-90 VICINITY EXPRESS TOLL LANES PROJECT (MP 0.0 TO 11.9)
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 2-2. I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project Improvements, Sheet 8 of 8



SECTION 3 STUDY APPROACH

This section addresses the approach the project team took to analyze the visual effects for the Project.

What is the study area and how was it determined?

The Project would extend along I-405 for 11.9 miles from the Interstate 5 (I-5)/I-405 interchange in Tukwila (MP 0.0) to north of the I-405/Interstate 90 (I-90) interchange (MP 11.9) in Bellevue. The Area of Visual Effect (AVE) for this analysis encompasses areas that can be seen from I-405 and areas from which I-405 can be seen. The AVE also includes views to and from the Lake Washington Trail in areas where the existing trail would shift to an abandoned railway corridor.

To determine the AVE, we first identified areas that have views of the Project based on topography alone (Exhibit 3-1). We then conducted field visits to identify land cover constraints, such as vegetation and structures, to determine which areas are most likely to provide views to and from the Project both during and after construction.

Based on existing analysis and additional field visits, we then categorized the AVE into landscape units for the Project; each of these has its own visual character and set of viewers.

Analysis was further refined to identify the landscape units with the most potential for the Project to affect visual quality. These landscape units are highlighted in orange on the Landscape Units map below (Exhibit 3-2) and are described further in Section 4, Affected Environment.

I-405, TUKWILA TO I-90 VICINITY EXPRESS TOLL LANES PROJECT (MP 0.0 TO 11.9)
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Exhibit 3-1. Tukwila to I-90 Vicinity Express Toll Lanes Project, Topographic Viewshed Analysis

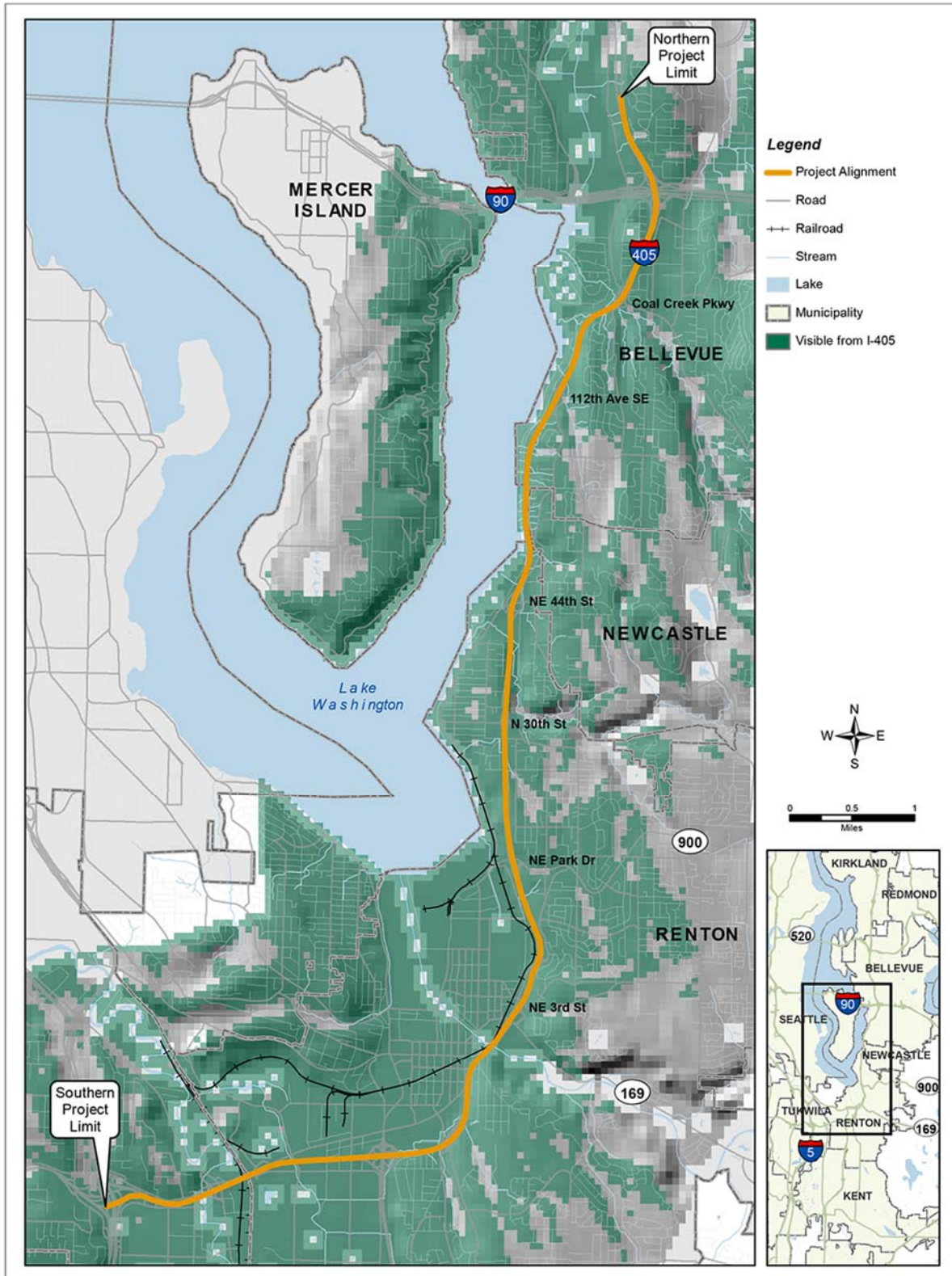
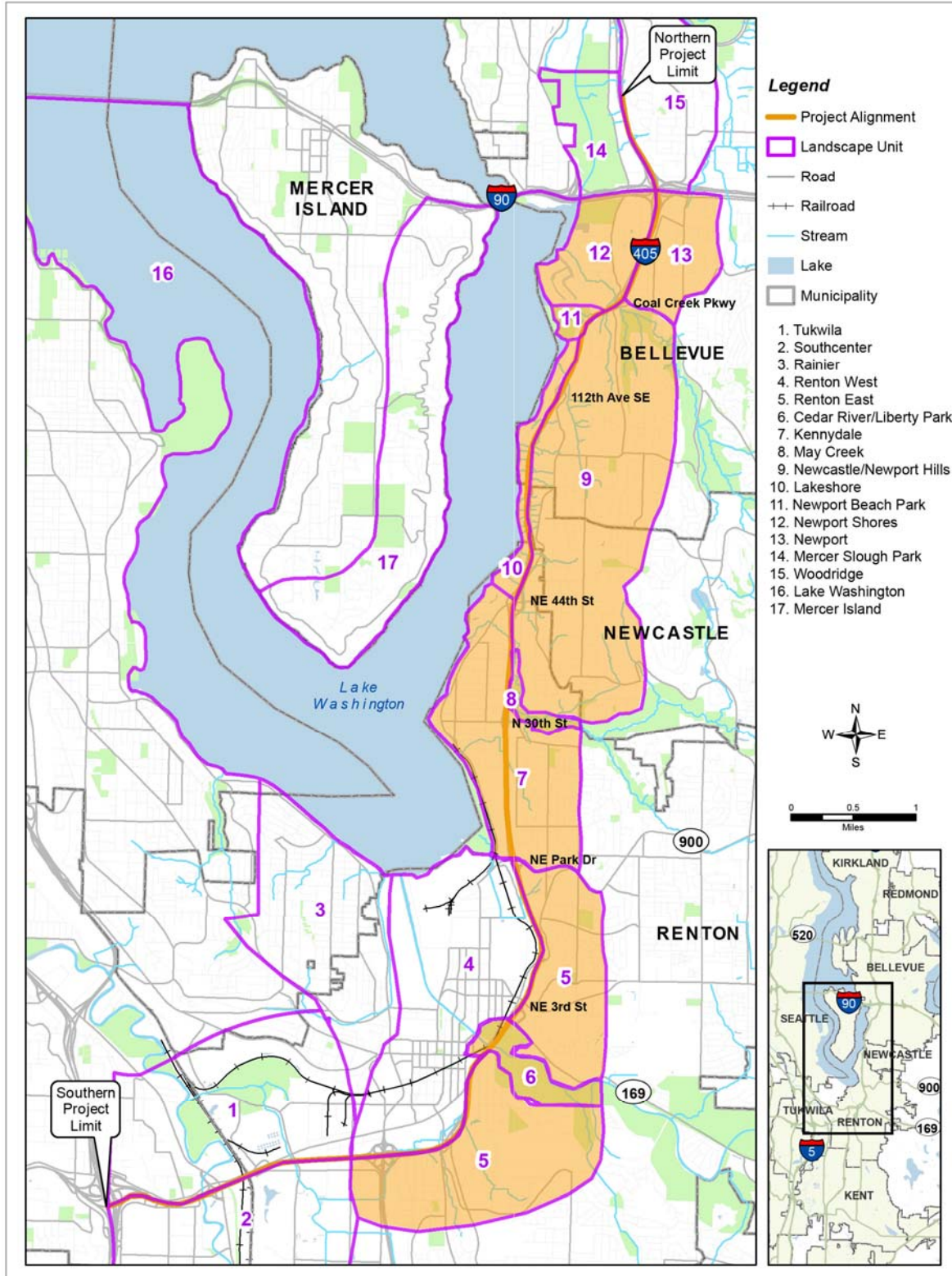


Exhibit 3-2. Tukwila to I-90 Vicinity Express Toll Lanes Project, Landscape Units



What policies or regulations relate to impacts on visual quality?

Both FHWA and WSDOT mandate evaluations of visual effects, including aesthetics, light, and glare, during project development. WSDOT policies for visual quality assessments are contained in Section 459 of the WSDOT *Environmental Manual* (WSDOT 2017). Section 459 also summarizes the state and federal policies and regulations associated with visual quality protection.

How did we collect information for this report?

For this report, we analyzed existing conditions using a combination of mapping, field investigations, photographs, and a review of preliminary engineering plans and past visual quality analyses. We also reviewed comprehensive plans for each of the municipalities that would be affected by the Project to understand each municipality's future land use plans and urban design goals.

How did we evaluate visual impacts?

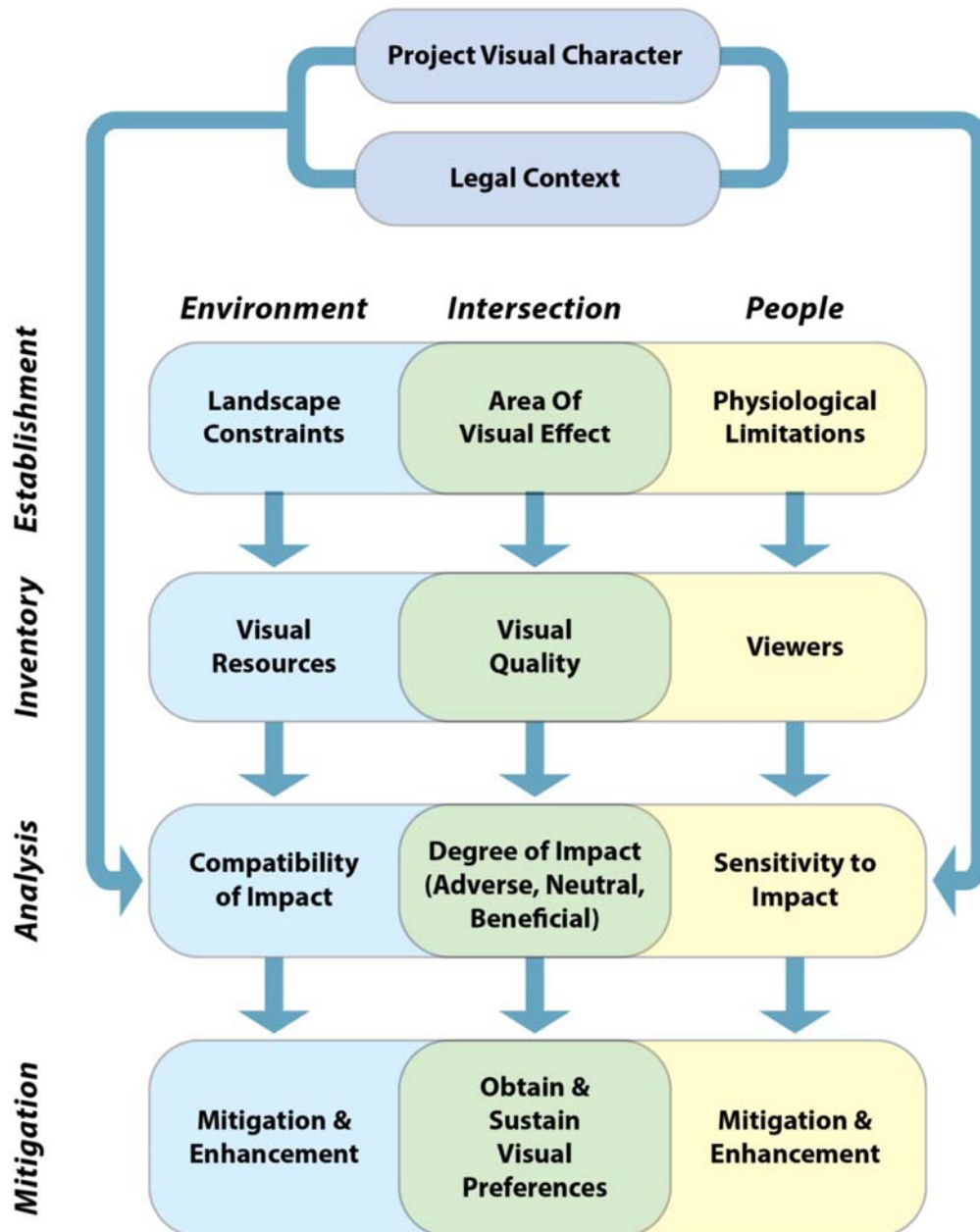
WSDOT uses the FHWA methodology for visual impact analyses. FHWA released new guidelines for visual impact assessments in its January 2015 publication, *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA 2015). The methodology used in this discipline report follows these guidelines.

What is the process for evaluating visual impacts?

The visual impact analysis process consists of four phases: Establishment, Inventory, Analysis, and Mitigation. In each of the four phases, we considered the relationship between the affected environment (*visual resources*) and the affected population (*viewers*). This type of analysis is based on the idea of *transactional perception* in which perception (*visual quality*) is result of the interaction between viewers and the environment, rather than the intrinsic characteristics of each taken in isolation. The process for evaluating visual impacts is described in this section and summarized in Exhibit 3-3.

Exhibit 3-3. Visual Impact Assessment Process

Visual Impact Assessment Process



During the Establishment phase, we defined the AVE as described previously in this section.

During the Inventory phase, we categorized the AVE into distinct landscape units and identified viewer types. We then selected representative viewpoints and described the existing visual quality for each viewpoint by identifying natural harmony, cultural order, and project coherence from the viewer perspective.

During the Analysis phase, we evaluated the visual changes that would result from the Project from each viewpoint by analyzing the changes to *natural harmony*, *cultural order*, and *project coherence* that were described in the Inventory phase. We then considered the overall landscape composition and vividness to rate visual impacts as beneficial, adverse, or neutral, in the context of the viewer groups' stated preferences.

During the Mitigation phase, we identified ways to avoid, minimize, or mitigate adverse impacts and described how beneficial changes might be incorporated into the Project as enhancements.

What representative views are being evaluated?

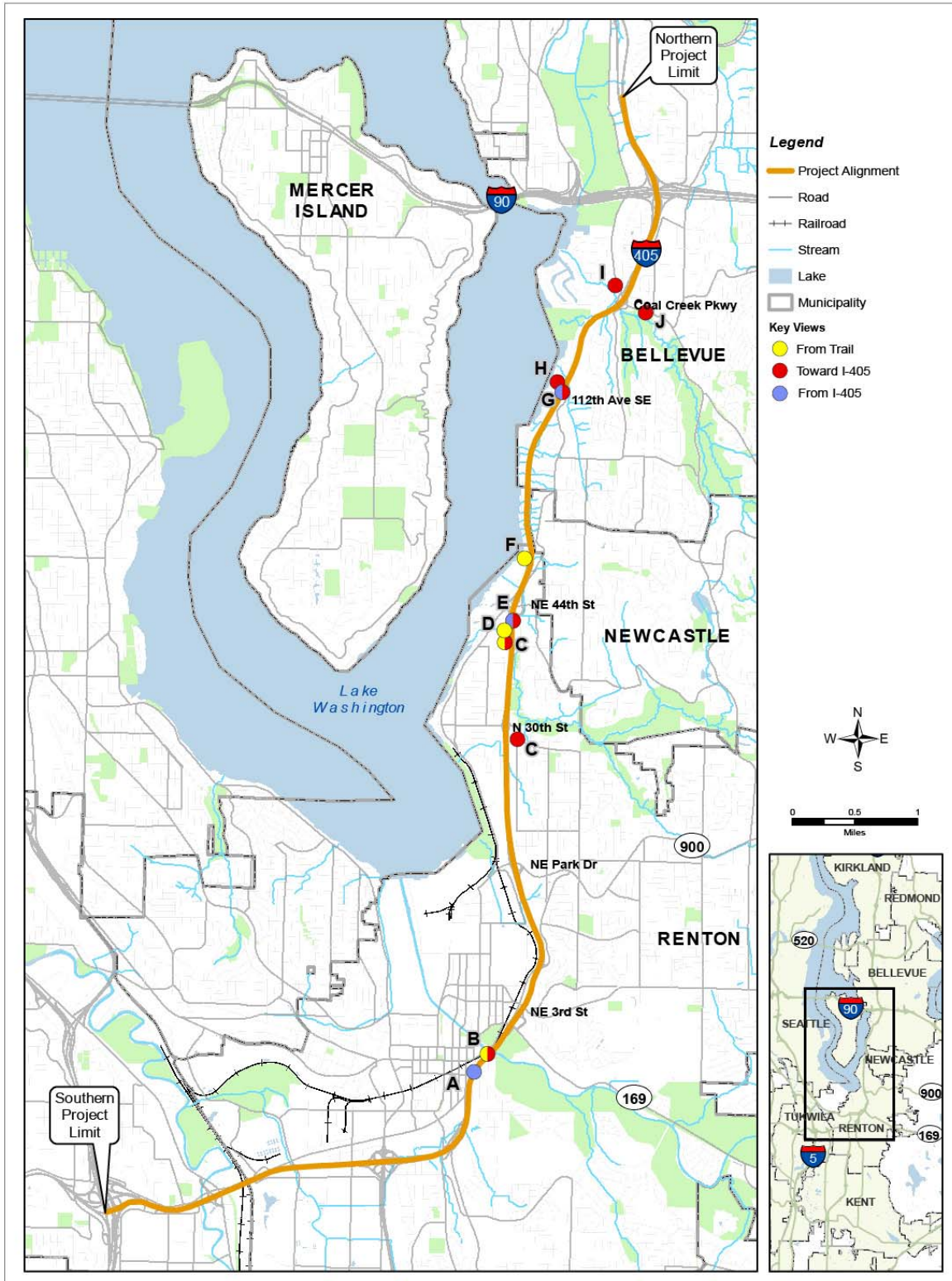
This discipline report analyzes visual quality impacts using new viewpoints selected based on changes proposed for the Project. The viewpoints considered in this analysis are shown in Exhibit 3-4.

The following viewpoints were used for evaluating visual changes for the Project:

- **View A** – I-405 bridges over Cedar and Renton Avenues (from I-405), located in the Renton East landscape unit.
- **View B** – Southbound I-405 bridge over Cedar River (from Cedar River Trail), located in the Cedar River/Liberty Park landscape unit.
- **View C** – Southbound I-405 bridge over May Creek (from May Creek Trail), located in the May Creek landscape unit.

I-405, TUKWILA TO I-90 VICINITY EXPRESS TOLL LANES PROJECT (MP 0.0 TO 11.9)
 VISUAL IMPACT ASSESSMENT DISCIPLINE REPORT

Exhibit 3-4. Viewpoints Analyzed for I-405, Tukwila to I-90 Vicinity Express Toll Lanes Project



- **View D** – Sound Transit Park-and-Ride (from May Creek Trail), located in the May Creek landscape unit.
- **View E** – NE 44th Street interchange (from and toward I-405), located in the Kenneydale landscape unit.
- **View F** – Lake Washington Trail north of Ripley Lane (from Lake Washington Loop Trail), located in the Lakeshore landscape unit.
- **View G** – 112th Avenue SE interchange (from I-405), located in the Newcastle/Newport Hills and Lakeshore landscape units.
- **View H** – 112th Avenue SE interchange (toward I-405), located in the Newcastle/Newport Hills and Lakeshore landscape units.
- **View I** – Coal Creek Parkway looking east (toward I-405), located in the Newport Shores landscape unit.
- **View J** – Coal Creek Parkway looking west (toward I-405), located in the Newport and Newport/Newcastle Hills landscape units.

Are there any legal directives or social constraints that dictate the visual quality of what can be constructed?

Based on the State of Washington’s Context Sensitive Solutions Executive Order (E 1028.00), WSDOT conducted an extensive Context Sensitive Solutions process in 2005 and 2006, to engage the community in the planning and design of the I-405 corridor, as documented in the *I-405 Context-Sensitive Solutions Master Plan* (WSDOT 2006). This process led to the creation of the *I-405 Urban Design Criteria* (WSDOT 2016), which detail the aesthetic and landscape treatments WSDOT agreed to implement based on the input from local communities about their preferences.

As part of the public input for the Eastside Rail Corridor Regional Trail project, King County also developed the Eastside Rail Corridor Regional Trail Master Plan (King County 2016) which shows preferred trail designs and aesthetic treatments for the Eastside Rail Corridor Regional Trail, a portion of which WSDOT will construct as part of the I-405, Downtown Bellevue Vicinity Express Toll Lanes Project.

SECTION 4 EXISTING CONDITIONS

What is the existing visual character in the study area?

The study area begins west of the I-405/I-5 interchange in Tukwila and ends north of the I-405/I-90 interchange in Bellevue. The study area includes views from I-405, as well as views from Lake Washington, local parks, pedestrian/bike trails (Cedar River Trail, May Creek Trail, and the Lake Washington Loop Trail), local roads and neighborhoods with views to or from the Project.

The project begins in a highly developed area just east of I-5. The sprawling commercial development of the Southcenter area lies south of I-405 (Southcenter landscape unit), while apartments and condominiums dot a wooded hillside to the north (Tukwila landscape unit). From the freeway itself, views of the Southcenter shopping area and residential neighborhoods are largely screened by trees in the highway roadside. The highway feels somewhat enclosed in this area and has a more natural character for the stretch of I-405 between I-5 and SR 181.

East of SR 181, views from the highway become more open. Travelers have broad views of the sky and the industrial valley of the Green River through Renton. In this section of the study area, built elements prevail, though corridors of green remain where the Green River and the Cedar River weave through the built environment and there are more distant views of the wooded hillsides around Lake Washington. Buildings in this portion of the study area consist of office parks, industrial buildings, “big box” retail, and expansive parking lots, all of which can be seen just below the highway through sparse roadside vegetation. Views of the sky are frequently interrupted by power poles, cell phone towers, roadway lighting, and signage for local businesses.

At SR 167, I-405 curves toward the north to follow the east shore of Lake Washington at the base of a hill dotted with residential development. Views of the commercial and industrial development persist in the lower-lying areas to the east, while views to the west are blocked by noise walls, topography, and vegetation.

From SR 169 to the I-405/I-90 interchange, the highway runs north-south and is carved into the west-facing hillside of Lake Washington. Views of I-405 from surrounding neighborhoods are limited by topography and most houses near the highway do not have direct views of the facility. Where streams cross under I-405, the ravines are lushly vegetated and their treetops visible from the highway above.

This portion of the study area has a more natural character owing to the presence of native vegetation along the roadsides and the absence of built structures other than the roadway itself, a few signs, and a few small utility cabinets. In a few locations, such as along 108th Avenue SE, houses are nearly level with the highway and vegetation thins to a narrow strip that provides little screening. In this area, approximately six homes are very exposed to the highway environment. This level of exposure is rare, however, and topography and vegetation prevent most residents from viewing the highway, and travelers on the highway have few clues that there are well populated, suburban neighborhoods flanking I-405.

Where local roads intersect with I-405, such as at NE 44th Street and 112th Avenue SE, the visual character shifts to a more open and built character. Light poles, signage, chain-link fencing, as well as the on- and off-ramps and overpasses at highway interchanges give these areas a much more developed character. There are few, if any, trees between the highway mainline and the on- and off-ramps, and the vegetation in these areas includes wide expanses of unmowed grass. In addition, development near these interchanges deviates from the primarily residential character of the corridor between Renton and Bellevue. At 112th Avenue SE, there is a park-and-ride facility visible to the northeast, and there are a few retail businesses visible from the highway just north of NE 44th Street.

North of Coal Creek Parkway, the visual character begins to change to a more urban character due to the presence of noise walls and thinner strips of roadside vegetation. A few homes are visible from the freeway (and have views of the freeway), but most of the homes remain screened from view.

Approaching the I-90 interchange, the topography flattens and the hillside east of the highway descends. Where high-voltage power lines cross I-405, travelers have views of the Factoria Mall to the east and single-family homes to the west. The I-

405/I-90 interchange has a very open and visually cluttered character high in complexity due to increased signing, lights, and the many on- and off-ramps headed in every direction.

What are the landscape units within the study area?

In accordance with FHWA's methodology, we divided the study area into a series of landscape units defined by viewshed and landscape type. A landscape unit can be conceived of as a distinct "outdoor room" with a relatively homogenous visual character and viewer type. Landscape units often correspond to land use types, since these tend to have a particular visual identity and often correspond with viewer sensitivity.

Exhibit 3-2 identifies the primary landscape units surrounding the study area. These landscape units are further described in this section.

Tukwila Landscape Unit

The Tukwila landscape unit includes the hillsides east of I-5 and north of I-405, which consist primarily of multifamily apartments and condominiums with some commercial development at the base of the slope along Southcenter Boulevard. Though the residential development is higher density, the trees and natural areas throughout this landscape unit give it a strong sense of natural harmony. Viewers in this landscape unit are higher in elevation than I-405 and technically look down upon the Southcenter Mall commercial area; however, their views are of the trees and tree tops, rather than the highway or commercial area. The Project proposes only minor changes within this landscape unit, unlikely to be noticed by viewers due to the screening effects of the vegetation and the distance of viewers from the highway.

Southcenter Landscape Unit

The Southcenter landscape unit is located south of I-405 and east of I-405 and is made up predominately of large-scale commercial and industrial developments slightly below the elevation of the highway. This landscape unit has a highly developed, sprawling commercial character. Vegetation has a sparse, suburban character with few trees breaking up the vast parking lots. From this landscape unit, the highway is screened from view by trees within the highway right of way

and street trees around the parking lot perimeters. It is unlikely that any of the improvements proposed by the Project would be visible from this landscape unit due to the highway being higher in elevation than viewers and also screened from viewers with native vegetation in the highway roadside. This landscape unit is relatively flat with street trees providing screening of foreground views to the south and east, partial views of I-405 and the multifamily homes in the Tukwila landscape unit to the north, and views of I-5 and Crystal Springs Park to the west.

Rainier Landscape Unit

The Rainier landscape unit is composed of the east-facing hillside at the south end of Lake Washington and west of the Renton West landscape unit. The east-facing hillside is primarily residential (single-family housing) with a north-south strip of commercial development at the base of the slope. Viewers in this landscape unit have views to the east of I-405 in the background of the Renton Airport and an industrial area, both of which dominate the middle ground.

Renton West Landscape Unit

The Renton West landscape unit encompasses the Renton Airport and adjacent industrial area at the southern end of Lake Washington. This landscape unit is relatively flat and visually dominated by large-scale industrial development, which is readily visible from I-405.

Renton East Landscape Unit

The Renton East landscape unit includes the hillsides east of I-405. In this landscape unit, gentle west-facing slopes are dotted with single- and multifamily homes. From these homes, viewers have partial views of I-405 and the large-scale industrial development of Renton West with views of Lake Washington beyond. Many commercial properties close to I-405 have views of the highway retaining walls or of freeway traffic moving by.

Cedar River/Liberty Park Landscape Unit

The Cedar River/Liberty Park landscape unit includes the Cedar River Trail and recreational complexes on either side of I-405 north of the Cedar River and the SR 169/Maple Valley Highway interchange. The Renton Community Center and Cedar River Park are situated east of I-405, and Liberty Park is located west of I-405. At Liberty Park, the highway is nearly

level with the ballfields, so vehicles moving by are more noticeable than they are from Cedar River Park, which is slightly lower than the highway. The Cedar River Trail runs along the Cedar River, passing beneath I-405 at Cedar River Park and continuing through the Renton West landscape unit. The I-405 facility is quite visible from the Cedar River Trail near I-405; however, views of I-405 north of Cedar River are more limited.

Kennydale Landscape Unit

The Kennydale landscape unit is located north of North Park Drive where I-405 passes through a road cut with noise walls and limited vegetation on both sides. Several multifamily residential developments and the Gene Coulon Memorial Beach Park are located west of I-405. In this landscape unit, most of the multifamily developments are oriented toward the lake and are screened from the freeway by topography and vegetation. A combination of vegetation and buildings screen most of I-405 from Gene Coulon Park. At the NE 30th Street interchange, the freeway passes beneath NE 30th Street, limiting the visibility of the fuel/convenience stations and Kennydale School located above them. A noise wall between the freeway and Kennydale School further limits visibility to and from the freeway. North of the interchange, the freeway slopes down towards May Creek.

May Creek Landscape Unit

The May Creek landscape unit consists of the May Creek Trail and greenbelt—a stream valley with native vegetation—that flows beneath I-405. The May Creek greenbelt enhances the natural character of the corridor, especially where it widens on the east side of I-405 between NE 30th Street and NE 44th Street. A smaller section of natural vegetation is visible on the west side of I-405.

Newcastle/Newport Hills Landscape Unit

The Newcastle/Newport Hills landscape unit lies to the east of I-405 between NE 44th Street and Coal Creek Parkway. The interchange at NE 44th Street has an industrial yard on the west and low-rise commercial development and an apartment complex to the east. The Seahawks training facility lies northwest of the interchange; however, it is oriented toward the lake and screened from I-405 by trees. Trees and steep slopes on either side of the highway preclude most

development. Residential neighborhoods on either side of I-405 are screened from the highway through a combination of vegetation and topography. At the 112th Avenue SE interchange, the park-and-ride facility northeast of the interchange interrupts the vegetated roadsides.

Lakeshore Landscape Unit

The Lakeshore landscape unit consists of a narrow strip of single-family homes on small lots along the lake just west of I-405. While the distance from the lake to I-405 is as little as a few hundred feet in some areas, a slope with a thin screen of native vegetation, the BNSF railroad track and the Lake Washington Loop Trail visually screen the highway from these neighborhoods. The Loop Trail is generally below the grade of the freeway, but I-405 remains visible from the trail in several locations. Lake Washington is a prime recreational area, especially during the summer boating season, when I-405 can be glimpsed from the lake through native vegetation.

Newport Landscape Unit

The Newport landscape unit runs from Coal Creek Parkway to I-90 where the visual character shifts to a more urban, commercial character. Freeway viewers look down on Factoria Mall and adjacent development. The I-405 right of way abuts the Mall parking lot and access roadways. Farther east of I-405, the land slopes upward and is developed with single-family residential units.

Newcastle Beach Park Landscape Unit

The Newcastle Beach Park landscape unit is located southwest of the interchange with Coal Creek. I-405 is partially visible from Newcastle Beach Park through a thin screen of trees. The park is oriented toward the lake, however, which helps to minimize views of I-405.

Newport Shores Landscape Unit

The Newport Shores landscape unit is west of I-90 between Coal Creek Parkway and I-90. I-405 is not visible from most public roadways in the Newport Shores landscape unit due to topography, vegetation, and structures. The highway is most visible for viewers in the residential neighborhood on a knoll southwest of the I-405/I-90 interchange immediately adjacent to the right of way.

Lake Washington Landscape Unit

Lake Washington forms its own landscape unit, extending from its southern edge at the Rainier and Renton West landscape units to the northern project area limits. I-405 is visible from multiple locations on the lake.

Mercer Island Landscape Unit

The Mercer Island landscape unit consists of the eastern half of Mercer Island south of I-90. Views of I-405 are limited due to distance and screening by vegetation and structure.

Woodridge Landscape Unit

The Woodridge landscape unit lies north of the I-405/I-90 interchange on a plateau east of I-405 that contains a mixture of single- and multifamily housing. Views of I-405 from these residential neighborhoods are limited due to vegetation and topography.

Mercer Slough Landscape Unit

The Mercer Slough landscape unit lies west of I-405 where a narrow strip of multifamily residential developments and light industrial use separates the Mercer Slough natural area from the highway. Visibility of I-405 from the Mercer Slough landscape unit is limited due to topography and vegetation.

What do people like and dislike about the existing visual character of the AVE?

During the I-405 Context Sensitive Solutions process, user groups along the project corridor identified key community issues and concerns related to visual quality. The *I-405, Context-Sensitive Solutions Master Plan* (WSDOT 2006) documented this process. The paragraphs below summarize the input WSDOT received during the Context Sensitive Solutions process as it relates to the changes proposed for the Project.

A major concern of these viewers is their desire to maintain views of Lake Washington, downtown skylines, and the mountains. Viewers also identified the need to preserve or enhance the existing natural context and landscape of the project corridor, while minimizing impacts on the existing natural environment to the greatest extent possible.

Viewers additionally expressed their desire for the Project to enhance the “green” aspect of the study area and use standard

urban design elements to establish a cohesive identity for all structures in the corridor. They agreed to a palette of colors, textures, and simple geometric forms that are described in the *I-405 Context-Sensitive Solutions Master Plan*.

This discipline report assesses visual quality changes based on the desire of viewers for the Project to enhance key views and preserve views of the natural environment and downtown skylines. This analysis considers the Project's effect on the integrity of the urban design elements (simple geometric forms, colors, and textures) preferred by viewers and used elsewhere in the study area.

SECTION 5 PROJECT EFFECTS

What would conditions be like if the Project is not built?

The No Build Alternative is WSDOT's continued routine maintenance. These activities include short-term minor construction necessary for continued operation of existing I-405 facility and minor safety improvements, as required, within the project limits. With the No Build Alternative, trees would remain and pavement width would remain the same, but traffic is projected to slow down, allowing for longer glimpses of Lake Washington and the adjacent neighborhoods. In addition, safety improvements may include removing hazard trees that would not be replaced, which would have an adverse impact on sensitive viewers in the homes adjacent to the facility.

Whose views would the Project affect?

Viewer groups for this assessment include travelers on I-405, viewers on properties adjacent to the highway, and trail users on the May Creek, Cedar River, and Lake Washington Loop trails.

Travelers may be categorized as commuters (lower sensitivity to visual quality) or tourists (higher sensitivity), and trail users may be described as recreational users (higher sensitivity). Neighbors may be categorized as residential, recreational, industrial, and commercial, with residential and recreational viewers having higher sensitivity to visual quality than industrial or commercial viewers. Viewers with views toward I-405 generally take in a wider vista with the transportation facility itself serving as a component of the larger landscape.

Within the study area, viewers with higher sensitivity likely to view I-405 include the following:

- Persons using parks and trails
- Residents of single- and multifamily homes
- Teachers, children, and parents at schools and their associated playfields

Viewers likely to exhibit lower sensitivity include:

- Travelers along arterial streets and highways that traverse the study area
- Employees and visitors in offices and hotel centers in the urban cores of each city
- Employees and visitors in commercial, distribution, transportation, and industrial businesses

To what extent would the Project be visible?

The Project would have noticeable visual impacts in nine landscape units, which are highlighted in orange in Exhibit 3-2.

- Renton West landscape unit
- Renton East landscape unit
- Cedar River/Liberty Park landscape unit
- Kennydale landscape unit
- May Creek landscape unit
- Newcastle/Newport Hills landscape unit
- Lakeshore landscape unit
- Newport landscape unit
- Newcastle Beach Park landscape unit

The changes proposed by the Project would not be visible or would only be minimally visible for the remaining landscape units.

How would the Project affect visual quality during construction?

The Project would create adverse visual impacts for I-405 users and neighbors during the proposed 3 years of construction. During this time, construction would reduce the visual quality in the study area through the presence of construction equipment and workers, materials, debris, signage, and staging areas. Temporary lighting could be employed for nighttime construction of some project elements. Detours and lane shifts would demand greater driver attention and distract travelers from views outside the construction activity.

The primary degradation of the landscape would occur when the Project clears vegetation and begins grading operations. After these changes, viewers looking toward I-405 and related transportation facilities would see more of the freeway and facilities. The visual encroachment of I-405 would become more apparent with vegetation removal in some areas. Exposure to glare generated by construction (illumination, headlights, construction lighting, and solar reflection) would increase with removal of roadside vegetation.

Generally, residential areas east of I-405 are screened from I-405 by a combination of topography and vegetation. However, removal of vegetation for the Project could expose businesses and homes along the right of way to views of or from the facility. Viewers in homes closest to the right of way are more likely to be exposed or to notice visual changes than are viewers in homes set farther back from the right of way. Many residential areas east of I-405 are only partially screened by vegetation and topography; therefore, removal of vegetation west of the facility would expose many of these viewers to the highway or reveal views of Lake Washington and Mercer Island to the west.

The visual effects of Project construction are not anticipated to change views for neighbors, since most of the screening vegetation along the right of way line would be preserved. However, during construction, highway views would become cluttered by construction activities, construction equipment, stored materials, and general disruption of normal landscapes with fencing, equipment, vehicles, additional lighting, and activity. These temporary effects could persist in some locations for the duration of construction (approximately 5 years).

How would the Project affect visual quality during operation?

The Project would result in long-term visual impacts with varying levels of impact, based on the sensitivity of different viewer groups.

For pedestrians and cyclists on the Lake Washington Loop Trail, the Project would have a beneficial impact on visual quality by relocating the trail to the Eastside Rail Corridor, thus limiting exposure to and awareness of highway traffic, lights, and glare on I-405. In addition, the Project would

construct a new trail under I-405 and restore May Creek to a meandering channel with native vegetation on either side of the new I-405 bridge overhead. Visual quality changes for trail users are discussed further in the representative viewpoint analysis section below.

For neighbors adjacent to the highway, the Project would have few impacts. The Project proposes minimal clearing of vegetation between the highway and the right of way line. In locations where vegetation would be cleared and not replanted, neighbors are generally screened from the highway through a combination of topography, noise walls, and remaining vegetation; therefore, these changes would not be visible. In a few locations, such as north of NE 44th Street where Wall 10 East would be constructed, the Project would clear the last remaining vegetation that shields neighbors from the freeway. To mitigate for the loss of screening, the Project would construct a concrete panel wall to restore privacy and screen homes from the light and glare of highway traffic.

For the most part, the Project would expand I-405 from six lanes to eight lanes by restriping existing pavement, resulting in little to no visual effect for travelers.

At several interchange areas along I-405, the Project would create adverse impacts on visual quality by eroding the natural character of the corridor and shifting it to a more urban condition. Vegetation would be cleared for construction. Tolling gantries, new light poles, and light-emitting diode (LED) signs would add complexity, light, and glare to the corridor. The Project would construct retaining walls, ramps, and inline transit stations and widen pavement to accommodate the additional lanes.

The Project would replace bridges at Cedar Avenue and Renton Avenue with longer-span structures and widen the southbound bridge at Cedar River. The bridge at May Creek would also be widened and changed to two single-span structures. New bridges would follow the *I-405, Urban Design Criteria*, which would have a beneficial impact on project coherence. Where bridge spans are lengthened, vegetation clearing would be minimal and changes less noticeable to the public. Where bridges are widened, vegetation clearing would be more extensive and shading would increase, both of which would have an adverse visual impact in areas where natural harmony is high.

For viewpoints where the visual effects of the Project are greater, we developed sketches that simulate the views after construction. The simulations in the viewpoint analysis section below are based on current designs, which may change during construction. As discussed in Section 2, Project Description, the Project is being constructed using a design-build approach in which contractors have the flexibility to propose alternatives that may result in changes to the visual effects described in this report. If the contractor proposes modifications not covered by this report, additional review of visual impacts would be conducted as needed.

I-405 Bridge Widening at Cedar and Renton Avenues

Representative View A (Exhibit 3-4) looks north from the northbound lanes of I-405 just south of the Cedar and Renton Avenue bridges that cross over I-405 (Exhibit 5-1). At this viewpoint, I-405 and the sky dominate the view and are framed by a retaining wall to the east and barrier to the west. Roadway elements dominate the foreground, middleground, and background. Sparse trees and vegetation on the west side of I-405 are barely noticeable in the middleground views giving this viewpoint a low level of natural harmony.

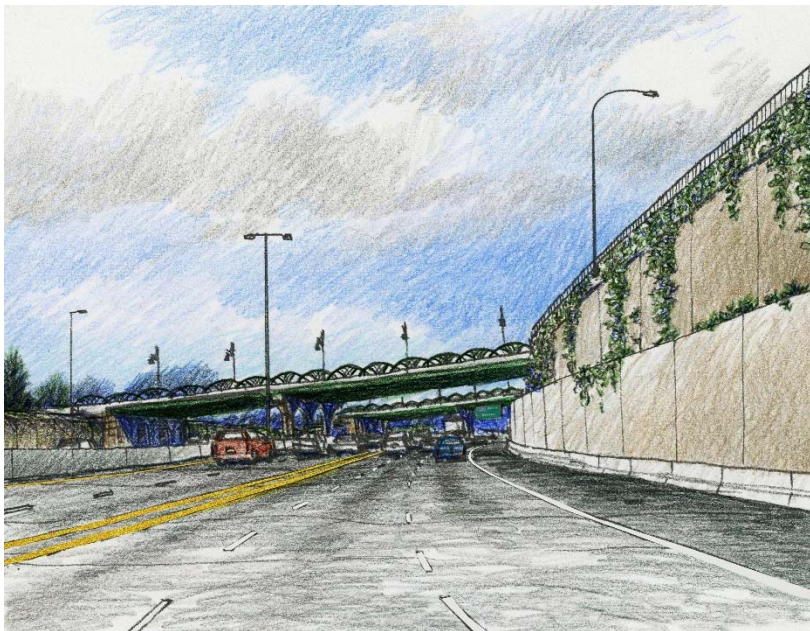
Exhibit 5-1. View A, South of Cedar and Renton Avenue Bridges over I-405, Existing Conditions



View A (Exhibit 5-2) simulates the two replacement bridges after construction. The Project would rebuild these bridges and lengthen their span by about 20 feet to the west to make

room for two additional lanes (one in each direction) on I-405. The rebuilt bridges would include the aesthetic treatments in the *I-405, Urban Design Criteria* (WSDOT 2016). The bridge barrier would have a “shingle” texture and new retaining walls would include wall textures and pigmented sealer to match other recently built structures in the I-405 corridor. The new bridges would include sidewalks and pedestrian lights on the north sides. These changes would increase the level of project coherence and cultural order for this viewpoint, resulting in an overall beneficial impact on visual quality.

Exhibit 5-2. View A, Cedar and Renton Avenue Bridges over I-405, After Construction



I-405 Bridge Widening at Cedar River

Representative View B (Exhibit 5-3) looks east toward I-405 from Cedar River Park where the Cedar River Trail and a local roadway (S 3rd Street) pass under I-405. In this view, the trail, local roadway, and I-405 dominate the foreground and middleground view. While native vegetation is visible in the background behind I-405, vegetation in the foreground view consists of sparse mowed grass. Viewers at this viewpoint are inferior to (looking up at) I-405.

Exhibit 5-3. View B, I-405 Bridge at Cedar River Existing Conditions



View B (Exhibit 5-4) simulates the changes to the visual environment as a result of the Project. The wider bridge carrying southbound I-405 would bring the highway approximately 15 feet closer to the viewer and increase the shadowing and massiveness of the structure over the trail and roadway below. Together, the existing northbound and widened southbound bridges would increase from roughly 130 feet wide to 145 feet wide.

Exhibit 5-4. View B, I-405 Bridge Widening at Cedar River after Construction



The new bridge would include the aesthetic treatments shown in the *I-405 Urban Design Criteria*. Consistent with other new bridges in the corridor, the bridge barrier would have a shingle pattern, and the bridge girders and roadway light poles would be painted Cascade Green. The bridge barrier and retaining walls would be sealed with Mount St. Helens pigmented sealer. These changes would have a beneficial impact on project coherence that would offset the adverse impacts of increased shading due to the bridge widening. As today, the trail and roadway under the bridge would be illuminated at night with underdeck lighting.

While recreational users typically have higher sensitivity to visual changes, trail users in this location are already exposed to views of I-405 and commercial development to the west. These viewers are presumed to have relatively moderate to low sensitivity to the changes proposed by the Project. Overall, the Project would have a neutral impact on visual quality at this viewpoint.

I-405 Bridge at May Creek

View C (Exhibit 3-4) looks east underneath I-405 from the existing May Creek Trail adjacent to I-405. Viewers on the trail are in an inferior position (i.e., looking up) relative to I-405.

At this viewpoint, the highway facility consists of the bridge columns and decking with chain-link fence running between the columns and the creek (Exhibit 5-5). An informal footpath runs between the stream and the chain-link fencing; however, this viewpoint is taken from the maintained May Creek Trail that runs alongside I-405.

The highway is the major component of the foreground and middleground views. Native vegetation beyond the bridge give the background a moderate degree of natural harmony. Both project coherence and cultural order are low at this viewpoint.

Exhibit 5-5. View C, I-405 Bridge at May Creek Existing Conditions



As shown in Exhibit 5-6, the Project would construct both a longer and wider bridge to make room for the two additional ETLs on I-405. The existing bridge columns would be removed, and the bridge would be replaced with two single-span structures. The bridge profile would remain the same. While the wider bridge would increase shading over the trail and creek, the increased span of the bridge and the two single-span design would allow for more expansive views under the bridge of the natural vegetation on either side of I-405.

The Project would restore the stream channel giving it a more natural, meandering alignment, replacing existing riprap with rounded rock, and restoring the streambank with native vegetation at the edges of the bridge. The informal footpath under I-405 would be replaced with a recreational trail to be maintained by the city. The bridge would include the aesthetic treatments shown in the *I-405 Urban Design Criteria*.

The changes proposed by the Project would increase natural harmony, cultural order, and project coherence at this viewpoint. Overall, these changes would result in a more vivid landscape composition as a whole and have a beneficial impact on visual quality at View C.

Exhibit 5-6. View C, I-405 Bridge Widening at May Creek after Construction



At-grade Park-and-Ride Lot

Representative View D (Exhibit 3-4) looks north from the May Creek Trail toward an existing low-rise industrial building west of I-405 (Exhibit 5-7). This view represents the perspective of May Creek Trail users looking north at the site of a future park-and-ride lot to be constructed by others.

The trail user's view of the industrial development to the north is partially screened by vegetation. The foreground view has a natural character, while the middleground view has a more urban character due to the industrial facilities beyond the sparse trees. The trees surrounding the facility and open views of the sky and wooded hillsides beyond the building together create a moderate degree of natural harmony for the background view.

Exhibit 5-7. View D, At-grade Park-and-Ride Existing Conditions



The Project would demolish the existing industrial structures and grade the industrial site to prepare it for construction of a 200-stall park-and-ride lot shown in the simulation (Exhibit 5-8). The existing vegetation would remain intact between the May Creek Trail and the chain-link fence around the industrial property. The Project would install a compost-amended biofiltration swale (maintained as a mowed lawn) at the south end of the parking lot, just beyond the chain-link fence, to treat stormwater running off the graded site. The actual design of the parking lot will be determined by others and would likely include landscape buffers and sidewalks to supplement the simple parking lot shown in the Exhibit 5-8.

While the proposed park-and-ride would not significantly alter the natural harmony of this view, it would be more compatible with surrounding suburban land uses, having a beneficial impact on cultural order. In the future, the Project could have either a beneficial impact on visual quality, depending on how the parking lot is designed. In the short term, the razing of the industrial buildings by the Project would have a neutral effect on visual quality.

Exhibit 5-8. View D, At-grade Park-and-Ride after Construction



NE 44th Street Interchange

Representative View E (Exhibit 3-4) looks north from northbound I-405 toward the NE 44th Street interchange (Exhibit 5-9). The viewer is level with I-405 and inferior to the NE 44th Street overpass. This view represents perspectives both toward the facility (the NE 44th Street overpass) and from I-405.

Exhibit 5-9. View E, NE 44th Street Interchange Existing Conditions



This view consists of project views in the foreground and middleground and a forested, natural character in the background. The simplicity of the highway structures—light poles, concrete barriers, and minimal highway signage—result in a moderate level of project coherence. The trees surrounding the facility and open views of the sky combine to create a moderately high degree of natural harmony for the background view.

The Project proposes to reconstruct the NE 44th Street interchange by widening I-405 by two lanes and adding direct-access ramps and inline transit stations (one in each direction) in the median (Exhibit 5-10). The inline transit stations would include station platforms, signage, artwork, lighting, ticket machines, and site furnishings, such as shelters, lean rails, benches, bollards, bicycle storage, and trash receptacles.

The Project would also replace the NE 44th Street bridge with a longer, wider bridge, relocate Lake Washington Boulevard along the east side of I-405, reconstruct the on- and off-ramps, and relocate the northbound off-ramp.

Exhibit 5-10. View E, NE 44th Street Interchange (Looking North) After Construction



Project elements associated with the roadway including the I-405 bridge, direct access ramps, retaining walls and improvements to Lake Washington Boulevard would incorporate the aesthetic treatments described in the *I-405*

Urban Design Criteria. The reconstructed NE 44th Street bridge would have a curvilinear railing to match other recently constructed structures in the corridor (Exhibit 5-2), and sign bridges, light poles, and bridge railings would be painted Cascade Green. Retaining walls would include wall textures and pigmented sealer to match other recently built structures in the corridor.

For Project elements associated with the inline transit stations that WSDOT is developing jointly with Sound Transit, Sound Transit and WSDOT will work together to meet the intent of the *I-405 Urban Design Criteria*. Lighting at the transit stations would use fixtures with hoods to minimize light pollution.

The Project would clear trees east of I-405 to make way for the reconstructed off-ramp to Lake Washington Boulevard. While trees and native vegetation would be installed in between the mainline and the off-ramp, the overall effect of the Project would be a dramatic increase in the expansiveness of the built structures and a much more urban character.

The addition of two lanes to the mainline, as well as the direct-access ramps with inline transit stations, would add visual complexity for travelers and new sources of light and glare. While the use of the aesthetic treatments described in the *I-405 Urban Design Criteria* would have a beneficial impact on project coherence, the overall shift in character from natural to more urban would be incompatible with the surrounding visual character. For this reason, the Project would have an adverse impact on visual quality at this viewpoint.

Lake Washington Trail

View F (Exhibit 3-4) looks north along the Lake Washington Trail where it runs adjacent to southbound I-405 at MP 8.0 (Exhibit 5-11). In this location, the trail is wedged between the highway on the east and a chain-link fence on the west. Cyclists and pedestrians are separated from the highway by a low precast, concrete barrier topped with a chain-link fence.

Though viewers can see glimpses of native vegetation on the far side of the highway and along the west side of the trail, the presence of the highway, concrete barrier, and fencing encroaches on these views and lowers the degree of natural harmony at this viewpoint.

Project coherence is similarly low due to the lack of consistency in materials used for the concrete barrier, chain-

link fencing, and light poles. The fence on the left side of the trail is rusted and falling off the fence poles, while the fence on the right side of the viewpoint is newer and galvanized.

Exhibit 5-11. View F, Lake Washington Trail Existing Conditions



The Project would relocate pedestrians and bicyclists to a new multipurpose trail on the footprint of the old railway corridor just west of Lake Washington Boulevard. Exhibit 5-12 shows the current condition of the rail corridor at approximately the same trail milepost as the photo above. The new trail would be 12 feet wide, with a 2-foot-wide gravel shoulder on the west side and a 6-foot-wide gravel shoulder on the east side.

Exhibit 5-12. View F, Eastside Rail Corridor Existing Conditions



For bicyclists and pedestrians, the visual experience of traveling on the relocated trail would be improved (Exhibit 5-13). The new trail would be flanked by the natural vegetation alongside the railway corridor and offer occasional

views through the trees of Lake Washington and the homes along the lakeshore, thus increasing the degree of natural harmony and sense of cultural order for viewers at this viewpoint.

Exhibit 5-13. View F, Eastside Rail Corridor Regional Trail After Construction



In addition, the relocated trail would be approximately 20 feet lower in elevation than the highway, so the light and glare trail users experience today would be blocked by both the change in elevation and the vegetation between the old railroad bed and I-405. The simplicity and consistency of the trail section, especially when compared to the existing trail conditions, would offer an increased sense of project coherence for trail users. Overall, the visual impacts at this viewpoint would be beneficial for trail users.

112th Ave SE Interchange

Visual quality at this interchange is evaluated from the two viewpoints (View G and View H) described below.

Representative View G (Exhibit 3-4) looks southbound from the existing 112th Avenue SE interchange (Exhibit 5-14). At this viewpoint, the viewer is in an elevated position above the mainline.

Exhibit 5-14. View G, 112th Avenue SE Interchange (Looking South) Existing Conditions



The highway facility consists of the roadway itself, grassed slopes, a few concrete barriers, one light pole, and several scattered, small signs. The highway is a major component of the foreground and middleground views, while the dark conifers and other vegetation flanking the roadway are more dominant components of the middleground and background views, giving this viewpoint a moderate degree of natural harmony.

View H looks northeast across I-405 toward an existing park-and-ride lot (Exhibit 5-15). The forested slopes east of the highway and the native vegetation between I-405 and the park-and-ride lot provide a moderate level of natural harmony at this viewpoint. In the foreground, the view of the highway and off-ramp is relatively uncluttered, and the grass strip between the northbound and southbound lanes helps to soften the view. In addition, the light poles, a few small signs, and low concrete barriers are relatively unobtrusive.

Exhibit 5-15. View H, 112th Avenue SE Interchange Existing Conditions



The Project would lengthen the footprint of the Newport Hills Park-and-Ride and widen the 112th Ave SE overpass to make room for the two additional ETLs on I-405. The Project would also add direct-access ramps and inline stations for bus rapid transit in the I-405 median.¹

As shown in Exhibit 5-16, the Project would shift the southbound lanes to the east, where the grass median is today. While the grass slope would remain between the mainline and the southbound on-ramp (in the right side of Exhibit 5-16), the existing grassed median would be replaced by the additional southbound lane and direct-access ramps with inline transit stations. The retaining walls supporting the direct-access ramps and the northbound off-ramp would be visible from the vantage point of View G, while the northbound mainline would be hidden from view behind the direct-access ramps. (The inline transit stations are not visible in this view; however, they would be similar to the transit station shown in Exhibit 5-10 above.)

¹ *The Project may construct only the southbound half of the overpass; however, the full overpass with the direct-access ramps for HOV and transit remains the long-term vision and may be completed during the time frame of the Project. For this analysis, we are considering the complete overpass replacement because visual impacts due to the partial overpass replacement will be less than the complete overpass replacement.*

Exhibit 5-16. View G, 112th Ave SE Interchange (Looking South) After Construction



Overall, the changes at this viewpoint would have an adverse impact on natural harmony, and a neutral impact on project coherence. The rolling slopes of the current view would be replaced by terraced ramps, barriers, and retaining walls, giving this view a much more urban character as compared to the more natural, almost park-like setting of the existing highway. The few trees that exist today in the foreground view would be cleared and not replaced. While the trees in the middleground and background views would be retained, I-405 would have a much more dominant presence than it did before.

The retaining walls, ramps, and bridge would use the aesthetic treatments described in the *I-405 Urban Design Criteria*. This viewpoint already has a high degree of visual coherence based on the simplicity of existing conditions; however, so the use of these treatments would have a neutral effect on project coherence at this viewpoint. Overall, the Project would have an adverse impact on visual quality at View G.

The impacts of the Project on visual quality at View H would be similar to the impacts described for View G. The southbound lanes would shift east and be farther away from the viewer, while the retaining walls that support the direct-access ramps would block views of the northbound lanes (Exhibit 5-17). The park-and-ride lot would be more noticeable, especially on the left side of the view where trees would be cleared to make way for the longer park-and-ride footprint. These changes would have an adverse impact on

natural harmony and a neutral impact on project coherence. Overall, the visual impacts at View H would have an adverse impact on visual quality.

Exhibit 5-17. View H, 112th Ave SE Interchange After Construction



Coal Creek Parkway

We analyzed the effects of the Project from two viewpoints: View I on the west side of I-405 and View J on the east. These viewpoints are represented by red dots in Exhibit 5-20.

View I looks east toward I-405 from Coal Creek Parkway at the foot of the southbound on- and off-ramps for I-405 (Exhibit 5-18). In this view, the roadway elements dominate the foreground, while the forest surrounding the interchange provides a moderate level of natural harmony to the middleground and background views.

View I lacks visual coherence due to its confusing jumble of elements—utility cabinets, light and signal poles, chain-link fence, signs, the current bridge, and the asphalt bicycle trail adjacent to the southbound on-ramp—that seem to have been added at different times and sited without considering their relationship to each other or to the natural environment of Coal Creek. Vegetation near the interchange consists of rough grass with a few weeds close to the roadway and native trees and shrubs beyond the grass area. The native vegetation has the appearance of a greenbelt on either side of Coal Creek Parkway as it winds through the suburban neighborhoods on either side of I-405.

Exhibit 5-18. View I, Coal Creek Parkway Existing Conditions



View J looks west toward I-405 from Coal Creek Parkway where it intersects 124th Street SE below Newport High School (Exhibit 5-19). The viewer is in a slightly superior position, looking down towards the I-405 overpass above Coal Creek Parkway, which dominates the foreground.

Exhibit 5-19. View J, Coal Creek Parkway Existing Conditions



The Project proposes to build a new bridge carrying I-405 southbound lanes over Coal Creek Parkway. The Lake Washington Trail, which is currently adjacent to the highway, would be relocated to the west onto the Eastside Rail Corridor. In addition, the Project would construct roundabouts on Coal Creek Parkway on the east and west sides of I-405.

The roundabout design for Coal Creek Parkway is shown in Exhibit 5-20. Sidewalks and trail connections are shown in

purple; areas where low vegetation may be planted are shown in orange; and areas where taller vegetation may be planted are shown in green. Areas shown in gray represent truck aprons (paved areas that allow for over-tracking of tires on larger vehicles).

Exhibit 5-20. Coal Creek Parkway Roundabouts



At View I, the Project would clear mature trees, construct a wider bridge over Coal Creek Parkway, and clear vegetation to construct a mowed grass bioswale in the southwest quadrant of the intersection (Exhibit 5-21). The new bridge carrying the southbound lanes would bring the highway much closer to the viewer than it is today.

The new bridge would be approximately 70 feet wide and include the aesthetic treatments shown in the *I-405 Urban Design Criteria*. The retaining walls facing the viewer would have an Ashlar wall texture and include terraced planters on the south side of Coal Creek Parkway. The bridge barrier would have a shingle pattern, and bridge girders and new roadway lighting would be painted Cascade Green. The bridge barrier, retaining walls, and planter walls would be sealed with Mount St. Helens pigmented sealer.

Exhibit 5-21. View I, Coal Creek Parkway After Construction



At View J, the existing northbound I-405 bridge would remain and the Project would construct roundabouts, retaining walls, and a transit island between the northbound on-ramp to I-405 and the westbound through-lanes on Coal Creek Parkway (Exhibit 5-22).

Exhibit 5-22. View J, Coal Creek Parkway After Construction



In both views, the Project would clear much of the vegetation that exists today and realign the ramps and roadways to fit into the new roundabout configuration. The construction of the roundabouts with their paved truck aprons and compact, paved center islands would increase the expansiveness of pavement at both viewpoints.

These changes would have an adverse impact on natural harmony at Views I and J. The expansiveness of the pavement and clearing of vegetation would be incompatible with the existing “greenbelt” character seen at these viewpoints and would permanently shift the visual character from natural to semi-urban, especially if areas where low vegetation is possible are paved in stamped, colored concrete rather than planted.

WSDOT would mitigate for these adverse impacts by including the landscaped terraces and other aesthetic treatments described in the *I-405 Urban Design Criteria*. At View J, the retaining wall would include an Ashlar texture, wall cap, and barrier, and use the colors described in the *I-405 Urban Design Criteria*. The bus stop would include a low barrier with a Cascade Green railing to protect bus passengers from errant vehicles on the adjacent northbound on-ramp. At View I, landscape terraces would be installed only on the south side of Coal Creek Parkway, since there is not enough room between the highway and the southbound off-ramp to install landscape terraces on the north side of Coal Creek Parkway (Exhibit 5-21). This area north of Coal Creek Parkway would include vines and shrubs only.

The truck apron and paved center islands would use Ashlar-stamped concrete with an integral color that is compatible with the community enhancement colors and textures described in the *I-405 Urban Design Criteria*. Where possible, the Project would install plants in the roundabout splitter islands and “teardrop” center islands. The plant selection would allow for unobstructed sight lines and be compatible with the plant palette described for community enhancement planting in the *I-405 Urban Design Criteria*. Mowed grass or low-growing plants may be used in areas where only low vegetation is possible, provided there is a maintenance agreement with the City of Bellevue or a local community to keep it maintained. If such an agreement is not reached, the Project would install landscape rock with mortar-set river cobble instead.

As part of the roundabout construction, the Project would remove the traffic poles and signals currently cluttering the intersections at both viewpoints. Pedestrian lights would be added along all new sidewalks, and the existing street lights would be replaced with the Cascade Green “Shoebox” style

lights shown in the *I-405 Urban Design Criteria*. The sidewalks themselves would have the paving pattern shown in the *I-405 Urban Design Criteria*. These changes would have a beneficial impact on project coherence and cultural order at both viewpoints.

The construction of roundabouts on Coal Creek Parkway would have an adverse impact on natural harmony at these two viewpoints, and a beneficial impact on project coherence. The changes proposed are compatible with the suburban neighborhoods nearby, which would have a beneficial impact on cultural order. Overall, the Project would have an adverse impact on visual quality due to the permanent loss of vegetation, expansiveness of pavement, and change in visual character from natural to semi-urban.

WSDOT would mitigate for these impacts by adhering to the *I-405 Urban Design Criteria* for walls, lighting, and landscaping and by developing aesthetic criteria for roundabouts that are compatible with these community enhancement treatments. WSDOT may also mitigate for these impacts by pursuing a maintenance agreement that would allow planting in the splitter islands and teardrop center islands.

Would there be any indirect effects that may be delayed or distant from the Project?

Over time, development is likely to become much denser in neighborhoods closer to the inline transit stops at 112th Avenue SE and NE 44th Street. This may result in clearing of the trees and native vegetation that give the corridor an appealing natural character that stakeholders have said they want to preserve.

With the expansion of the May Creek Trail under I-405 and the relocation of the Lake Washington Loop Trail to the Eastside Rail Corridor, people would be more likely to travel on foot or by bike within their neighborhoods or to commute to urban centers for work, shopping, or recreation. Viewers in homes near these trails would be likely to see the movement of these travelers on a much more frequent basis as these modes of travel increase.

SECTION 6 MEASURES TO AVOID OR MINIMIZE EFFECTS

What measures will WSDOT take to mitigate visual quality impacts during operation?

Mitigation measures for visual quality include the following measures:

- The Project is being planned, developed, and designed in accordance with Context Sensitive Solutions guidelines. These guidelines provide an approach that incorporates community values and improves compatibility of the transportation facility with the communities and neighborhoods through which it passes. Context Sensitive Solutions also meet local, regional, and national requirements for the safe, efficient, effective movement of people and goods. Context Sensitive Solutions consider the elements of mobility, safety, environment, and attractiveness throughout the Project. Adhering to these guidelines, the Project is being developed to fit its physical surroundings and to preserve scenic, visual, historic, and environmental resources.
- The application of Context Sensitive Solutions guidelines precludes the need to further mitigate visual impacts. Because the Project is being developed with local input, community concerns relating to appearance, environment, cultural resources, and other areas are being addressed early. Mitigation measures typical for transportation projects, such as retaining existing natural vegetation and planting new vegetation to screen built elements, are incorporated within the highway and related transportation features. Other areas subject to Context Sensitive Solutions include structural elements, landscape features, lighting, and signage. The Project will mitigate for visual quality impacts from the increase in built structures by adhering to the aesthetic treatments described in the *I-405 Urban Design Criteria*, which were developed with extensive community and stakeholder input. For Project elements that WSDOT is developing jointly with Sound Transit, Sound Transit and WSDOT will work together to meet the intent of the *I-405 Urban Design Criteria*. These elements include

the park-and-ride lot and inline transit stations at NE 44th Street and at 112th Avenue SE. Lighting at the transit stations would use fixtures with hoods to minimize light pollution.

What measures will WSDOT take to mitigate visual quality impacts during construction?

- During construction, visual impacts can be reduced by locating material and equipment storage/staging in areas that are not prominent. Light and glare effects can be reduced by shielding freeway lighting and using downcast lighting so light sources (e.g., light bulbs) are not directly visible from residential areas and local streets.
- Visual effects during construction can further be reduced by restoring areas as work in each area is completed, rather than waiting until all roadway construction is done. By restoring completed areas right away, portions of the I-405 corridor will be returned to permanent landscapes sooner.
- Common signs and public notices with clear directions will be used to enhance visual interest as well.

SECTION 7 REFERENCES

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APPENDIX A ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
AVE	Area of Visual Effect
ADA	Americans with Disabilities Act
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
ETL	express toll lane
FHWA	Federal Highway Administration
GP	general purpose
HOV	high-occupancy vehicle
I-405	Interstate 405
I-5	Interstate 5
I-90	Interstate 90
LED	light-emitting diode
MP	milepost
NEPA	National Environmental Policy Act
OEO	Office of Equal Opportunity
ROD	Record of Decision
SOV	single-occupant vehicle
SR	State Route
USDOT	U.S. Department of Transportation
WSDOT	Washington State Department of Transportation
WSTC	Washington State Transportation Commission

APPENDIX B GLOSSARY

Term	Meaning
Affected environment	As defined by NEPA, this is the “environment of the area(s) to be affected or created by the alternatives under consideration” (40 CFR 1502.15).
Area of Visual Effect (AVE)	The area in which views of the Project would be visible as influenced by the presence or absence of intervening topography, vegetation, and structures.
Background	The zone that extends from 3 to 5 miles to infinity miles away from the viewer.
Baseline conditions	Existing conditions of the affected environment, affected population, and existing visual quality.
Color	The light reflecting off of an object at a particular wavelength that creates hue (green, indigo, purple, red, etc.) and value (light to dark hues).
Cumulative impacts	Impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Direct impacts	Impacts caused by the action and occur at the same time and place.
Distance zones	Distance zones are based on the position of the viewer in relationship to the landscape. They are measured from one static point, such as the location of a key view. There are three defined distance zones: <ul style="list-style-type: none">▪ Foreground: 0.25 to 0.5 mile from the viewer.▪ Middleground: Extends from the foreground zone to 3 to 5 miles from the viewer.▪ Background: Extends from the middleground zone to infinity.
Express toll lane	A limited-access freeway lane that is actively managed through a variable toll system to regulate its use and thereby maintain express travel speeds and reliability. Toll prices rise or fall in real time as the lane approaches capacity or becomes less used. This ensures that traffic in the express toll lane remains flowing at express travel speeds of 45 to 60 miles per hour. Transit and carpools do not pay a toll.
Foreground	The zone that extends from the viewer to 0.25 to 0.5 mile away from the viewer.

Term	Meaning
Form	The unified mass or shape of an object that often has an edge or outline and can be defined by surrounding space. For example, a high-rise building would have a highly regular, rectangular form, whereas a hill would have an organic, mounded form.
Impact	<p>Change can be made to the physical environment (measured by the compatibility of the impact) or to viewers (measured by sensitivity to the impacts). Together, the compatibility of the impact and the sensitivity of the impact yield the value of the impact on visual quality.</p> <ul style="list-style-type: none"> ▪ Compatibility of the impact: Defined as the ability of environment to visually absorb the proposed project as a result of the project and the environment having compatible visual characters. The proposed project can be considered compatible or incompatible. By itself, compatibility of the impact should not be confused or conflated with the value of the impact. ▪ Sensitivity to the impact: Defined by the ability of viewers to see and care about a project’s impacts. The sensitivity to impact is based on viewer sensitivity to changes in the visual character of visual resources. Viewers are either sensitive or insensitive to impacts. By itself, the sensitivity of the impact should not be confused or conflated with the value of the impact. ▪ Value of the impact: Defined as either a beneficial, adverse, or neutral change to visual quality. A proposed project may benefit visual quality by either enhancing visual resources or by creating better views of those resources and improving the experience of visual quality by viewers. Similarly, it may adversely affect visual quality by degrading visual resources or obstructing or altering desired views.
Indirect impacts	Impacts caused by the action that are later in time or farther removed in distance but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
Key view	A location from which a viewer (traveler or neighbor) can see either iconic or representative landscapes, with or without the highway, of the project corridor. Usually there is at least one key view for each landscape unit. Used for visual simulations.

Term	Meaning
Landscape units	Defined areas within the AVE that have similar visual features and homogeneous visual character and frequently, a single viewshed. An “outdoor room.” Typically, the spatial unit used for assessing visual impacts.
Line	Perceived when there is a change in form, color, or texture and where the eye generally follows this pathway because of the visual contrast. For example, a city’s high-rises can be seen silhouetted against the blue sky and be seen as a skyline, a river can have a curvilinear line as it passes through a landscape, or a hedgerow can create a line where it is seen rising up against a flat agricultural field.
Middleground	The zone that extends from 0.25 to 0.5 mile to 3 to 5 miles away from the viewer.
Permanent impacts	Impacts resulting from construction activities lasting for 2 or more years, the built project, or the operations and maintenance associated with the built project.
Project region	The 30-mile radius surrounding a project corridor.
Project vicinity	The 0.5-mile offset surrounding a project corridor.
Protected visual resources	Components of the natural, cultural, or project environments that are capable of being seen and that are protected under local, state, or federal plans or policies. There are instances where there is an overwhelming community interest in the preservation of the aesthetic qualities of visual resources that although they are not officially protected by local, state, or federal plans or policies, they still warrant protection.
Temporary impacts	Impacts resulting from construction or short-term activities that fall within a period of 2 years or less.
Simulations	Two- or three-dimensional depictions of the visual character of a future state. Simulations range from artistic renderings to computer animations.
Texture	The perceived coarseness of a surface that is created by the light and shadow relationship over the surface of an object. For example, a rough surface texture (e.g., a rocky mountainside) would have many facets resulting in a number of areas in light and shadow and, often, with distinct separations between areas of light and shadow. Conversely, a smooth surface texture (e.g., a beach) would have fewer facets, larger surface areas in light or shadow, and gradual gradations between light and shadow.

Term	Meaning
Viewers	<p>Neighbors who can see the proposed project and travelers who would use it.</p> <ul style="list-style-type: none"> ▪ Neighbors: Viewers who occupy or will occupy land adjacent or visible to the proposed project. For a complex or controversial project, neighbors can be defined by land use, including residential, retail, commercial, industrial, agricultural, recreational, and civic neighbors. ▪ Travelers: Viewers who use the existing or would use the proposed transportation project. For complex or controversial projects, travelers can be defined by the purpose of traveling, including commuting, hauling, touring, or exercising travelers or by their mode of travel as motorists, bicyclists, or pedestrians.
Viewer sensitivity	<p>The degree to which viewers are sensitive to changes in the visual character of visual resources. It is the consequence of two factors—viewer exposure and viewer awareness.</p> <ul style="list-style-type: none"> ▪ Viewer exposure: Viewer exposure is a measure of proximity (the distance between viewer and the visual resource being viewed), extent (the number of viewers viewing), and duration (how long of a time visual resources are viewed). The greater the exposure, the more viewers will be concerned about visual impacts. ▪ Viewer awareness: Viewer awareness is a measure of attention (level of observation based on routine and familiarity), focus (level of concentration), and protection (legal and social constraints on the use of visual resources). The greater the attention, the more viewers will be concerned about visual impacts.
Viewshed	<p>All of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail).</p>
Visual character	<p>The description of the visible attributes of a scene or object typically using artistic terms such as form, line, color, and texture.</p>
Visual impacts	<p>Changes to visual resources, viewers, or visual quality.</p>

Term	Meaning
Visual quality	<p>What viewers like and dislike about visual resources that compose the visual character of a particular scene. Different viewers may evaluate specific visual resources differently based on their interests in natural harmony, cultural order, and project coherence. Neighbors and travelers may, in particular, have different opinions on what they like and dislike about a scene.</p> <ul style="list-style-type: none">▪ Natural Harmony: What viewer likes and dislikes about the natural environment. The viewer labels the visual resources of the natural environment as being either harmonious or inharmonious. Harmony is considered desirable; disharmony is undesirable.▪ Cultural Order: What a viewer likes and dislikes about the cultural environment. The viewer labels the visual resources of the cultural environment as being either orderly or disorderly. Orderly is considered desirable; disorderly is undesirable.▪ Project Coherence: What the viewer likes and dislikes about the project environment. The viewer labels the visual resources of the project environment as being either coherent or incoherent. Coherent is considered desirable; incoherent is undesirable.
Visual resources	<p>Components of the natural, cultural, or project environments that are capable of being seen.</p> <ul style="list-style-type: none">▪ Natural Visual Resources: The land, water, vegetation, and animals that compose the natural environment. Although natural resources may have been altered or imported by people, resources that are primarily geological or biological in origin are considered natural. A grassy pasture with rolling terrain, scattered trees, and grazing cows, for example, is considered to be composed of natural visual resources, even though it is a landscape created by people.▪ Cultural Visual Resources: The buildings, structures, and artifacts that compose the cultural environment. These are resources that were constructed by people.▪ Project Visual Resources: For highway transportation projects, the geometrics, structures, and fixtures that compose the project environment. These are the constructed resources that were or will be placed in the environment as part of the proposed project.

