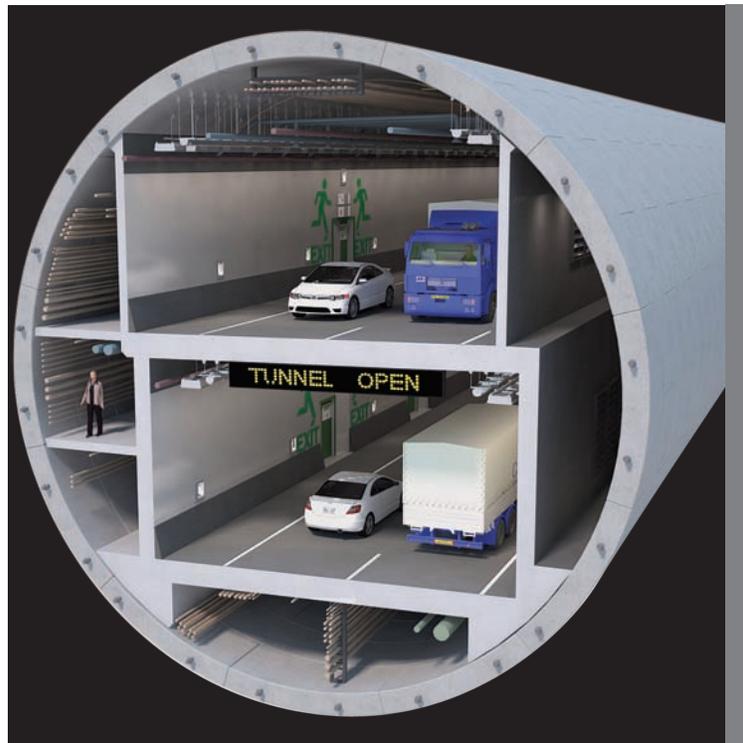


# ALASKAN WAY VIADUCT REPLACEMENT PROJECT

## 2010 Supplemental Draft Environmental Impact Statement

### APPENDIX G Land Use Discipline Report



Submitted by:  
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OCTOBER 2010

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# **Alaskan Way Viaduct Replacement Project**

## **Supplemental Draft EIS**

### **Land Use Discipline Report**

The Alaskan Way Viaduct Replacement Project is a joint effort between the Federal Highway Administration (FHWA), the Washington State Department of Transportation (WSDOT), and the City of Seattle. To conduct this project, WSDOT contracted with:

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- A Tunnel Subsurface Property Acquisitions
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## ACRONYMS AND ABBREVIATIONS

City	City of Seattle
CBD	Central Business District
CZM	Coastal Zone Management
EIS	Environmental Impact Statement
ESHB	Engrossed Substitute House Bill
FHWA	Federal Highway Administration
GMA	Washington State Growth Management Act
HOV	high-occupancy vehicle
I-5	Interstate 5
I-90	Interstate 90
MIC	Manufacturing and Industrial Center
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge and Elimination System
Program	Alaskan Way Viaduct and Seawall Replacement Program
project	Alaskan Way Viaduct Replacement Project
PSRC	Puget Sound Regional Council
SDOT	Seattle Department of Transportation
SEPA	State Environmental Policy Act
SCM	Seattle Cascade Mixed
SM	Seattle Mixed
SMC	Seattle Municipal Code
SR	State Route
TBM	tunnel boring machine
TSP	Transportation Strategic Plan
WOSCA	Washington-Oregon Shippers Cooperative Association
WSDOT	Washington State Department of Transportation

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# Chapter 1 INTRODUCTION AND SUMMARY

## 1.1 Introduction

This discipline report evaluates the Bored Tunnel Alternative, the new alternative under consideration for replacing the Alaskan Way Viaduct. This report and the Alaskan Way Viaduct Replacement Project Supplemental Draft Environmental Impact Statement (EIS) that it supports are intended to provide new information and updated analyses to those presented in the March 2004 Alaskan Way Viaduct and Seawall Replacement Project Draft EIS and the July 2006 Alaskan Way Viaduct and Seawall Replacement Project Supplemental Draft EIS. The discipline reports present the detailed technical analyses of existing conditions and predicted effects of the Bored Tunnel Alternative. The results of these analyses are presented in the main volume of the Supplemental Draft EIS.

The Federal Highway Administration (FHWA) is the lead federal agency for this project, primarily responsible for compliance with the National Environmental Policy Act (NEPA) and other federal regulations, as well as distributing federal funding. As part of the NEPA process, FHWA is also responsible for selecting the preferred alternative. FHWA will base their decision on the information evaluated during the environmental review process, including information contained within the Supplemental Draft EIS and the subsequent Final EIS. FHWA can then issue their NEPA decision, called the Record of Decision (ROD).

The 2004 Draft EIS (WSDOT et al. 2004) evaluated five Build Alternatives and a No Build Alternative. In December 2004, the project proponents identified the cut-and-cover Tunnel Alternative as the preferred alternative and carried the Rebuild Alternative forward for analysis as well. The 2006 Supplemental Draft EIS (WSDOT et al. 2006) analyzed two alternatives—a refined cut-and-cover Tunnel Alternative and a modified rebuild alternative called the Elevated Structure Alternative. After continued public and agency debate, Governor Gregoire called for an advisory vote to be held in the city of Seattle. The March 2007 ballot included an elevated alternative and a surface-tunnel hybrid alternative. The citizens voted down both alternatives.

Following this election, the lead agencies committed to a collaborative process to find a solution to replace the viaduct along Seattle’s central waterfront. This Partnership Process is described in Appendix S, the Project History Report. In January 2009, Governor Gregoire, King County Executive Sims, and Seattle Mayor Nickels announced that the agencies had reached a consensus and recommended replacing the aging viaduct with a bored tunnel.

The environmental review process for the Alaskan Way Viaduct Replacement Project (the project) builds on the five Build Alternatives evaluated in the 2004

Draft EIS and the two Build Alternatives evaluated in the 2006 Supplemental Draft EIS. It also incorporates the work done during the Partnership Process. The bored tunnel was not studied as part of the previous environmental review process, and so it becomes the eighth alternative to be evaluated in detail.

The Bored Tunnel Alternative analyzed in this discipline report and in the Supplemental Draft EIS has been evaluated both quantitatively and qualitatively. The Bored Tunnel Alternative includes replacing State Route (SR) 99 with a bored tunnel and associated improvements, such as relocating utilities located on or under the viaduct, removing the viaduct, decommissioning the Battery Street Tunnel, and making improvements to the surface streets in the tunnel's south and north portal areas.

Improvements at the south portal area include full northbound and southbound access to and from SR 99 between S. Royal Brougham Way and S. King Street. Alaskan Way S. would be reconfigured with three lanes in each direction. Two options are being considered for new cross streets that would intersect with Alaskan Way S.:

- New Dearborn Intersection – Alaskan Way S. would have one new intersection and cross street at S. Dearborn Street.
- New Dearborn and Charles Intersections – Alaskan Way S. would have two new intersections and cross streets at S. Charles Street and S. Dearborn Street.

Improvements at the north portal area would include restoring Aurora Avenue and providing full northbound and southbound access to and from SR 99 near Harrison and Republican Streets. Aurora Avenue would be restored to grade level between Denny Way and John Street, and John, Thomas, and Harrison Streets would be connected as cross streets. This rebuilt section of Aurora Avenue would connect to the new SR 99 alignment via the ramps at Harrison Street. Mercer Street would be widened for two-way operation from Fifth Avenue N. to Dexter Avenue N. Broad Street would be filled and closed between Ninth Avenue N. and Taylor Avenue N. Two options are being considered for Sixth Avenue N. and the southbound on-ramp:

- The Curved Sixth Avenue option proposes to build a new roadway that would extend Sixth Avenue N. in a curved formation between Harrison and Mercer Streets. The new roadway would have a signalized intersection at Republican Street.
- The Straight Sixth Avenue option proposes to build a new roadway that would extend Sixth Avenue N. from Harrison Street to Mercer Street in a typical grid formation. The new roadway would have signalized intersections at Republican and Mercer Streets.

For these project elements, the analyses of effects and benefits have been quantified with supporting studies, and the resulting data are found in the discipline reports (Appendices A through R). These analyses focus on assessing the Bored Tunnel Alternative's potential effects for both construction and operation, and consider appropriate mitigation measures that could be employed. The Viaduct Closed (No Build Alternative) is also analyzed.

The Alaskan Way Viaduct Replacement Project is one of several independent projects that improve safety and mobility along SR 99 and the Seattle waterfront from the South of Downtown (SODO) area to Seattle Center. Collectively, these individual projects are often referred to as the Alaskan Way Viaduct and Seawall Replacement Program (the Program). This Supplemental Draft EIS evaluates the cumulative effects of all projects in the Program; however, direct and indirect environmental effects of these independent projects will be considered separately in independent environmental documents. This collection of independent projects is categorized into four groups: roadway elements, non-roadway elements, projects under construction, and completed projects.

#### **Roadway Elements**

- Alaskan Way Surface Street Improvements
- Elliott/Western Connector
- Mercer West Project (Mercer Street improvements from Fifth Avenue N. to Elliott Avenue)

#### **Non-Roadway Elements**

- First Avenue Streetcar Evaluation
- Transit Enhancements
- Elliott Bay Seawall Project
- Alaskan Way Promenade/Public Space

#### **Projects Under Construction**

- S. Holgate Street to S. King Street Viaduct Replacement
- Transportation Improvements to Minimize Traffic Effects During Construction

#### **Completed Projects**

- SR 99 Yesler Way Vicinity Foundation Stabilization (Column Safety Repairs)
- S. Massachusetts Street to Railroad Way S. Electrical Line Relocation Project (Electrical Line Relocation Along the Viaduct's South End)

## 1.2 Summary

This report describes the existing conditions, effects, and mitigation related to land uses for the construction and operation of the project.

### 1.2.1 Study Area

The study area for the analysis of land use comprises the urban environment of downtown Seattle that is generally bounded by Interstate 5 (I-5) to the east and Elliott Bay to the west. The southern boundary is S. Atlantic Street and the northern boundary is Valley Street, as shown on Exhibit 1-1. The study area includes the proposed construction areas surrounding the south and north termini of the Bored Tunnel Alternative, the project staging areas and construction zones, and other roadway and non-roadway elements of the Program.

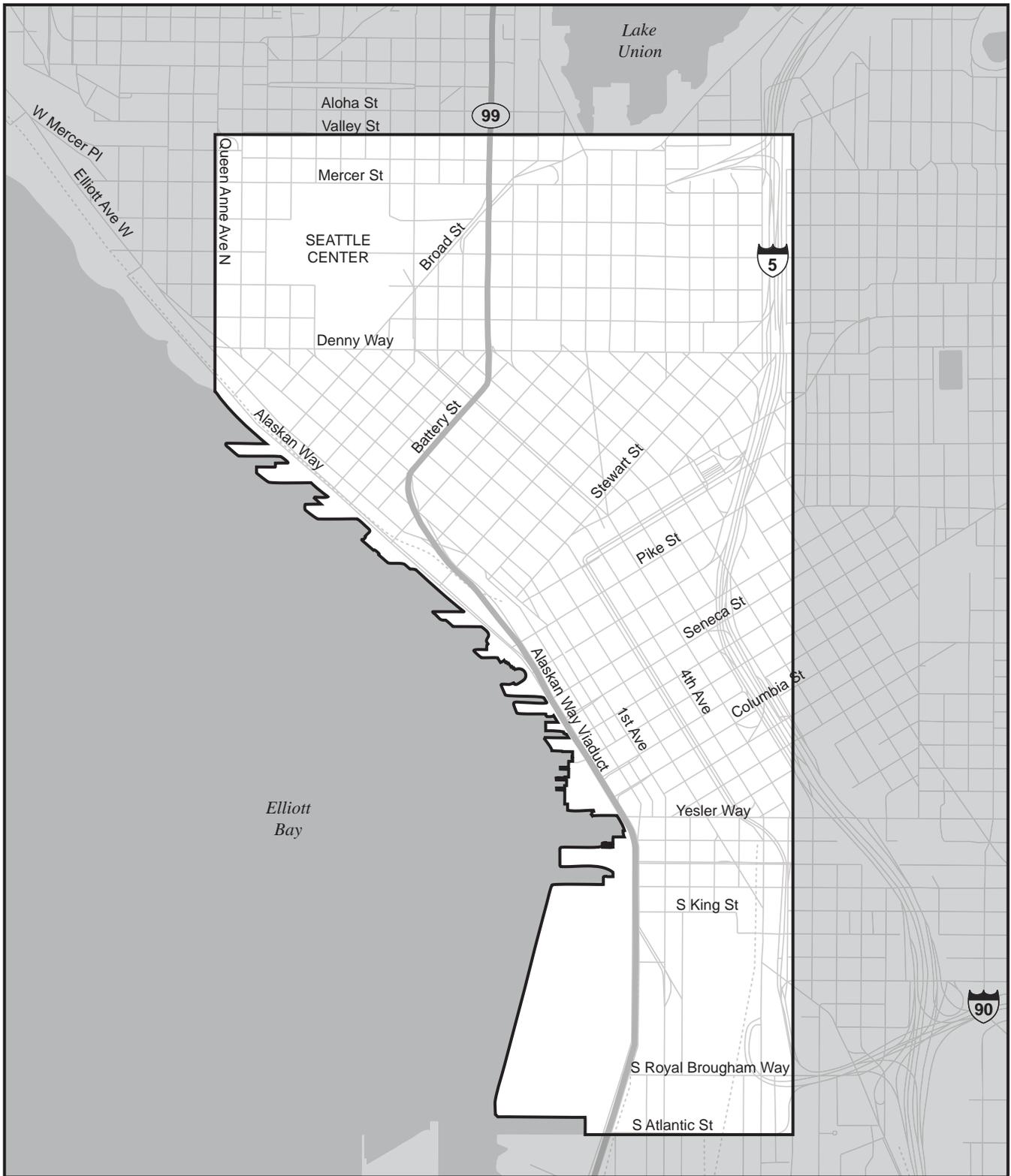
### 1.2.2 Existing Land Use Characteristics

The study area includes a variety of land uses and zones. The primary land use types encountered in the southern portion of the project area are terminal/warehouse, retail, office, and recreation/entertainment; primary uses in the central portion are office, retail, and residential; and primary uses in the northern portion are office, retail, utility, and residential. The terminal/warehouse land uses in the south end include cargo and passenger terminals.

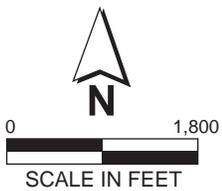
The project is generally located in portions of eight Seattle planning areas, beginning in the south with the Greater Duwamish Manufacturing and Industrial Center (MIC) and Pioneer Square neighborhoods; moving to the Commercial Core, Downtown Urban Center, and Belltown neighborhoods in the central area; and extending to the Denny Triangle, Uptown (Queen Anne), and South Lake Union neighborhoods in the north.

Land and neighborhood uses are regulated and influenced by several state, regional, and local plans and policies. The following plans and policies for the study area are considered in this report:

- Washington State Growth Management Act (GMA)
- *Washington Transportation Plan 2007–2026*
- Coastal Zone Management (CZM) Program and Shoreline Management Act
- Puget Sound Regional Council (PSRC) *VISION 2040* and *Transportation 2040*
- *City of Seattle Comprehensive Plan: Toward a Sustainable Seattle*



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**Exhibit 1-1  
Study Area**

- Local neighborhood plans for the Greater Duwamish MIC, Pioneer Square, Commercial Core, Downtown Urban Center, Belltown, Denny Triangle, Uptown (Queen Anne), and South Lake Union areas
- Seattle's *Transportation Strategic Plan (TSP)*
- Seattle Municipal Code, including zoning and development regulations; Shoreline Master Program; State Environmental Policy Act (SEPA) regulations; Environmentally Critical Areas Ordinance; Stormwater, Grading, and Drainage Control Code; design review regulations; and neighborhood-specific design review guidelines, where applicable, including downtown and Uptown areas
- *Mayor's Recommendations: Seattle Central Waterfront Concept Plan*
- *Seattle Center Century 21 Master Plan*

Development activity and overall land use characteristics in the study area continue to evolve from primarily employment-related uses to a major center for tourism, retail shopping, meeting and convention activities, and entertainment. Continuing long-term trends, downtown Seattle's land use character is a relatively dense and growing Urban Center, the largest in the Pacific Northwest. The downtown area has continued to evolve from a predominantly commercial office and retail center to a more diverse-use character that includes numerous residential uses, shopping, convention and meeting facilities, tourism, and entertainment-oriented uses. The Port of Seattle continues to expand and improve the facilities on Seattle's waterfront, such as Terminals 25, 30, and 46.

The area south of the Commercial Core includes the areas of Pioneer Square, the Stadium Transition Area Overlay District, and the Greater Duwamish MIC. Land uses in Pioneer Square are primarily tourist, services, and residential. The Stadium Transition Area Overlay District and the First Avenue S. corridor have a mix of industrial and commercial uses, consistent with City of Seattle (City) policies. This area may trend toward increased diversity with the presence of commercial uses mixed with warehouse and industrial uses.

Planned development south of the Commercial Core includes an office and residential mixed-use project on Qwest Field's north parking lot as well as other mixed-use residential and office developments.

In the north, much of the development continues to focus on residential and office uses. A major development project under way in this area is the Bill and Melinda Gates Foundation Campus. The South Lake Union neighborhood, also in the north, has seen substantial redevelopment in the last decade, with a number of biotechnology and other high-technology research and development companies locating in this area. The most recent additions include UW Medicine South Lake Union Branch and Amazon.com.

### 1.2.3 Operational Effects, Mitigation, and Benefits

#### Viaduct Closed (No Build Alternative)

The Viaduct Closed (No Build Alternative) assumes that one of two scenarios would occur: (1) an unplanned closure of the viaduct for some structural deficiency, weakness, or smaller earthquake event; or (2) a catastrophic and complete collapse. Any collapse, whether partial or complete, would result in a sudden disruption to traffic flow, which would affect adjacent residences and businesses that rely on the viaduct for their access. Disruption of traffic flow would also include industrial traffic using the viaduct for access to cargo transfer areas in the study area and industrial areas to the south, as well as north-south traffic. Any collapse could also include debris striking existing land uses near the viaduct.

Under a complete collapse, disruptions to traffic flow would likely affect an area larger than that of nearby residences and businesses, and the disruptions would last for a longer period of time. Except for a complete collapse, it is expected that effects on land uses would be relatively short in duration until the damaged area or impaired use could be replaced and full access restored.

#### Bored Tunnel Alternative

The Bored Tunnel Alternative would convert only a few land uses in the south and north portal areas from primarily office, retail, service, and parking uses to transportation uses due to right-of-way acquisitions. Replacement of the aerial viaduct structure with an underground tunnel would also offer enhanced opportunities for improved connections, both physically and visually, between the waterfront and downtown. A total of 11 properties have been identified as required for acquisition in full or in part to accommodate the Bored Tunnel Alternative. However, no change in zoning or amendment to existing land use plans would be required. Full and partial property acquisitions are discussed in Section 5.2.1, Permanent Effects on Land Use.

In addition to property acquisitions, permanent tieback easements for subsurface wall shoring systems would be needed on three properties in the north portal area: the Hostess Cake Continental Baking Company at the northwest corner of Aurora Avenue and Republican Street (225 square feet); the School of Visual Arts between Republican and Mercer Streets on the east side of SR 99 (1,588 square feet); and one of two options for the site of the Bill and Melinda Gates Foundation Campus between Broad and Mercer Streets on the west side of SR 99 (area to be determined—two options being considered). No permanent tieback easements would be required in the south portal area.

Subsurface property acquisitions would be required for between 52 and 59 parcels for the proposed 54-foot-diameter bored tunnel (see Attachment A). The

subsurface property acquisitions would consist of a three-dimensional corridor below the surface of the ground for the tunnel, and they would not affect land uses on the surface because the limits are outside of the practical building requirements for typical building foundations and zoning requirements.

A net loss of approximately 310 on-street and 250 off-street parking spaces is expected. The removal of off-street parking spaces would not result in any land use nonconformities with respect to accessory parking requirements.

With the Bored Tunnel Alternative, the downtown access ramps from and to SR 99 would not be in their existing locations; they currently include a southbound off-ramp and a northbound on-ramp at First Avenue S., a southbound on-ramp from Columbia Street, and a northbound off-ramp at Seneca Street. Instead, new ramps would be built from northbound SR 99 to Alaskan Way S. and from Alaskan Way S. to southbound SR 99 near S. Royal Brougham Way. More circuitous and less convenient access due to removal of the downtown access ramps may result in some degree of inconvenience, and businesses in the central downtown could experience disruptions in the flow of customers and employees and in the delivery or shipment of materials and supplies.

Businesses along the east side of SR 99, between Harrison and Mercer Streets, would no longer have direct access to and from SR 99. However, these businesses have other access points on Harrison Street and Republican Street, as well as access via the alleyway between SR 99 and Dexter Avenue N. More circuitous and less convenient access for these businesses could affect their operations. In addition, the Straight Sixth Avenue option at the north portal would divide the eastern portion of the Bill and Melinda Gates Foundation property from the main campus buildings. Access to the property east of Sixth Avenue N. from the main campus would not be allowed from Sixth Avenue N. but could be provided by building over Sixth Avenue N. The Bored Tunnel Alternative would be consistent with the City's policies to coordinate transportation and development in a manner that concentrates and intensifies urban development. In accordance with state, regional, and local plans and policies, the Bored Tunnel Alternative would provide mobility and access options that could accommodate higher densities and reduce land consumption. Because the Bored Tunnel Alternative would be compatible with state, regional, and local plans and implementing regulations, no mitigation would be required for compliance.

The overall effects of the Bored Tunnel Alternative on land use would be positive. Where acquisition and relocation are unavoidable, the Washington State Department of Transportation (WSDOT) would follow the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Improvements in the south and north portal areas would increase east-west connectivity between neighborhoods and enhance accessibility to existing land uses in the area. Future developments in both areas would also benefit from the increase in accessibility.

#### 1.2.4 Indirect Effects

The Bored Tunnel Alternative represents only one of numerous ongoing improvements in Seattle. Overall, many factors influence decisions about land use, including economic conditions, zoning, and land supply. Because the Bored Tunnel Alternative would replace an existing facility to satisfy safety requirements and projected traffic demands growth, it would not likely have large, if any, influences on these factors. Its potential for inducing growth would be minor.

Future development along a new Alaskan Way would likely occur in the form of modest expansions of existing buildings on the east side of the roadway. In addition, substantial changes would occur in the relationship between the waterfront and upland properties leading to the downtown core. To the extent that the existing viaduct has been perceived as a barrier to waterfront uses, new development on vacant or under-used property or redevelopment may take place around the new Alaskan Way surface street. The loss of on-street and off-street parking would result in less convenient access to businesses by patrons and would, therefore, represent an adverse effect.

The SR 99 corridor has an influence on areas beyond the immediate neighborhoods through which it passes. Many of the daily commuters now using this route live in neighborhoods north and south of downtown, such as Ballard, Fremont, Greenwood, West Seattle, White Center, and Georgetown. For these commuters, the viaduct offers a convenient route either to downtown or around the city without using I-5. The Bored Tunnel Alternative may have an influence on growth in neighborhoods where the area's desirability is in part facilitated by the ease of access to downtown Seattle, including commute, retail, and residential trips.

#### 1.2.5 Construction Effects and Mitigation

Construction-related detours, closures, and traffic congestion would cause changes in mobility on streets in the project area. Temporary roadway closures are expected to result in a redistribution of traffic to nearby streets throughout the study area.

The greatest changes in adjacent land uses during construction would occur in the north portal area, where traffic would be diverted along the west side of SR 99. The loss of parking, especially on-street short-term parking, could reduce the

convenience of access to land uses. In addition, transit service could be adversely affected by construction-related detours. It has not yet been determined where construction workers would park in the north portal area.

The economic effect of construction on businesses is discussed in Appendix L, Economics Discipline Report. Throughout the duration of construction, on-street parking spaces in the south and north portal areas would be temporarily unavailable. Pedestrian and vehicle access, including freight deliveries to buildings in these areas, may be affected for the entire construction period.

Construction-related parking in the south portal area would occur in the upland area of Pier 48, northwest of Qwest Field. Traffic congestion could be a temporary inconvenience for those traveling to and from the Seattle Ferry Terminal at Colman Dock and businesses along the waterfront.

Spoils from the bored tunnel and portal excavations are proposed to be transported by barge to the Mats Mats Quarry, near Port Ludlow, Washington, for disposal.

After the completion of the new bored tunnel, the existing viaduct would be removed and the Battery Street Tunnel would be decommissioned. Demolition of the existing viaduct would require various surface street closures at several locations during the 9-month removal period. During demolition of the viaduct, pedestrians would be rerouted from the work zone to alternative routes in the area from S. King Street to Battery Street. Removal of the viaduct would potentially increase pedestrian traffic between downtown and the waterfront.

The decommissioning of the Battery Street Tunnel is not expected to result in any effects on land uses. Land uses at both ends of this structure would be served by new roadway connections that would improve accessibility to SR 99 and the surrounding roadway network.

Mitigation measures for potential effects on land use during construction activities would include providing advance notice to property owners in the project area regarding demolition and construction activities, utility disruptions, and detours. Major special events at the sports stadiums and operations at the Pier 66 cruise ship terminal could limit construction activities.

Where right-of-way is needed, the property acquisition and potential relocations would occur before construction begins. The owners of acquired property will be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, as well as the Washington Relocation Assistance—Real Property Acquisition Policy Act of 1970, as amended.

## 1.2.6 Cumulative Effects

Cumulative effects are the total effects of the proposed action combined with other past, present, and reasonably foreseeable future actions. They can include both construction and operational effects. The cumulative effects in the study area could contribute to the following changes:

- Reduced traffic congestion.
- A more urbanized character in the area.
- Increased likelihood of redevelopment for underdeveloped properties.
- Increased demands for municipal public services and facilities.

During construction, the cumulative effects of development activity are also expected to contribute noise, dust, and traffic congestion in the general areas where construction would occur.

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## Chapter 2 METHODOLOGY

The project team used maps, plans, and development regulations from the City to identify the existing land uses, zoning, and shoreline environment and critical areas designations in the study area. Field visits were conducted, and photographs were used to confirm existing land uses.

### 2.1 Regulatory Overview

The analyses of land use effects and relocations address the following laws, regulations, and guidance:

- WSDOT *Environmental Procedures Manual* (WSDOT 2010).
- The City's environmental policies and procedures (Seattle Municipal Code, Chapter 25.05 [SMC 25.05]) for implementing SEPA.
- Federal Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 as amended in 1987.

### 2.2 Study Area

The study area for this analysis encompasses the SR 99 corridor in the project vicinity. It comprises the urban environment of downtown Seattle that is generally bounded by I-5 to the east and Elliott Bay to the west. The southern boundary is S. Atlantic Street and the northern boundary is Valley Street (see Exhibit 1-1). It includes the areas that would likely be affected by activities associated with the Bored Tunnel Alternative, such as demolition of the existing Alaskan Way Viaduct, decommissioning of the Battery Street Tunnel, and the proposed construction areas surrounding the south and north portals of the bored tunnel. The study area also includes the anticipated project areas for other roadway and non-roadway elements of the Program.

For construction, the area of immediate effect is assumed to be one city block around all sides of the portal construction areas (south and north), all access ramps, and all surface street modifications, as well as one block to either side of the existing viaduct alignment.

### 2.3 Analysis of Environmental Effects

The Bored Tunnel Alternative was overlaid on land use maps to identify effects on land use, including the amounts and uses of land required for new right-of-way, temporary effects during demolition and construction, and the types of land uses displaced by property acquisitions.

Direct effects are described in terms of full and partial property acquisitions, changes in land use, changes in existing pedestrian or vehicle access to properties, potential relocations, and temporary disturbance to adjacent businesses and properties during demolition and construction. If a right-of-way need for the project would result in land use nonconformities (e.g., lot size, lot coverage, setbacks, parking, or removal of access), the acquisition is considered a full property acquisition. Acquisitions are presented in terms of acres of effect for each parcel. The parcel information includes existing land use and zoning. Permanent and temporary easements are also identified.

Indirect effects are described in terms of changes in land and shoreline use that may occur as a result of increases or decreases in accessibility or mobility; right-of-way disposal; or changes in noise, air quality, or visual quality. The appropriate discipline report is referenced for more information on each subject area.

Potential residential and business relocations resulting from property acquisitions include an estimate of the number of households or businesses to be displaced, the availability of similar housing or suitable business locations, and any anticipated relocation issues. Resident characteristics such as occupancy type (owner/tenant) are identified. Business relocation characteristics rely on information provided in Appendix L, Economics Discipline Report, and include the number, types, and sizes of businesses and the approximate number of employees. Housing characteristics are addressed in Appendix H, Social Discipline Report.

Consistency or inconsistency with applicable state, regional, and local land use plans and regulations is also addressed. Consistency is evaluated by assessing whether the Viaduct Closed (No Build Alternative) and Bored Tunnel Alternative support the type of growth and meet the needs of the community outlined in the plans and regulations.

## 2.4 Determination of Mitigation Measures

Mitigation measures are proposed to avoid or minimize effects on adjacent properties. The proposed mitigation measures address direct and indirect effects of the project on land use and relocation, including any effects that result from full or partial property acquisitions, disturbances during construction, and changes in existing access. The acquisition of property, including displacements and relocations, will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended in 1987.

## 2.5 Methodology for Cumulative Effects

Cumulative effects are effects that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable

future actions. The cumulative effects analysis focused on the combined effects of the Bored Tunnel Alternative and other roadway and non-roadway elements included in the Program. In addition, other projects that are anticipated to add to effects on land use in the study area were evaluated.

These other roadway and non-roadway elements of the Program were qualitatively assessed for operational and construction effects on land use. The roadway Program elements included in this qualitative analysis are the Alaskan Way Surface Street Improvements (on the location of the former viaduct) from S. King Street to Pike Street, the Elliott/Western Connector from Pike Street to Battery Street, and the Mercer West Project (Mercer Street improvements from Fifth Avenue N. to Elliott Avenue). The non-roadway Program elements include the Elliott Bay Seawall Project, the Alaskan Way Promenade/Public Space to be built on the location of the existing Alaskan Way surface street, the First Avenue Streetcar Evaluation, and Transit Enhancements.

Other planned projects and developments in Seattle may add to the effects on land use in the study area. No specific projects were identified for the cumulative effects analysis due to the more regional effects of transportation projects on land use resources.

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## Chapter 3 STUDIES AND COORDINATION

The following information from the Seattle Department of Planning and Development and the Seattle Department of Transportation (SDOT) has been used to prepare this discipline report:

- Relevant land use and transportation plans, policies, and regulations.
- Existing land uses and zoning.
- Future land uses as identified in Seattle's Comprehensive Plan.
- Planned development projects that are under construction or in permit/design review with the City.
- Future development trends.
- Property characteristics and population immediately adjacent to the project area.
- Critical area designations.
- Shoreline environments and designations.

City maps and data from the Seattle and King County Assessors' records and field visits were used to identify parcel locations and characteristics. The conceptual plan drawings for the Bored Tunnel Alternative were reviewed to determine where parcels would be affected and where building relocations might be needed. Acquisitions were considered necessary where the alignment would cross existing parcels. The WSDOT *Environmental Procedures Manual* and FHWA NEPA guidelines provide guidance on addressing relocation issues of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. The Seattle Municipal Code also provides guidance regarding the prevention of unfair housing practices (SMC 14.08).

Information on the PSRC website was reviewed for additional background land use characteristics and development trends as well as regional and state information on land use and transportation plans and policies.

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## Chapter 4 AFFECTED ENVIRONMENT

The SR 99 corridor passes through a variety of land use zones and types. The corridor lies entirely within the urban environment of downtown Seattle, with I-5 to the east and Elliott Bay to the west. The existing land uses and zoning for staging areas and construction work zones are provided in Exhibit 6-3 in Chapter 6.

### 4.1 Existing Land Uses and Zoning

#### 4.1.1 South

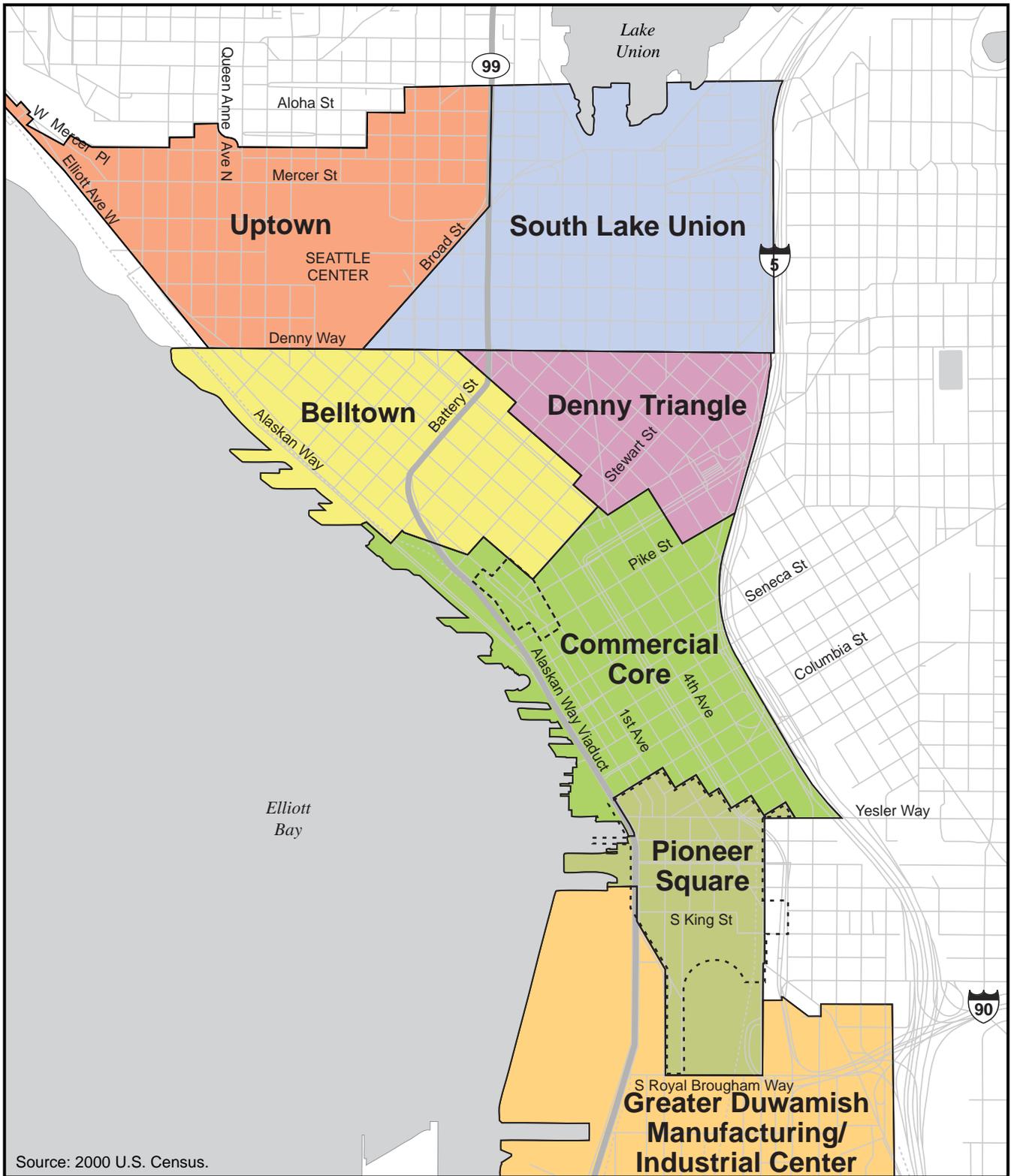
The southern portion of the study area includes portions of two Seattle neighborhood planning areas: the Greater Duwamish MIC and the Pioneer Square neighborhood. Exhibit 4-1 shows the neighborhood planning areas, including those in the southern portion of the study area. Land use types in the southern portion of the study area are shown on Exhibit 4-2.

Land use types in the Greater Duwamish MIC include primarily waterfront terminal/warehouse, retail, office, and recreation/entertainment uses. Some of the specific land uses that typify this area include the Starbucks office building, Safeco Field, the Bemis mixed-use building, and the new Stadium Technology Center currently under construction on Utah Avenue S. The Port of Seattle's Terminal 46 shipping container terminal is also located in this portion of the study area.

Land uses types in the Pioneer Square portion of the study area include retail, office, terminal/warehouse, residential, parking, and recreation/entertainment uses. Some of the specific land uses that typify this area include the Silver Cloud Inn, Bites Restaurant, Artists' Gallery of Seattle, Worldwide Marble & Granite, Palmer Building, Squire Center, Coastal Environmental Systems Inc., Fix Designs, Elysian Fields Restaurant, Sluggers, American Slate Company, Azuma Gallery, Picture Perfect, Art Exchange Gallery, Seattle's Historic Triangle Pub, and the Florentine Condominiums. Qwest Field is also located in this portion of the study area. Additionally, as one of the oldest parts of Seattle, most of the Pioneer Square area has been designated a historic district and is a focal point for many tourist and entertainment activities.

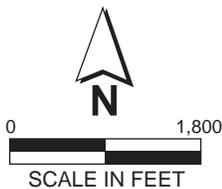
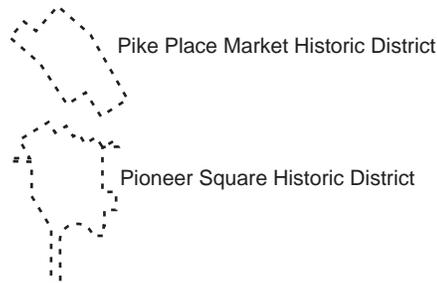
#### 4.1.2 Central

The central portion of the study area includes portions of the Commercial Core, Belltown, and Denny Triangle neighborhood planning areas as well as the Pike Place Market Historic District. Exhibit 4-1 shows the neighborhood planning areas, including those in the central portion of the study area.



Source: 2000 U.S. Census.

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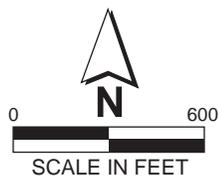


**Exhibit 4-1  
Neighborhood  
Planning Areas**



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Source: City of Seattle, 2009



**Exhibit 4-2**  
**Existing Land Use Types - South**

Land use types in the Commercial Core area are primarily retail, office, and parking, along with some residential uses. The primary land uses in the Belltown neighborhood are residential, office, and retail uses. Similarly, portions of the Denny Triangle neighborhood in the study area include office and residential uses. The Pike Place Market Historic District includes residential, office, retail, and parking uses. Land use types in this portion of the study area are shown on Exhibit 4-3.

North of Yesler Way, the area begins to transition from Pioneer Square to the Central Business District (CBD) and the Pike Place Market in the Commercial Core neighborhood. In this area, land uses along the waterfront and adjacent to the viaduct on the west include the Seattle Ferry Terminal at Pier 52, Fire Station No. 5 at Pier 53, Ivar's Seafood and Ye Olde Curiosity Shop at Pier 54, the Red Robin restaurant at Pier 55, Argosy Cruises and Elliott's Restaurant at Pier 56, the Bay Pavilion shops at Pier 57, and the Seattle Aquarium at Pier 59.

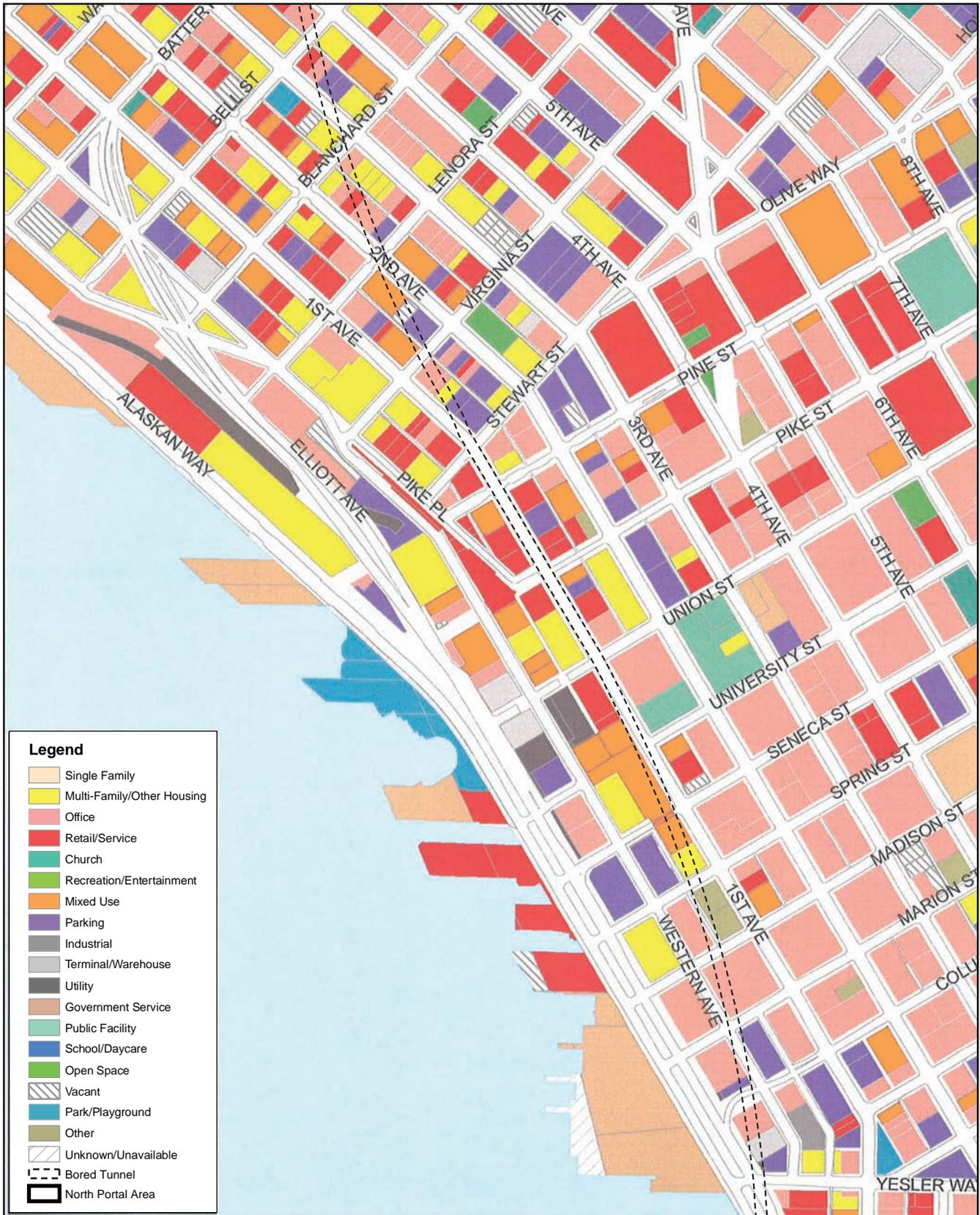
On the east side of the viaduct, buildings in this area include the Polson Building, Colman Parking Garage, Commuter Center Building, Maritime Building, Waterfront Place One, 1201 Western Building, Immunex Building, Seattle Steam Plant, Shurgard Mini Storage, Market Square Office Building, Hillclimb Court, and Market Place North Office Building.

#### 4.1.3 North

The northern portion of the study area includes portions of four Seattle neighborhood planning areas: Belltown, Denny Triangle, South Lake Union, and Uptown. Exhibit 4-1 shows the neighborhood planning areas, including those in the northern portion of the study area.

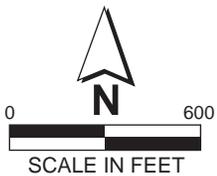
As the SR 99 corridor turns northeast toward Lake Union, land use types are primarily a mix of office, retail, utility, parking, and residential. Land use types in this portion of the study area are shown on Exhibit 4-4.

Beginning at Denny Way and extending north to Mercer Street, specific land uses along Aurora Avenue on the west include a Shell Service Station, Starbucks Coffee, a residential condominium building, Quality Inn & Suites, Seattle Pacific Hotel, and the City of Seattle maintenance yard. On the east side of Aurora Avenue, uses include a parking lot, Holiday Inn, King Broadcasting Company, Clark Construction, Hostess Cake Continental Bakery, and the School of Visual Arts. Land uses farther west on Sixth Avenue N. include residential apartment buildings, Walgreen's Drugstore, Seattle Housing Authority, Travelodge, office buildings, City Light substation, and the Bill and Melinda Gates Foundation site, which is currently under construction. Seattle Center is located west of the Gates Foundation site on Fifth Avenue N.

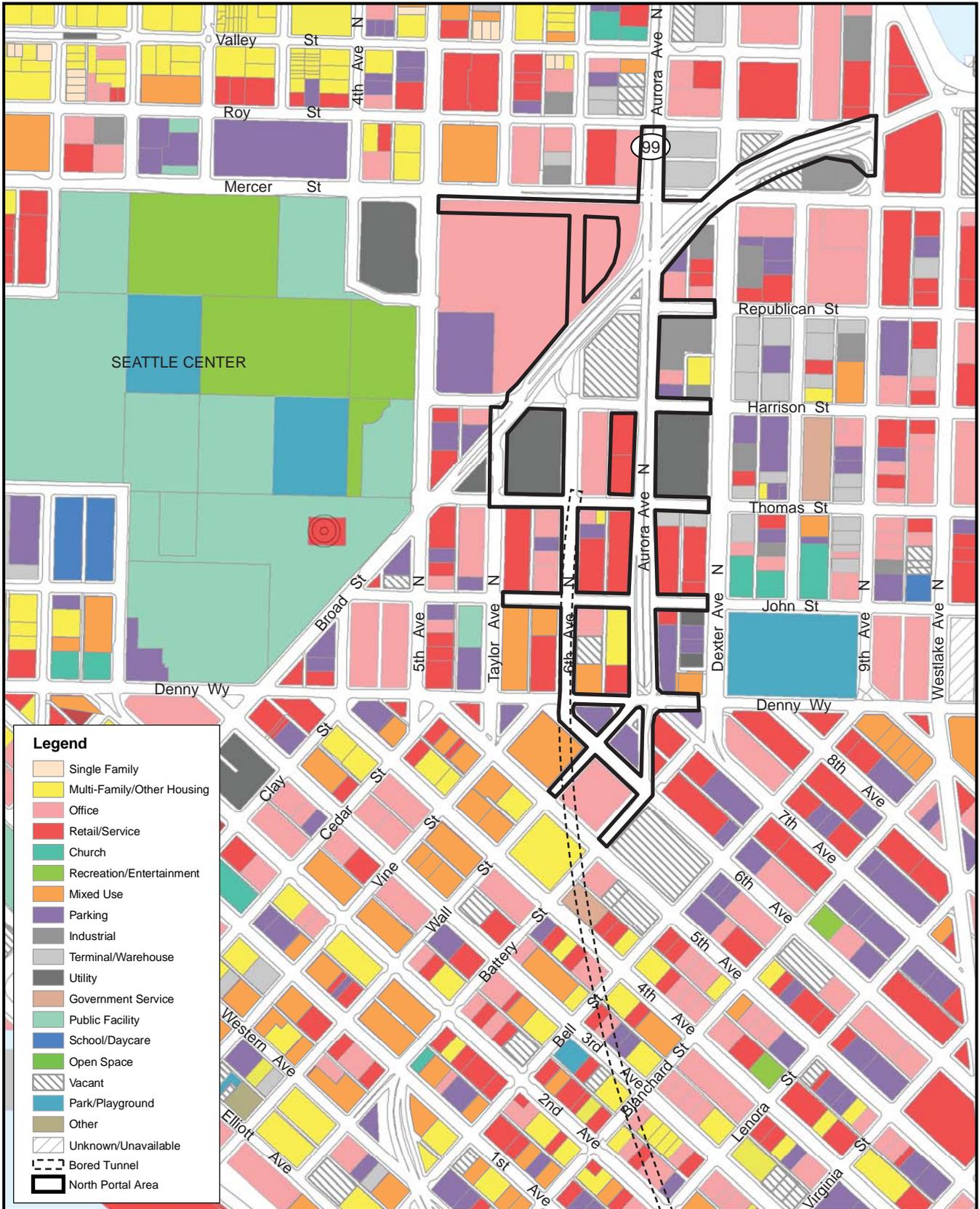


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Source: City of Seattle, 2009



**Exhibit 4-3**  
**Existing Land Use Types - Central**



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Source: City of Seattle, 2009



**Exhibit 4-4**  
**Existing Land Use Types - North**

#### 4.1.4 Zoning

The study area is subject to a number of zoning classifications, which generally allow for a variety of potential uses at different densities. The City's code specifies allowable uses; standards for parking; and building size, shape, and location within each zone. Development in the study area is consistent with height and density regulations in the existing zoning classifications, which are shown on the zoning maps on Exhibits 4-5, 4-6, and 4-7. The zoning classification descriptions that apply to the study area are summarized below (Seattle Land Use Code [SMC Title 23]).

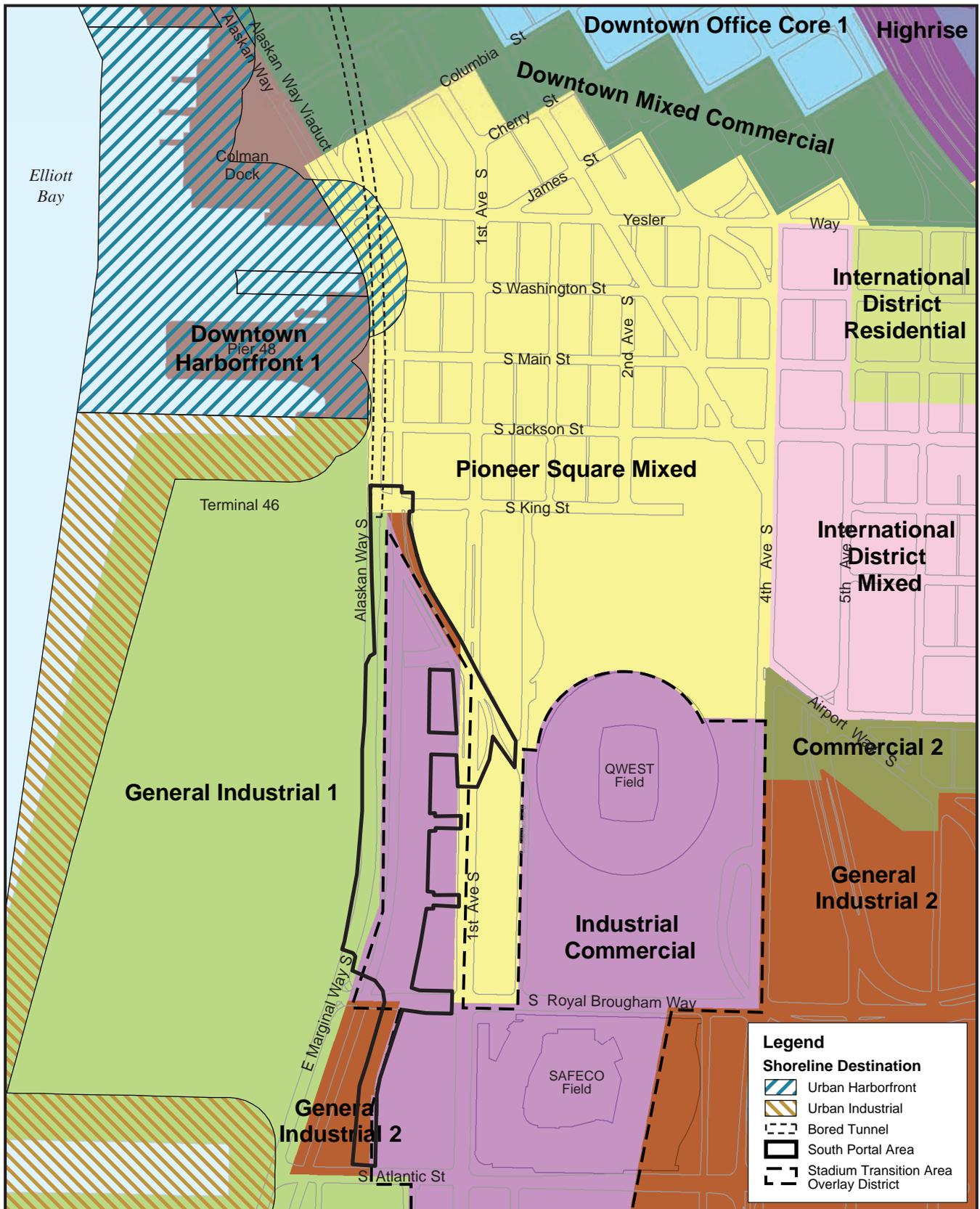
**C1—Commercial 1:** An automobile-oriented, primarily retail/service commercial area that serves surrounding neighborhoods as well as citywide or regional clientele; typical uses include large supermarkets, building supplies and household goods, and automobile sales and repairs. Building types include a variety of commercial structures, typically multistory office or mixed-use buildings, typically with parking.

**DH1—Downtown Harborfront 1:** Applies the Urban Harborfront Shoreline Environment designation to waterfront lots and the adjacent Harborfront area within the boundaries of downtown.

**DH2—Downtown Harborfront 2:** Provides for commercial activities in support of shoreline goals and related office, commercial, and residential uses, where the intended scale of development is moderate and an orientation toward the water exists; intended to provide a transition in scale and character between the waterfront and downtown.

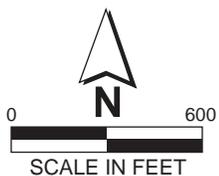
**DOC1—Downtown Office Core 1:** Provides for high-density office and commercial activities with related support services and retail shopping. The density of office activity should be greater than in any other part of downtown, with the greatest concentration of large buildings of primarily office and commercial use.

**DOC2—Downtown Office Core 2:** Provides for a range of high-density office and commercial activities with retail shopping and support services closely related to the primary office core. The density of development is not as great as in the DOC1 zone. Large-scale office buildings are appropriate when they do not adversely affect the pedestrian environment or existing development determined desirable for preservation.

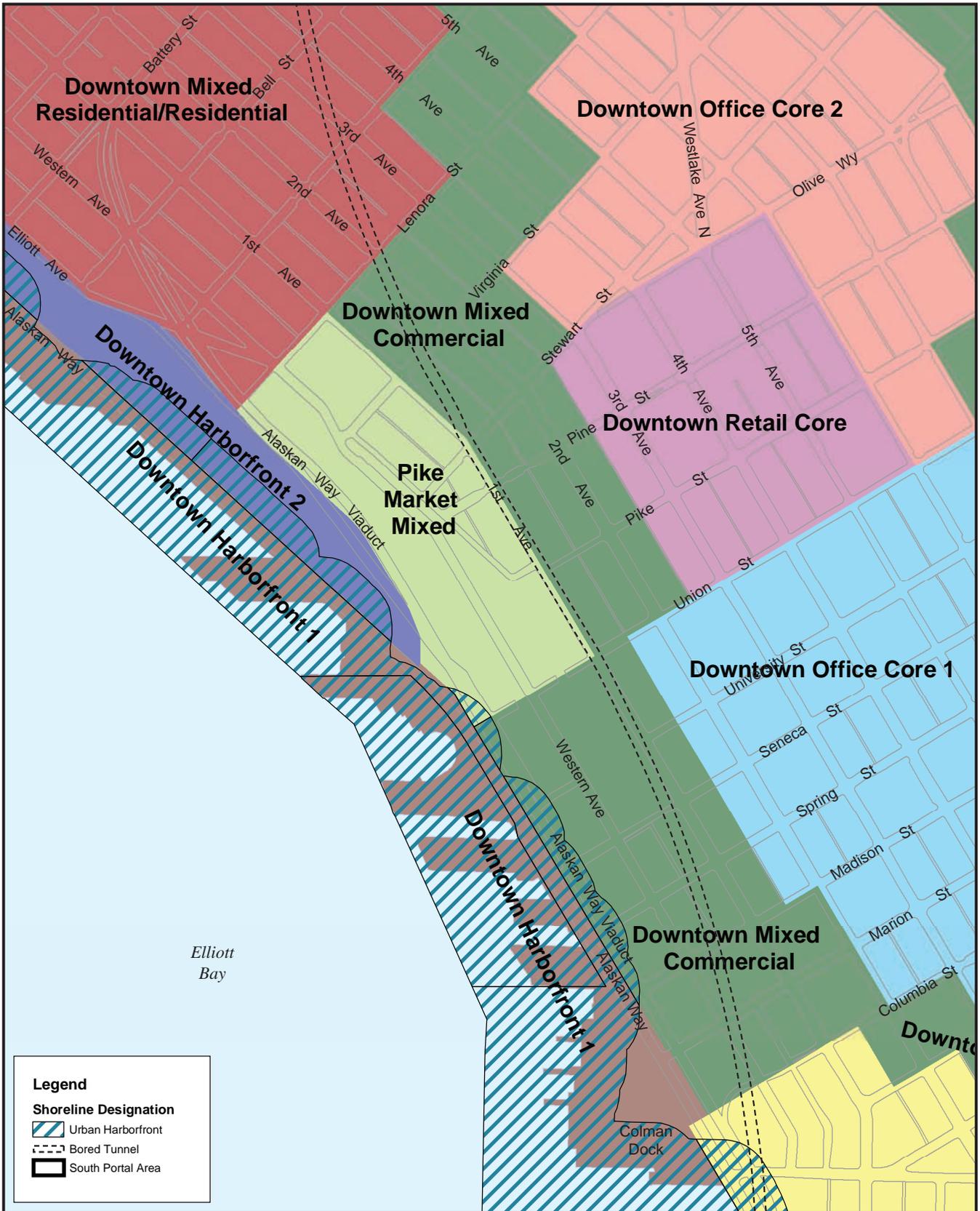


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Source: City of Seattle, 2009

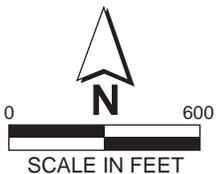


**Exhibit 4-5**  
**Zoning and Shoreline Environment**  
**Designation Map - South**

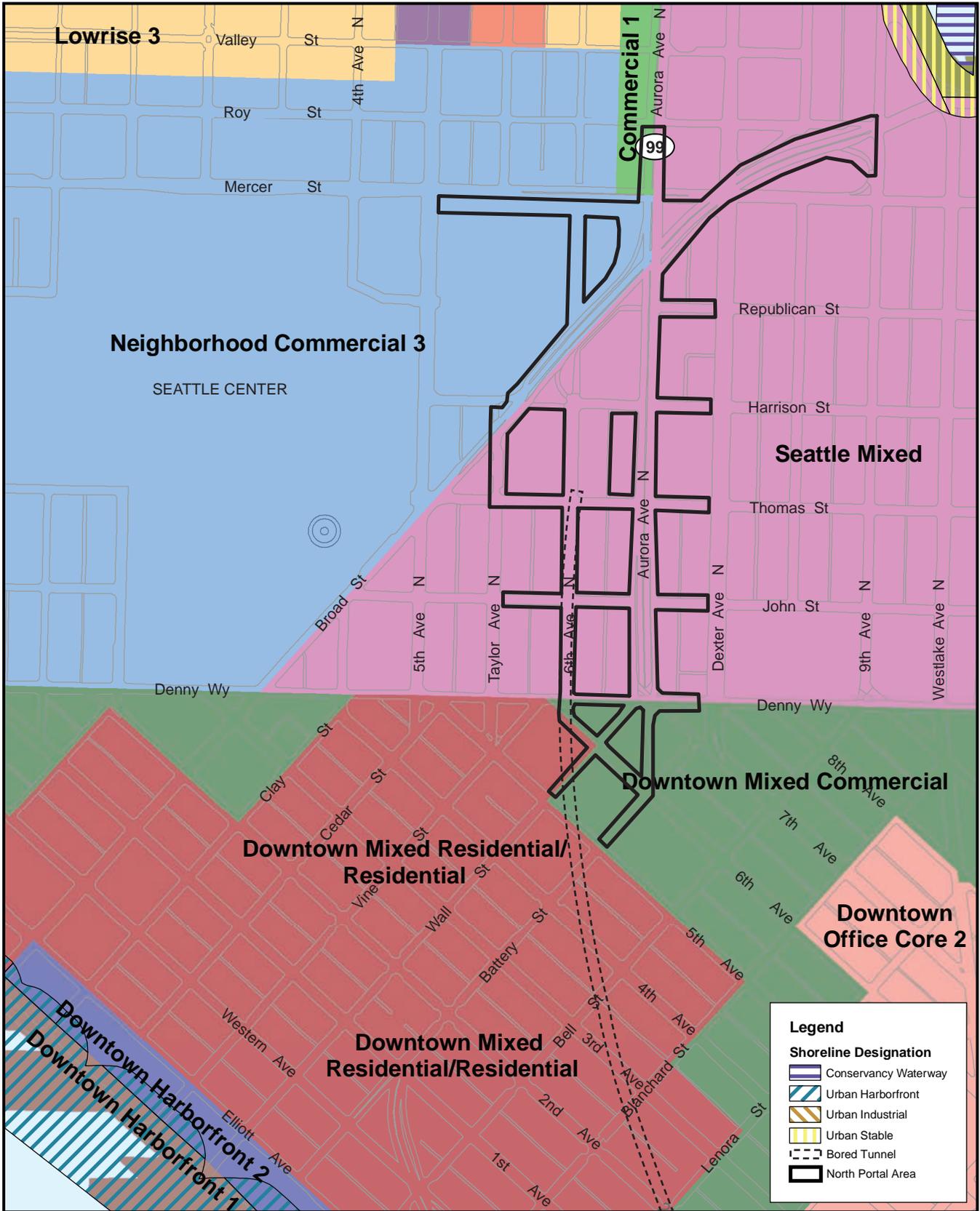


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Source: City of Seattle, 2009



**Exhibit 4-6  
Zoning and Shoreline Environment  
Designation Map - Central**



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Source: City of Seattle, 2009



**Exhibit 4-7**  
**Zoning and Shoreline Environment**  
**Designation Map - North**

**DMC—Downtown Mixed Commercial:** Historically a warehouse and commercial district serving the waterfront, this area currently serves as a transition between the Pike Place Market, the waterfront, Pioneer Square, and the office core. The transition area between the Pike Place Market and the retail core contains several commercial, office, and residential buildings. Land uses transition from the higher-density office buildings in the DOC1 to older office/warehouse-style buildings with historical character near the waterfront and Pioneer Square. However, newer residential complexes (such as Harbor Steps) and institutional uses (such as the old Federal Office Building) are also present.

**DMR—Downtown Mixed Residential:** Provides a mixed-use community where housing and associated services and amenities predominate. Office, retail, and other commercial uses are compatibly integrated with the predominant residential character at low to moderate densities.

**DRC—Downtown Retail Core:** Provides highly concentrated, regional retail shopping activity in the core of downtown. Retail shopping, entertainment, and consumer services predominate at street level, with related and supporting uses in the upper floors of buildings. Office and other commercial uses may also be present, but at a density and scale of development that does not conflict with the primary retail function or make the street environment less conducive to shopping.

**IC—Industrial Commercial:** This zone is intended to promote development of businesses that incorporate a mix of industrial and commercial activities, such as light manufacturing and research and development facilities, while also allowing for a wide range of other employment activities. Residential uses are prohibited in this zone.

**IG1—Industrial General 1:** Protects marine and rail-related industrial areas from an inappropriate level of unrelated retail, residential, and commercial uses by limiting these uses to a density or size limit lower than that allowed for heavy industrial uses. This zone also provides for continuing, improved, redeveloped, and new water-dependent marine industrial land uses and activities. Full and partial acquisitions may lead to changes in land use due to reduced parcel size.

**IG2—Industrial General 2:** Allows for a broad range of uses where the industrial function of an area is less established than in IG1 zones and where additional commercial activity could improve employment opportunities and the physical condition of the area without conflicting with industrial activity.

**NC3—Neighborhood Commercial 3:** A larger pedestrian-oriented shopping district serving the surrounding neighborhood and a larger community, citywide, or regional clientele, allowing comparison shopping among a range of retail businesses. Land uses include supermarkets, restaurants, offices, hotels, clothing

shops, business support services, and residences that are compatible with the area's mixed-use character. Building types are single-purpose commercial, multistory mixed-use, and residential structures.

**Pioneer Square Mixed:** The Pioneer Square Mixed zone applies to those areas that lie within the Pioneer Square Preservation District, north of those areas predominantly in manufacturing and industrial use and not contained within the International Special Review District.

**PMM—Pike Market Mixed:** Provides for less intensive uses than the surrounding zonings, in keeping with the Pike Place Market Historic District designation.

**Stadium Transition Area Overlay District:** The intent of this district is to improve the pedestrian environment of the area while also protecting the surrounding industrial uses and encouraging uses that are complementary to the stadiums. Land located within the Stadium Transition Area Overlay District is subject to the regulations of the underlying zone. In the event of a conflict between the provisions for the overlay and the underlying zone, the more restrictive provisions apply.

**SM—Seattle Mixed:** A zone that provides for a wide range of uses to encourage development of a mixed-use neighborhood.

#### 4.1.5 Special Districts

The study area includes the Pioneer Square and Pike Place Market Historic Districts, where specific development policies apply (see Exhibit 4-1). In the south portal area, the Stadium Transition Area Overlay District is intended to promote uses that are compatible with the two major sports stadiums (see Exhibit 4-5). This district supports pedestrian-friendly uses, including connections to the downtown core, and it seeks to reduce potential conflicts with nearby industrial and commercial uses.

## 4.2 State, Regional, and Local Land Use and Transportation Plans and Implementing Regulations

Several state, regional, and local land use and transportation plans and implementing regulations appear to be applicable to the project. These plans and regulations are described below.

### 4.2.1 Washington State Plans and Regulations

#### Growth Management Act

Adopted in 1990, the GMA (Revised Code of Washington, Chapter 36.70A) requires state and local governments to manage statewide growth by identifying

urban growth areas and preparing comprehensive plans, capital improvement programs, and development regulations. The GMA also requires the identification of transportation projects. The Alaskan Way Viaduct is considered an essential public facility under the GMA.

#### Washington Transportation Plan 2007–2026

The *Washington Transportation Plan 2007–2026* provides a framework and strategies to guide decisions and investments needed to develop Washington’s transportation system to serve the future needs of its citizens, communities, and economy, while safeguarding the environment. The core principle of the investment guidelines is that the existing transportation system should not be allowed to deteriorate (Washington State Transportation Commission and WSDOT 2006).

#### Coastal Zone Management Program and Shoreline Management Act

Under the requirements of the CZM Act of 1972, activities of federal agencies that affect coastal zone land uses, water uses, or natural resources must be consistent with the state’s CZM Program. The State of Washington uses the CZM Program as its primary implementing mechanism to comply with the CZM requirements. King County is one of 15 counties in the state’s coastal zone. The City of Seattle has its own Shoreline Master Program, which serves to implement the policy and provisions of the Shoreline Management Act and the Shoreline Goals and Policies of the *City of Seattle Comprehensive Plan* (Seattle 2009) by regulating development of Seattle’s shorelines. The City’s Shoreline Master Program is being amended.

### 4.2.2 Regional Plans

#### VISION 2040/Transportation 2040

*VISION 2040* provides a regional framework for long-range transportation planning that integrates freight, ferries, highways, local roads, transit, bicycling, and walking (PSRC 2009). The regional perspective for transportation recognizes the critical link between transportation and land use planning, economic development, and the environment. The focus of *VISION 2040* is to contain growth, concentrate new employment into urban centers, and link the centers with a high-quality multimodal transportation system. *VISION 2040* also provides the basis for the more detailed planning and investment strategies in the Metropolitan Transportation Plan (*Transportation 2040*) (PSRC 2010).

*Transportation 2040* is an action plan for transportation in the central Puget Sound region for the next 30 years (PSRC 2010). It is the regional transportation planning document that serves as the basis for state and federal transportation expenditures within the region. The transportation-related plans of the cities, counties, transit agencies, and the region form the basis of *Transportation 2040*.

### Comprehensive Plan for Public Transportation

The *Comprehensive Plan for Public Transportation* sets the policy basis for the King County Department of Transportation, Metro Transit Division (Metro Transit) (King County 2007). It identifies goals, objectives, and high-level policies to guide the management and development of public transportation services. Originally developed in 1993 as the Long Range Planning Framework, it was updated and renamed the *Comprehensive Plan for Public Transportation* in 2007. The update involved the addition of new policies to address locally developed transit services and transit-oriented development and to incorporate the Transit Now program.

### Strategic Plan for Public Transportation, 2007–2016

The *Strategic Plan for Public Transportation, 2007–2016*, provides the framework for transit service and capital investments for the next 10 years (King County 2009). Adopted in November 2007, the Strategic Plan replaces and updates the 2002–2007 *Six-Year Transit Development Plan* (King County 2004). It sets forth strategies for transit, paratransit, and rideshare services and supporting capital facilities in King County and guides annual operating and capital program decisions that define Metro services. It also incorporates the voter-approved Transit Now program and includes new strategies to address transit-oriented development and locally developed transit. The plan was amended in 2009 to reflect circumstances that have changed since 2007 and to align with the Metro 2010–2011 biennial budget (King County 2007).

## 4.2.3 Local Plans and Implementing Regulations

### Seattle's Comprehensive Plan

The *City of Seattle Comprehensive Plan: Toward a Sustainable Seattle* (2004–2024) is a 20-year plan to guide growth and development in Seattle; it articulates basic policy choices and provides a flexible framework for adapting to real conditions over time. The plan can be amended annually to address changes in specific goals and policies (Seattle 2009).

Goals and policies established in all of the neighborhood plans within the study area were reviewed, and key policies within each plan were adopted into the overall Comprehensive Plan. Although the neighborhood plans in their entirety were not adopted by the City, goals and policies within these plans provide community direction intended to guide future activities within individual neighborhoods.

The Washington State Legislature passed Engrossed Substitute House Bill (ESHB) 1959, and it was signed into law by the governor in July 2009. The new law requires the City of Seattle to include a container port element in its Comprehensive Plan. When the container port element is developed and adopted

into the plan, it will establish policies and programs that define and protect the core areas of port and port-related industrial uses in Seattle, provide reasonably efficient access to the core area through freight corridors within the city limits, identify and resolve key land use conflicts along the edge of the core area, and minimize and mitigate incompatible uses along the edge of the core to the extent practicable.

### Neighborhood Plans

A few of the neighborhood plans within the study area are in the preliminary stages of being updated and have gone through a recent review process. Status reports have been prepared for each of these neighborhoods to describe aspects such as population, development, housing affordability, transportation, parks, and neighborhood plan implementation. These reports will contribute to future policy decisions, including decisions about whether or how to update these neighborhood plans. All other neighborhoods in the study area have been the subject of recent extensive planning initiatives and are not included as part of the current review and update process. The Livable South Downtown planning process addresses growth and planning issues specific to the neighborhoods of Pioneer Square, Chinatown/International District, and the northernmost edges of the Greater Duwamish MIC (Seattle 2006a). Specific goals include stimulating housing and jobs through zoning and land use decisions, promoting an integrated mix of uses, and supporting quality connections between neighborhoods and the downtown as a whole. The neighborhood plan update process is expected to be completed by 2012. A summary of the goals and policies for each neighborhood plan within the study area is provided below.

#### Greater Duwamish Manufacturing and Industrial Center Plan (1999)

This plan provides goals and policies that are intended to ensure the vitality and expansion of manufacturing and industrial activity in the Greater Duwamish MIC. The plan presents the following primary objectives for this area:

- Restrict incompatible or competing land uses within the MIC.
- Encourage manufacturing and industrial job retention and growth.
- Establish a growth target of 10,680 new family-wage industrial jobs.
- Retain and improve access to and transportation within the MIC.
- Retain existing businesses and encourage new manufacturing and industrial development within the MIC.

The plan designated the Greater Duwamish MIC as an industrial area, with a focus on providing family-wage, industrial-type jobs and limiting incompatible uses, such as residences and gathering places for the general public. Retention of the manufacturing and industrial base as an important economic asset is the

primary overall goal of the plan. Recent planning initiatives related to the Industrial Jobs Work Program have been associated with this neighborhood planning area (Seattle 1999f).

#### Pioneer Square Neighborhood Plan (1998)

This plan provides an update to the 1991 plan for the Pioneer Square Historic District. The 1991 plan provided proposals for capital improvements, identified sites where development should be encouraged, and recommended design guidelines for public space. The updated 1998 plan provides recommendations to achieve goals and policies of the former plan and includes goals for improving public spaces; increasing the range of housing stock; strengthening the economic base; and improving parking, transportation, and utility infrastructure (Seattle 1998). Recent South Downtown planning efforts have involved the Pioneer Square neighborhood.

#### Commercial Core Neighborhood Plan (1999)

This plan contains goals and policies for the Commercial Core area, the city's largest and most developed downtown neighborhood. The downtown Commercial Core includes Seattle's retail core, the financial center/office core, City of Seattle and King County government centers, the central waterfront, and the Pike Place Market Historic District. The *Commercial Core Neighborhood Plan* presents the area's goals and policies for implementing the overall goal of Seattle's Comprehensive Plan to concentrate future growth in urban centers throughout the city. Two primary goals are identified: (1) create a major center for employment, tourism and conventions, shopping, and residential neighborhood resulting in a regional hub of cultural and entertainment activities; and (2) promote a unique neighborhood identity for the Commercial Core (Seattle 1999b). Recent planning efforts in this neighborhood have included the 2006 downtown zoning work.

#### Downtown Urban Center Neighborhood Plan (1999)

The 1999 neighborhood plan is an update of the 1985 *Downtown Land Use and Transportation Plan*. It includes goals and policies for five urban center villages within the Downtown Urban Center. As such, it provides a compilation of the more specific goals and policies included in the downtown urban village neighborhood plans.

The plan is discussed in the context of policies for land use, housing, transportation, human services, economic development, and capital facilities that may influence the Downtown Urban Center (Seattle 1999e).

#### Belltown Neighborhood Plan (1998)

Belltown lies within the Denny Regrade Urban Center Village. This plan includes elements for housing, commercial land use, transportation, the pedestrian environment, public safety, and community enrichment. The plan outlines key strategies for achieving its goals. These strategies are to provide for the Green Streets and open space strategy within the neighborhood, sustain the overall character of Belltown, and sustain adequate parking in the neighborhood. Recommendations are made for each strategy, followed by individual goals and policies for each of the elements identified above (Seattle 1999a).

#### Denny Triangle Plan (1998)

This plan provides goals and policies intended to create a separate identity and future for the Denny Triangle area, distinct from downtown or the larger Denny Regrade area. It presents key integrated activities for the area and identifies goals and policies for housing, land use, urban form, and transportation. Recent planning initiatives in this neighborhood include the 2006 downtown zoning work (Seattle 1999c).

#### Uptown/Queen Anne Neighborhood Plan (1998)

The Uptown neighborhood (also known as Lower Queen Anne) is envisioned as a thriving and active mixed-use urban center village. The neighborhood plan recommends several actions that should be taken to fulfill its goal of making this location into a unique urban neighborhood. In addition, the plan calls for establishing a new conservation district to preserve historic and affordable apartment buildings, implementing improvements to identified intersections and enhancing crossroads traffic flow, reducing heavy truck traffic to reduce pedestrian conflicts and promote safety, and establishing a neighborhood park (Seattle 1999g).

#### South Lake Union Neighborhood Plan (1998)

This plan focuses on three components for improving the South Lake Union area: neighborhood character, parks and open space, and transportation. The key recommendations for each of these elements are intended to establish long-range goals for future development in the area. The plan emphasizes the desire for mixed-use opportunities to provide work and recreation in the area, while maintaining and expanding commercial opportunities. Concerns about housing, environmental, transportation, and open space are also addressed (Seattle 1999h).

South Lake Union has continued to undergo significant changes. The neighborhood is expected to see much higher growth than it had planned for in the 1990s. Seattle's 2004 Comprehensive Plan update designated South Lake Union as an urban center to recognize the expected growth. The updated 2007

neighborhood plan includes plans for large-scale redevelopment of the neighborhood and major public investments. Neighborhood planning activity in this area is ongoing.

Past planning initiatives for this neighborhood included the South Lake Union Transportation Study, completed in 2004, which identified transportation improvements necessary in the area (SDOT and WSDOT 2004). These improvements call for a number of transit, pedestrian, and bicycle measures that, taken together, would result in significant benefits to South Lake Union and the surrounding neighborhoods. Such benefits include reconnecting the growing neighborhood to the city, untangling streets, improving mobility for surrounding neighborhoods, promoting transit, and continuing a smooth flow of freight and people through the corridor.

#### Seattle's Transportation Strategic Plan (2005)

The *Transportation Strategic Plan* (Seattle 2005) is the 20-year functional work plan for SDOT. The plan describes the actions SDOT will take to accomplish the goals and policies in the Comprehensive Plan over the next 20 years. The plan helps to define key transportation issues raised by the City Council about the long-term and day-to-day operations of Seattle's transportation system and to instigate change within SDOT. The plan strategies are consistent with the direction of both Seattle's Comprehensive Plan and PSRC's *Transportation 2040* plan. Key themes of the plan include improving safety, preserving and maintaining transportation infrastructure, supporting the urban village land use strategy, and providing mobility and access through transportation choices.

#### Seattle Land Use Code

The purpose of the Seattle Land Use Code (SMC Title 23) is to protect and promote public health, safety, and general welfare through a set of regulations and procedures for the use of land that are consistent with and implement the Seattle's Comprehensive Plan. The Land Use Code classifies land within the city into various land use zones and overlay districts that regulate the use and development standards, as well as bulk of buildings and structures. The provisions are designed to provide adequate light, air, access, and open space; conserve the natural environment and historic resources; maintain a compatible scale within an area; minimize traffic congestion; separate incompatible land uses; and enhance the streetscape and pedestrian environment. They seek to achieve an efficient use of the land without major disruption of the natural environment and to direct development to sites with adequate services and amenities.

The Land Use Code also provides zoning and other development regulations for the city. These regulations set forth procedures and standards for the use of land within the city. In addition to general use or activity requirements, these

provisions include specified height and size restrictions, as well as setback, parking, landscaping, and view requirements. The Land Use Code also includes special overlay districts that identify other development requirements in addition to those noted for individual zones.

### **Environmentally Critical Areas**

The City designates environmentally critical areas where existing conditions warrant specification of potential hazards or protection of critical areas. The shoreline area along the harborfront has been identified as a potential seismic liquefaction zone. This designation refers to the potential instability of soils during an earthquake, given that much of the study area is underlain by old fill material. Critical areas maps also identify several steep slope areas scattered near the waterfront. Steep slope areas may be subject to slide conditions if overburdened by extensive development. Refer to Appendix P, Earth Discipline Report, for more detailed information.

### **Shoreline Master Program**

The Shoreline Master Program constitutes the policies and regulations governing development and uses on and adjacent to marine and freshwater shorelines. These include Elliott Bay along with other waters of Puget Sound and Lake Washington, Lake Union/Ship Canal, the Duwamish River, and Green Lake, as well as associated wetlands and floodplains.

The City's current Shoreline Master Program defines shoreline environments for all shoreline areas. Shoreline environments form zones where additional development standards must be met in addition to the zoning requirements of the underlying zones. These additional requirements establish the types of land uses permitted within shoreline areas and development regulations governing size and other standards. The location of the shoreline environment designations relative to the southern, central, and northern portions of the study area are shown on Exhibits 4-5, 4-6, and 4-7. Two shoreline environments are designated in the study area:

**UI–Urban Industrial:** The purpose of the UI shoreline environment is to provide for efficient use of industrial shorelines by cargo and passenger terminals and other water-dependent and water-related industrial uses. Views must be secondary to industrial development, and public access must be provided mainly on public lands or in conformance with an area wide public access plan.

**UH–Urban Harborfront:** The purpose of the UH shoreline environment is to encourage economically viable water-dependent uses to meet the needs of waterborne commerce, facilitate the revitalization of downtown Seattle's waterfront, provide opportunities for public access and recreational enjoyment of

the shoreline, preserve and enhance elements of historic and cultural significance, and preserve views of Elliott Bay and the land forms beyond.

#### Seattle's Central Waterfront Concept Plan (2006)

In June 2006, the City released a new plan, entitled *Mayor's Recommendations: Seattle's Central Waterfront Concept Plan*, for the downtown waterfront area extending approximately from Myrtle Edwards Park in the north to S. Atlantic Street in the south, and from First Avenue in the east to the Elliott Bay shoreline in the west (Seattle 2006b). The plan describes the existing conditions and presents conceptual plans and policies for the central waterfront area. Framework principles have been identified to guide these efforts, with an overall principle that stresses the need to balance and integrate multiple uses, and in some cases competing uses, for the waterfront area. The plan was developed in anticipation of the removal of the Alaskan Way Viaduct. The concept plan includes specific recommendations for three waterfront areas: the North Waterfront, Central Waterfront, and Colman Dock/South Waterfront. The plan also proposes the creation of a Historic Piers District for Piers 54 through 59, which may include local or national historic designation for this area (Seattle 2006b).

The concept plan includes a number of recommendations intended to form a design program for the planning area, including the following goals:

- Acknowledge the past, present, and future theme within the plan.
- Develop a visual sequence of icons and public spaces along the length of the waterfront.
- Incorporate green design in the redevelopment of the waterfront.
- Enhance habitat in shallow shoreline areas and integrate habitat into the seawall design.
- Create public spaces and integrate them with shoreline habitat along the seawall.
- Reinforce existing east-west connections between the waterfront and Center City for pedestrians and vehicles.
- Develop east-west connections that improve pedestrian movement between Center City and waterfront destinations.
- Manage the flow of traffic on the Alaskan Way surface street for pedestrian, freight, and vehicle movement through the corridor.
- Adjust regulations to allow building entrances and facades along the east edge of Alaskan Way.
- Maintain Terminal 46 as a container facility.

### Seattle Center Century 21 Master Plan (2008)

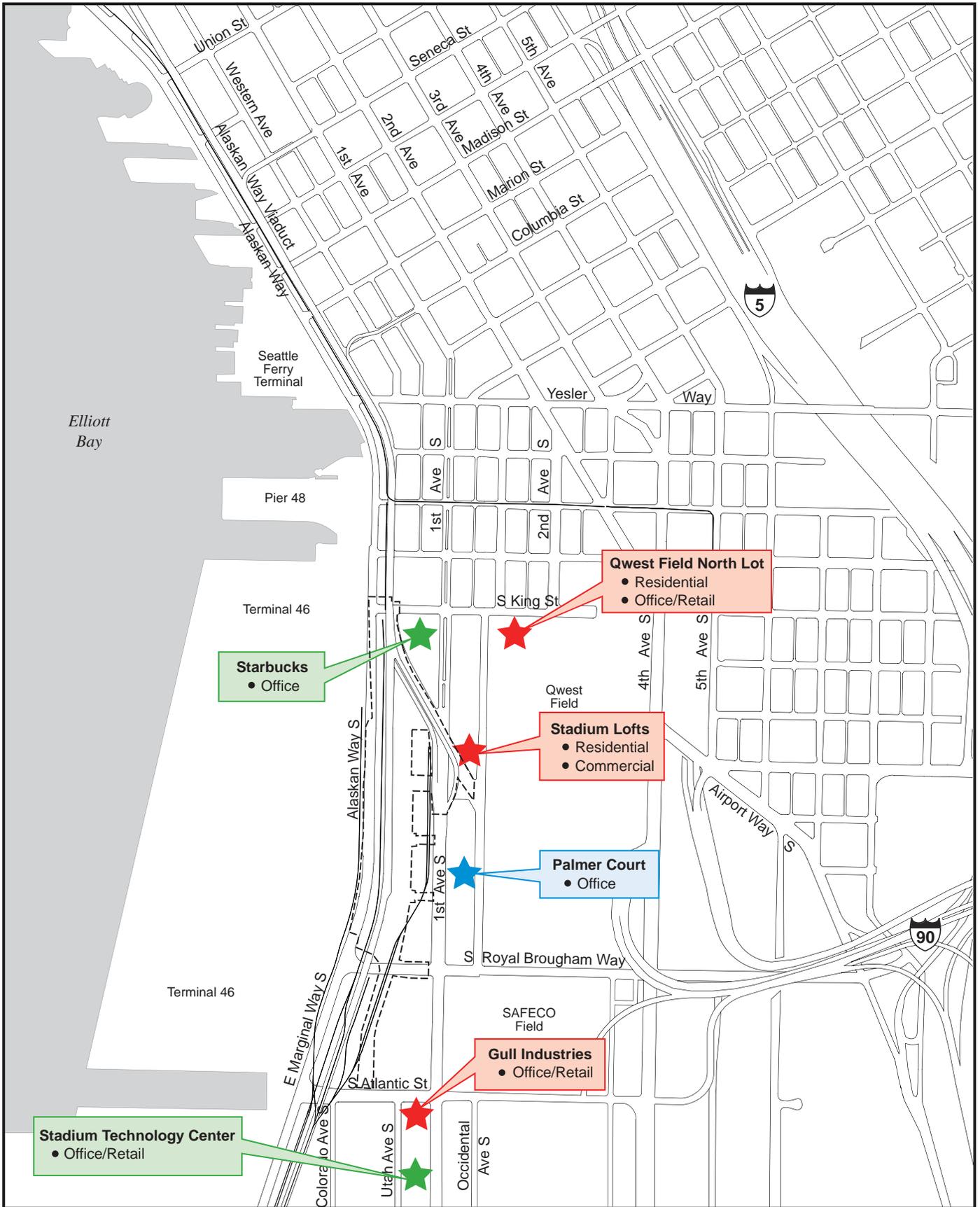
The *Seattle Center Century 21 Master Plan* (Seattle 2008) lays out a vision for the future of the campus over a 20-year period. The focus of the plan is to unify the open space at the heart of the campus and create connections between the buildings on the periphery, the open spaces at the center, and the growing neighborhoods on the edges of Seattle Center. The *Seattle Center Century 21 Master Plan* calls for increasing the mode and frequency of transit, improving pedestrian connections to and through the campus, and making it easier and safer to access Seattle Center from a vehicle or bicycle or on foot. The following future transportation-related projects are called for in the plan:

- A new underground multimodal transportation center and parking garage, located at the Memorial Stadium site, providing direct bus and truck loading to campus venues and patron parking.
- Improved access with new emphasis on pedestrian safety, with better connections to and through the site, especially from transit stops.
- A proposed bus rapid transit stop on the west side of Seattle Center on First Avenue N. and Republican Street as part of the new RapidRide line between north downtown and Ballard.
- Expansion of the South Lake Union streetcar to Seattle Center along the Central Line route.

### 4.3 Development Activity and Trends

Development activity and overall land use characteristics in the study area continue to evolve from primarily employment-related uses to a major center for tourism, retail shopping, meeting and convention activities, and entertainment. Continuing long-term trends, downtown Seattle's land use character is a relatively dense and growing Urban Center, the largest in the Pacific Northwest. The downtown area has continued to evolve from a predominantly commercial office and retail center to a more diverse-use character that includes numerous residential uses, shopping, convention and meeting facilities, tourism, and entertainment-oriented uses.

Within the study area, there has been an increased emphasis on providing more residential opportunities and better livability, placing residents close to jobs and amenities. According to the Downtown Seattle Association, in 2009 there were several residential development projects under construction or scheduled to begin construction (Downtown Seattle Association 2009). Exhibits 4-8 and 4-9 show recent development activity in the south and north portal areas, respectively. Development projects are divided into three categories: those planned for construction, those currently under construction, and those recently completed. Several development projects are currently under construction in both the south and north portal areas, with only a few projects planned for future development.

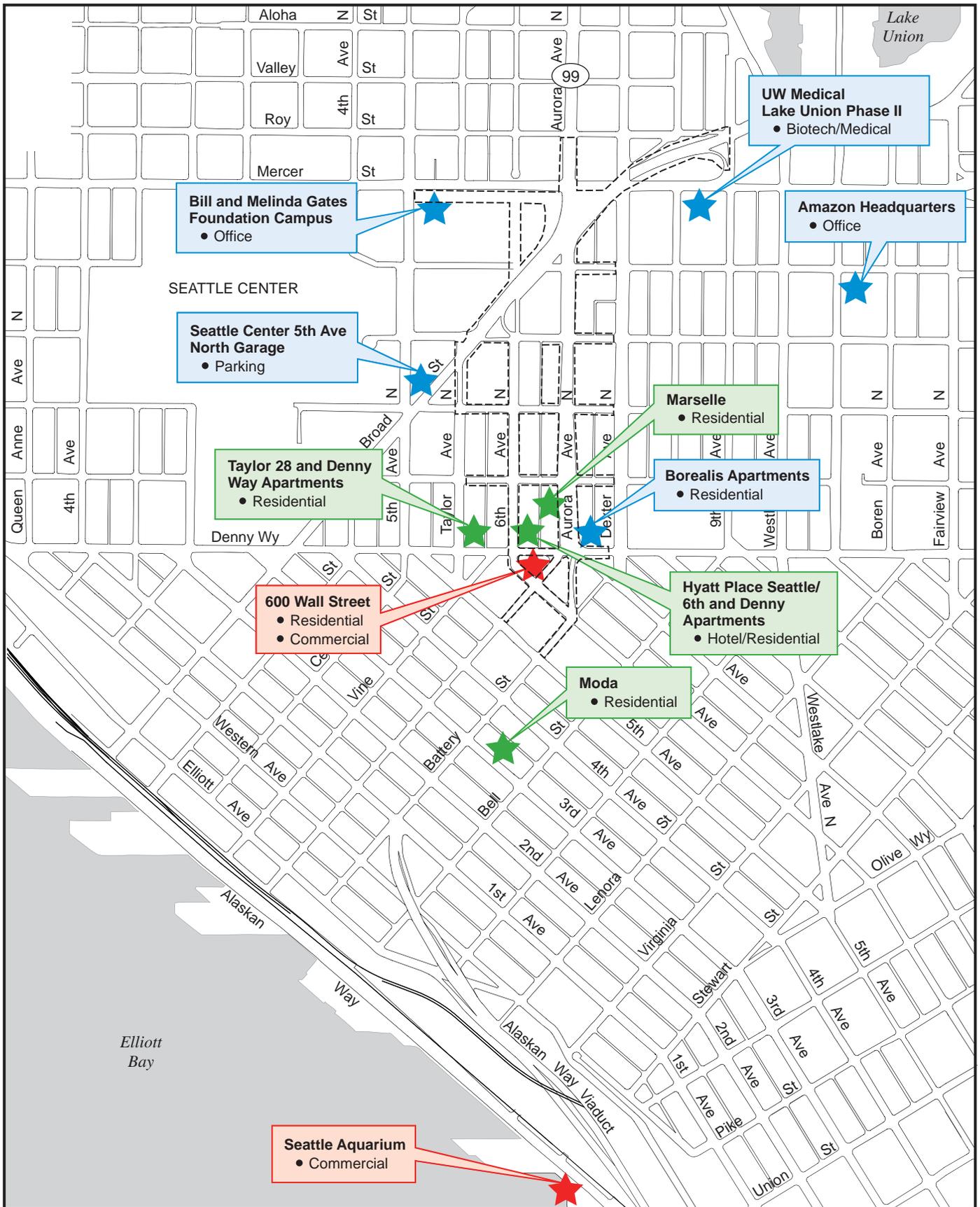


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- ★ Planned Projects
- ★ Projects Recently Completed
- ★ Projects Currently Under Construction
- North Portal

**Exhibit 4-8  
Development Activity  
South Portal Area**



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- ★ Planned Projects
- ★ Projects Recently Completed
- ★ Projects Currently Under Construction
- North Portal

**Exhibit 4-9**  
**Development Activity**  
**North Portal Area**

The area south of Seattle's Commercial Core includes the areas of Pioneer Square, the Stadium Transition Area Overlay District, and the Greater Duwamish MIC. Land uses in Pioneer Square are primarily tourist, services, and residential. The Stadium Transition Area Overlay District and the First Avenue S. corridor are a mix of industrial and commercial uses, consistent with City policies. This area generally trends toward increased diversity with the presence of commercial uses mixed with warehouse and industry-oriented uses.

Infill and redevelopment trends in the past few years are mostly related to office and residential high-rise development in Belltown and the Denny Triangle. This has increased residential densities in Belltown with a general pattern of office core infill and continuing the growth of the downtown office core outward. Similarly, infill development has occurred within the Pioneer Square neighborhood as part of an overall downtown growth trend. South of the Commercial Core, the trend has included occasional development projects that involve filling in available vacant parcels and remodeling existing buildings in Pioneer Square and along the First Avenue S. corridor. However, recent economic conditions have brought most short-term development prospects to a halt. The Port of Seattle continues to improve and redevelop existing marine cargo facilities in the UI and IG1 environments, particularly water-dependent marine industrial locations west of E. Marginal Way S. and Alaskan Way S., including Terminals 25, 30, and 46.

The City, acknowledging this shift, has initiated a planning process for several of the neighborhoods located south of downtown Seattle. This planning process will identify City land use actions that may result in a more livable community by encouraging residential and job-related development in appropriate ways and by balancing local and regional uses while respecting the rich culture and history of the area.

The south portal area has a mix of residential and office-use developments currently under construction, and much of the development near the north portal area is also a mix of residential and office uses, with more office and research/development uses slightly farther away in South Lake Union.

A major development project currently underway in the northern portion of the study area is the Bill and Melinda Gates Foundation Campus. Located just east of Seattle Center, the foundation's global headquarters will include three 6-story office buildings with a combined 700,000 square feet of office space, visitor's center, parking garage, and open space. The first two buildings will be completed by 2011; the third building will likely be completed by 2013–2014. Roadway access to the complex is expected along Fifth Avenue N., Harrison Street, and Mercer Street.

The South Lake Union neighborhood in the northern portion of the study area has experienced substantial redevelopment in the last decade, with an increasing number of biotechnology and high-technology companies locating there. The most recent addition is the UW Medicine South Lake Union branch. In addition, Amazon.com will move its current global headquarters to a new 11-building campus in the South Lake Union neighborhood beginning in mid-2010, with full occupancy by 2011. The new campus is located south of Mercer Street along Terry Avenue N. and the South Lake Union streetcar line. Each of the proposed campus buildings will include office and street-level retail space; about 100,000 square feet of retail space is planned. In addition, the campus will include courtyard plazas and pockets of open green space. Redevelopment along the Mercer corridor has also begun in the last few years, and efforts continue toward economic development in the South Lake Union neighborhood through several redevelopment projects planned along this corridor.

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## Chapter 5 OPERATIONAL EFFECTS, MITIGATION, AND BENEFITS

### 5.1 Operational Effects of the Viaduct Closed (No Build Alternative)

Both federal and Washington State environmental regulations require agencies to evaluate a No Build Alternative to provide baseline information about existing conditions in the project area. For this project, the No Build Alternative is not a viable alternative because the existing viaduct is vulnerable to earthquakes and structural failure due to ongoing deterioration. Multiple studies of the viaduct's current structural conditions, including its foundations in liquefiable soils, have determined that retrofitting or rebuilding the existing viaduct is not a reasonable alternative. At some point in the future, the roadway will need to be closed.

The Viaduct Closed (No Build Alternative) describes what would happen if the Bored Tunnel Alternative or another build alternative is not implemented. If the existing viaduct is not replaced, it will be closed, but it is unknown when that would happen. However, it is highly unlikely that the existing structure could still be in use in 2030.

The Viaduct Closed (No Build Alternative) describes the consequences of suddenly losing the function of SR 99 along the central waterfront based on the two scenarios described below. All vehicles that would have used SR 99 would either navigate the Seattle surface streets to their final destination or take S. Royal Brougham Way to I-5. The consequences would last until transportation and other agencies could develop and implement a new, permanent solution. The planning and development of the new solution would have its own environmental review.

The Viaduct Closed (No Build Alternative) assumes that one of two scenarios would occur: (1) an unplanned closure of the viaduct for some structural deficiency, weakness, or smaller earthquake event; or (2) a catastrophic and complete collapse. Any collapse, whether partial or complete, would cause a sudden disruption to traffic flow, which would affect adjacent residences and businesses that rely on the viaduct for their access. Disruption of traffic flow would also include industrial traffic using the viaduct for access to cargo transfer areas in the study area and industrial areas to the south, as well as north-south traffic. Any collapse could also include debris striking existing land uses near the viaduct.

Under a complete collapse, disruptions to traffic flow would likely affect an area larger than that of nearby residences and businesses, and the disruptions would last for a longer period of time. Except for a complete collapse, it is expected that effects on land uses would be relatively short in duration until the damaged area or impaired use could be replaced and full access restored.

## 5.2 Operational Effects of the Bored Tunnel Alternative

The Bored Tunnel Alternative would begin at about S. Royal Brougham Way as a surface roadway that would transition to a cut-and-cover tunnel. SR 99 would be in a stacked tunnel, with two southbound travel lanes on the top and two northbound travel lanes on the bottom. The tunnel would continue under Alaskan Way S. to approximately S. Washington Street, where it would curve slightly away from the waterfront and then travel under First Avenue. At Stewart Street, it would travel in a northern direction under the Belltown neighborhood. At Denny Way, the tunnel would travel under Sixth Avenue N., where SR 99 would transition to a side-by-side surface roadway at about Harrison Street. The Bored Tunnel Alternative would provide increased access to nearby land uses in the south and north portal areas.

### 5.2.1 Permanent Effects on Land Use

Only a few land uses in the south and north portal areas would be permanently changed, primarily from office, retail, and commercial land uses to transportation uses, due to right-of-way acquisitions. Conversion of land to transportation use would result in a very slight reduction in the overall level of development. This conversion of land use is not expected to influence development activity or trends in those areas. In addition, land use under the Bored Tunnel Alternative would be consistent and compatible with existing land use plans.

The tunnel operations buildings at both the north and south portals would provide both maintenance and ventilation functions. Major portions of the structure would likely be several stories high, but it would fit within the requirements of the existing zoning and land use code. Height restrictions and the urban context would be carefully considered in the design of these buildings.

With the Bored Tunnel Alternative, the downtown access ramps from and to SR 99 would not be in their existing locations, which currently include a southbound off-ramp and a northbound on-ramp at First Avenue S., a southbound on-ramp from Columbia Street, and a northbound off-ramp at Seneca Street. Instead, new ramps would be built from northbound SR 99 to Alaskan Way S. and from Alaskan Way S. to southbound SR 99 near S. Royal Brougham Way. More circuitous and less convenient access due to removal of the downtown access ramps may result in some degree of inconvenience, and businesses in the central downtown could experience disruptions in the flow of customers and employees and in the delivery or shipment of materials and supplies.

Local traffic access to downtown land uses would be provided via an improved Alaskan Way (and northbound Western Avenue); a more in-depth discussion about these improvements is included in Appendix C, Transportation Discipline Report.

Permanent loss of on-street and off-street parking would occur in the south and north portal areas. A net loss of approximately 310 on-street and 250 off-street parking spaces is expected to occur, resulting in increased competition for remaining parking areas. The loss of parking would result in less convenient patron access to businesses and would represent an adverse effect. However, the removal of off-street parking spaces would not result in any land use nonconformities with respect to accessory parking requirements. The on- and off-street parking areas that would be affected and other changes in parking areas, as well as mitigation, are discussed in Appendix C, Transportation Discipline Report.

### South Portal

In the south portal area, full northbound and southbound access to and from SR 99 would be provided between S. Royal Brougham Way and S. King Street. The northbound on-ramp to and southbound off-ramp from SR 99 would be built in the vicinity of S. Royal Brougham Way and would intersect with the East Frontage Road. The southbound on-ramp to and northbound off-ramp from SR 99 would feed directly into a reconfigured Alaskan Way S. The reconfigured Alaskan Way S. would have a pedestrian and bicycle trail on the west side, called the Port Side Pedestrian/Bike Trail. These improvements would benefit adjacent land uses by improving accessibility for employees, customers, and residents.

South of S. King Street, two options are being considered for new cross streets that would be built to intersect with Alaskan Way S. The New Dearborn and Charles Intersections option would provide new westerly street extensions at S. Dearborn Street and S. Charles Street. The New Dearborn Intersection option would provide only a westerly extension of S. Dearborn Street. With the New Dearborn and Charles Intersections option, S. Dearborn Street and S. Charles Street would be about 350 feet apart. These improvements would increase east-west connectivity between the historic Pioneer Square and Greater Duwamish MIC neighborhoods and enhance the accessibility to existing land uses, such as the sports stadiums, ferry terminal, and waterfront businesses. Potential future development, such as the Qwest Field north lot, would benefit from the improved accessibility. The City Side Trail and the Port Side Pedestrian/Bike Trail would also benefit from the improved accessibility.

The two south portal area options would also define new blocks of property that would be available for future development under the City's existing Industrial Commercial land use zone. This zone is intended to promote development of businesses that incorporate a mix of industrial and commercial activities, such as light manufacturing and research and development facilities, while also allowing for a wide range of other employment activities. The availability of this land for development is not expected to influence development activity or trends in the Pioneer Square or Greater Duwamish MIC neighborhoods. The future development

of this property would be required to be consistent and compatible with existing land use plans.

The south portal would include a tunnel operations building south of Railroad Way S. and west of First Avenue S. to provide tunnel ventilation and tunnel maintenance functions. Part of the building would be constructed underground. The remaining portion of the building is expected to be approximately 60 feet tall, with ventilation stacks extending up to 30 feet above the roof. The ventilation stacks would be exempt from zoning height restrictions.

The tunnel operations building could be designed to meet requirements of the existing Industrial Commercial zone, Stadium Transition Area Overlay District, and other applicable land use code regulations that may apply. The tunnel operations building may be similar in character to the terminal and warehouse land uses in the area.

#### North Portal

In the north portal area, full northbound and southbound access to and from SR 99 would be provided near Harrison and Republican Streets. The existing on- and off-ramps at Denny Way would be closed and replaced with downtown access ramps to and from SR 99 that would be accessed via Aurora Avenue between Denny Way and Harrison Street. Northbound access from SR 99 and southbound access to SR 99 would be provided via new ramps at Republican Street.

A two-way Mercer Street would be constructed between Dexter Avenue N. and Fifth Avenue N. Sixth Avenue N. would be extended from Harrison Street to Mercer Street. Broad Street would be closed and filled between Ninth Avenue N. and Taylor Avenue N. Although the removal of Broad Street would change pedestrian, bicycle, and vehicle circulation patterns, it would not decrease accessibility to adjacent land uses.

Surface streets would be reconfigured and improved in the north portal area. Improvements would include connecting John, Thomas, and Harrison Streets so that they intersect with Aurora Avenue and provide pedestrians and vehicles access across this street. The connections would extend from Sixth Avenue N. to Dexter Avenue N. Pedestrian sidewalks would be maintained along both sides of Aurora Avenue.

Businesses along the east side of SR 99, between Harrison and Mercer Streets would no longer have direct access to and from SR 99. However, these businesses have other access points on Harrison and Republican Streets as well as via the alleyway between SR 99 and Dexter Avenue N. The more circuitous and less convenient access for these businesses could affect their operations.

Two options are being considered for Sixth Avenue N. and the southbound on-ramp to SR 99: a Curved Sixth Avenue option and a Straight Sixth Avenue option. Overall, both options would increase east-west connectivity between the South Lake Union and Uptown neighborhoods and enhance the accessibility to existing land uses and potential future development, such as the South Lake Union area and the Bill and Melinda Gates Foundation Campus. However, the Straight Sixth Avenue option would divide the eastern portion of the Bill and Melinda Gates Foundation property from the main campus buildings. Access to the property east of Sixth Avenue N. from the main campus would not be allowed from Sixth Avenue N. but could be provided by building over Sixth Avenue N. The Bill and Melinda Gates Foundation Campus Master Plan would need to be modified to accommodate the Straight Sixth Avenue option.

The north portal would include a tunnel operations building between Thomas and Harrison Streets on the east side of Sixth Avenue N. to provide tunnel ventilation and maintenance functions. Part of the building would be constructed underground, and the remaining portion is expected to be approximately 65 feet tall, with ventilation stacks extending up to 30 feet above the roof. The ventilation stacks would be exempt from zoning height restrictions.

The tunnel operations buildings could be designed to meet requirements of the Seattle Mixed 85 zone and other applicable land use code regulations that may apply. The tunnel operations building may be similar in character to the current multistory mixed-use developments in the area.

### **Land Acquisitions and Relocations**

Permanent land use effects are described below in terms of full and partial property acquisitions. Subsurface property acquisitions and permanent tieback easements for subsurface wall shoring systems are also identified.

The subsurface property acquisitions would consist of a three-dimensional space corridor below the surface of the ground for the tunnel and would not affect land uses on the surface because the limits are outside of the practical building requirements for typical building foundations and zoning requirements. Future development would need to consider the bounds of the subsurface property that would be acquired for the tunnel. The subsurface property acquisitions are listed in Attachment A. Compensation requirements for all property acquisitions, including subsurface acquisitions, are discussed in Section 5.3.

Tieback easements allow for use of a property below the surface for a wall shoring system to stabilize a permanent wall. Temporary construction-related easements are described in Chapter 6, Construction Effects and Mitigation. A total of 11 properties have been identified as required for acquisition, in full or in part, to accommodate the Bored Tunnel Alternative.

In the south portal area, full acquisitions would include about 173,000 square feet (3.97 acres) of land zoned for Industrial Commercial use. Partial acquisitions would include about 17,900 square feet (0.41 acre) of land zoned for Industrial Commercial use. No permanent tieback easements would be required in the south portal area. The Industrial Commercial zone is intended to promote development of businesses that incorporate a mix of industrial and commercial activities, such as light manufacturing and research and development facilities, while also allowing for a wide range of other employment activities.

In the north portal area, full acquisitions would include about 113,280 square feet (approximately 2.60 acres) of property. Partial acquisitions with the Straight Sixth Avenue option would be about 38,207 square feet (approximately 0.87 acre). Partial acquisitions with the Curved Sixth Avenue option would be about 15,507 square feet (approximately 0.36 acre). All of the property acquisition in the north portal area would be land zoned as Seattle Mixed. The Seattle Mixed zone provides for a wide range of uses to encourage development of a mixed-use neighborhood.

A review of Seattle real estate listings indicates that there are presently a variety of warehouse-type properties available for sale or lease in the south Seattle and Greater Duwamish areas. Similarly, several office/commercial properties in the South Lake Union area are also available. These are the general categories of land uses that would be fully displaced. Online listings—Coldwell Banker Commercial, LoopNet, Showcase, Cityfeet, and Colliers International—were consulted to confirm the availability of replacement property. Residential properties were not reviewed because no residential displacements have been identified.

The sizes of available properties vary greatly, as do prices and lease rates. The current market has slowed due to the downturn in economic conditions. This has resulted in higher vacancy rates than those experienced at the end of the 1990s and in the early 2000s, when the economy was stronger. It is difficult to predict how long the current economic environment will last; however, as the economy improves, the demand for all property types downtown is expected to be relatively high, based on activity during the recent past. The permanent effects of land acquisitions are described below.

In addition to property acquisitions, permanent tieback easements for subsurface wall shoring systems would be needed on three properties in the north portal area: the Hostess Cake Continental Baking Company at the northwest corner of Aurora Avenue and Republican Street (225 square feet); the School of Visual Arts between Republican and Mercer Streets on the east side of SR 99 (1,588 square feet); and one of two options for the site of the Bill and Melinda Gates Foundation Campus between Broad and Mercer Streets on the west side of SR 99 (Curved Sixth Avenue option: 19,780 square feet; Straight Sixth Avenue option: 23,905 square feet).

## South Portal

The full and partial property acquisitions needed to implement the Bored Tunnel Alternative in the south portal area are listed in Exhibit 5-1. The acquisition locations are shown on Exhibit 5-2. The amount of land acquired and converted to transportation use would be relatively small compared to the amount of similar land currently available in the area. Only one of the two buildings on property to be partially acquired would be altered or demolished, (Seattle Hometown Fans) shown in Exhibit 5-1. The other building would not be altered, and its use and access would not be adversely affected. Temporary easements and staging areas are discussed in Chapter 6.

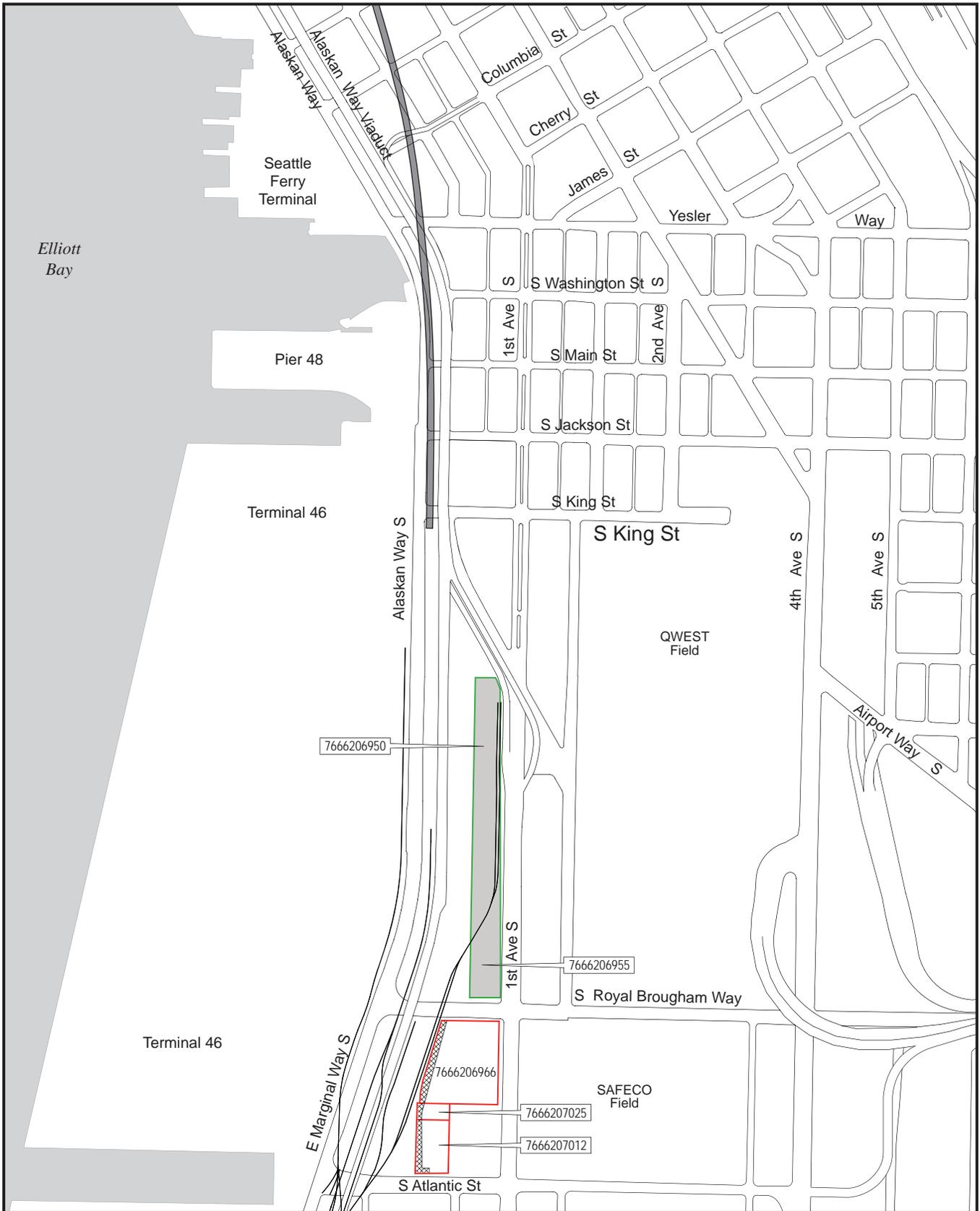
### Exhibit 5-1. South Portal Property Acquisitions

Parcel ID	Existing Ownership	Existing Land Use <sup>1</sup>	Existing Zoning <sup>1</sup>	Approximate Size of Property Acquisition
766620 6966	1201 Building LLC, Pyramid Alehouse	Terminal/warehouse (Pyramid Alehouse parking lot)	Industrial Commercial	Partial acquisition, 11,400 square feet (approximately 50 parking spaces)
766620 7012 and 766620 7025	Seattle Hometown Fans, LLC Warehouse	Terminal/warehouse (includes vacant lot)	Industrial Commercial	Partial acquisition, 6,500 square feet
766620 6955	MSI Triangle, LLC	Terminal/warehouse (Gerry Sportswear Building)	Industrial Commercial	Full acquisition, 37,000 square feet
766620 6950	WOSCA site, MSI Railroad, LLC	Terminal/warehouse (vacant land)	Industrial Commercial	Full acquisition, 136,000 square feet
Totals	Full acquisitions: 173,000 square feet (approximately 3.97 acres) Partial acquisitions: 17,900 square feet (approximately 0.41 acre)			

Note:

<sup>1</sup> Existing land uses and zoning (Seattle 2009).

Some on-street and off-street parking spaces on privately owned property would also be removed. Refer to Appendix C, Transportation Discipline Report, for a discussion of parking changes.



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- Parcels for Full Acquisition
- Parcels for Partial Acquisition
- Tunnel

**Exhibit 5-2  
South Port Property  
Acquisition Locations**

**Parcel 766620 6966: Pyramid Alehouse Parking Lot (1201 Building LLC).** This property is on S. Royal Brougham Way, west of First Avenue S. The City Side Trail would require partial acquisition of this property. Approximately 50 of the existing 105 parking spaces would be removed. The parking lot is a pay lot that serves not only the Pyramid Alehouse but also other businesses in that building and in the area. Replacement parking that would compensate for the loss of parking is available nearby, along First Avenue S. and at a parking lot to the south. The Pyramid Alehouse building would not be altered, and its use and access to it would not be adversely affected.

**Parcels 766620 7012 and 766620 7025: Warehouse (Seattle Hometown Fans LLC) and Vacant Lot.** The warehouse parcel is on the north side of S. Atlantic Street between Utah Avenue S. and Alaskan Way S. A portion of this property would be acquired, and the building would be altered or demolished to widen the frontage road. The vacant lot is on the west side of Utah Avenue S. between S. Atlantic Street and S. Royal Brougham Way; it is currently used as part of the warehouse business. Utah Avenue S. has been vacated in this area and is not a through street. A portion of the vacant lot would also be acquired. The warehouse employs about 25 workers, and these jobs would be displaced if the building is demolished.

**Parcel 766620 6955: Gerry Sportswear Building (MSI Triangle LLC).** This parcel is at the northwest corner of S. Royal Brougham Way and First Avenue S. It was originally identified in the S. Holgate Street to S. King Street Viaduct Replacement Project as a long-term construction easement. The entire property is now needed for the unbraiding of the southbound and northbound decks of the tunnel. The building is currently being used by WSDOT for construction offices.

**Parcel 766620 6950: Washington-Oregon Shippers Cooperative Association (WOSCA) Site (MSI Railroad LLC).** This parcel is at the corner of S. Royal Brougham Way, First Avenue S., Railroad Way S., S. Dearborn Street, and the viaduct. The western portion of this property was previously acquired by WSDOT. The eastern portion was leased and the buildings purchased by WSDOT to be used for the S. Holgate Street to S. King Street Viaduct Replacement Project as a long-term construction easement. The buildings on the entire WOSCA site have been demolished, and the site is vacant. The eastern portion would be acquired for the unbraiding of the southbound and northbound decks of the tunnel.

#### Bored Tunnel

Subsurface property acquisitions would be required for between 52 and 59 parcels for the proposed 54-foot-diameter bored tunnel. These include parcels where tunnel rights are needed and special considerations need to be

implemented to stabilize buildings. The subsurface property acquisitions are listed in Attachment A, Tunnel Subsurface Property Acquisitions (see Exhibit A-1). The locations of these property acquisitions are shown on Exhibits A-2 through A-5 in Attachment A. The *SR 99 Bored Tunnel Alternative Right-of-Way Needs and Boundaries Summary* (PB 2009) provides additional information on the right-of-way needs for the Bored Tunnel Alternative. The subsurface property acquisitions would not affect land uses on the surface. Future development would need to consider the bounds of the subsurface property that would be acquired for the tunnel.

#### North Portal

The full and partial property acquisitions needed to build the necessary facilities in the north portal area are listed in Exhibit 5-3. The acquisition locations are shown on Exhibit 5-4. The amount of land acquired and converted to transportation use would be relatively small compared to the amount of similar land that is currently available in the area. The use of and access to the planned buildings on the Bill and Melinda Gates Foundation Campus, which are under construction, would not be affected by the partial acquisition of this property. However, the Straight Sixth Avenue option would require a larger acquisition than the Curved Sixth Avenue option, 37,100 square feet compared to 14,400 square feet, respectively. In addition, the Straight Sixth Avenue option could limit the development potential for the newly created parcel east of Sixth Avenue N. due to restricted access from Sixth Avenue N. Temporary easements and staging areas are discussed in Chapter 6. The Bill and Melinda Gates Foundation Campus Master Plan would need to be modified to accommodate the Straight Sixth Avenue option.

Some on-street and off-street parking spaces on privately owned property would also be removed. Refer to Appendix C, Transportation Discipline Report, for a discussion of parking changes.

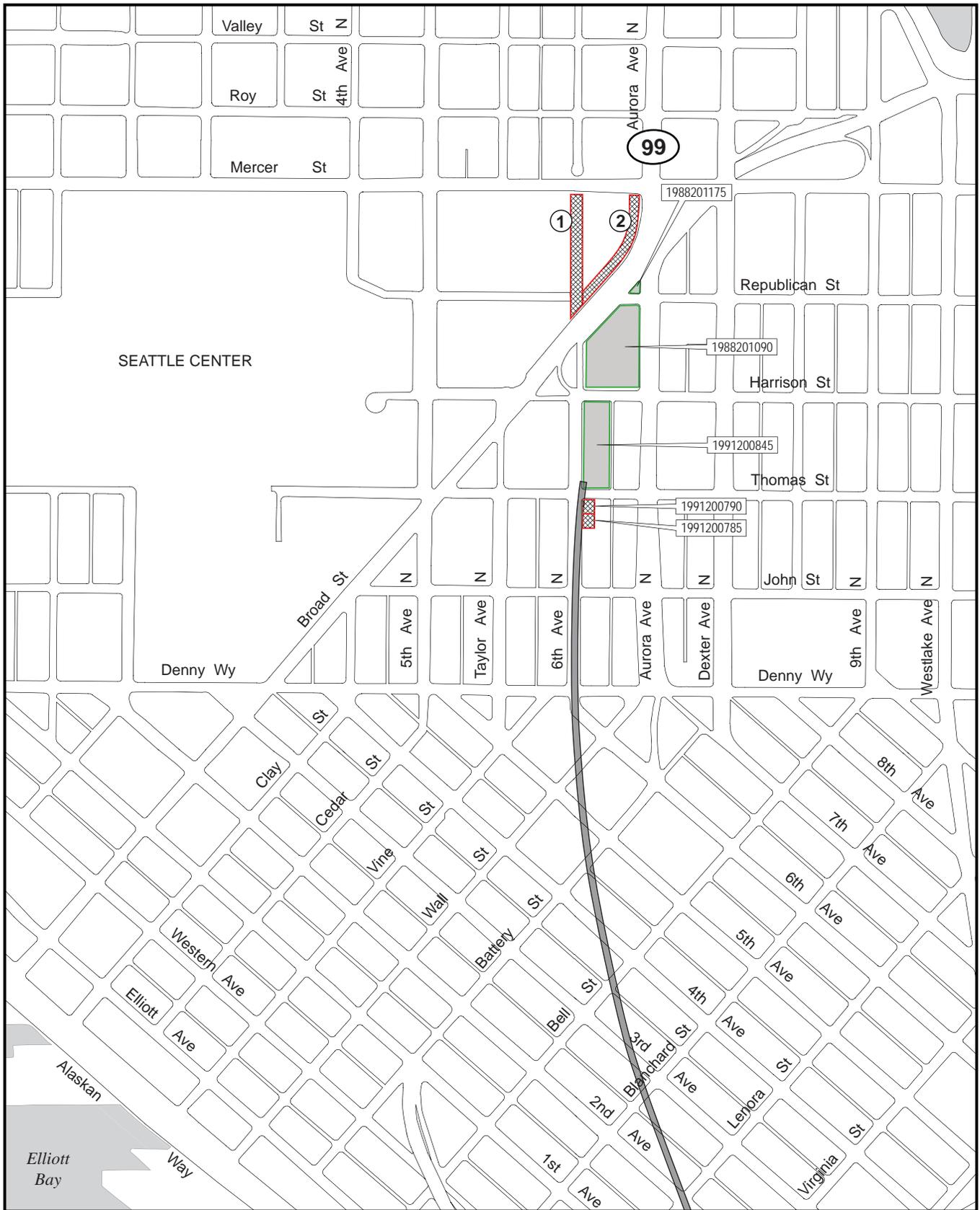
**Parcel 198820 1090: City of Seattle Maintenance Yard.** This maintenance yard, between Harrison and Republican Streets on the west side of SR 99, would be a full property acquisition, and the modular building on this site would be demolished. The full acquisition would accommodate a temporary detour into the Battery Street Tunnel during construction of the bored tunnel, the new southbound on-ramp and acceleration lane, and the southbound mainline lanes into the bored tunnel; and the property would also serve as a construction staging area. The maintenance employees would likely be transferred to another City of Seattle maintenance facility.

### Exhibit 5-3. North Portal Property Acquisitions

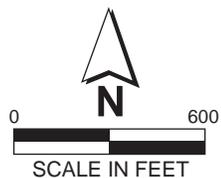
Parcel ID	Existing Ownership	Existing Land Use <sup>1</sup>	Existing Zoning <sup>1</sup>	Approximate Size of Property Acquisition
199120 0785	C/O Clise Properties Inc.	Parking lot	Seattle Mixed	Partial acquisition, 393 square feet
199120 0790/T55	Carl Fennema	Office	Seattle Mixed	Partial acquisition, 714 square feet
199120 0845	Cederstrand Properties LLC	Office	Seattle Mixed	Full acquisition, 38,880 square feet
198820 1090	City of Seattle maintenance yard	Vacant	Seattle Mixed	Full acquisition, 73,400 square feet
198820 1175	Vacant parcel with billboard	Vacant	Seattle Mixed	Full acquisition, 1,000 square feet
198820 1155	Gates Foundation Campus	Office	Seattle Mixed	Partial acquisition Straight Sixth Avenue: 37,100 square feet Curved Sixth Avenue: 14,400 square feet
Totals	Full acquisitions: 113,280 square feet (approximately 2.60 acres) Partial acquisitions: Straight Sixth Avenue option: = 38,207 square feet (approximately 0.87 acre) Curved Sixth Avenue option = 15,507 square feet (approximately 0.36 acre)			

Note:

<sup>1</sup>Existing land uses and zoning (Seattle 2009).



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- ① Straight Sixth Avenue
- ② Curved Sixth Avenue
- █ Parcels for Full Acquisition
- ▨ Parcels for Partial Acquisition
- Tunnel

**Exhibit 5-4  
North Portal Property  
Acquisition Locations**

**Parcel 198820 1175:** This parcel is at corner of Broad Street and west side of SR 99. This small triangular parcel with a large billboard would be a full acquisition to accommodate the southbound SR 99 mainline lanes. It would also be used for a temporary detour route.

**Parcel 198820 1155: Gates Foundation Campus.** This parcel, between Broad and Mercer Streets on the west side of SR 99, would be a partial property acquisition from the east side to accommodate the southbound SR 99 mainline and Sixth Avenue N. connection. There are two options for the Sixth Avenue N. alignment, and each option would affect this parcel in a different way. The Bill and Melinda Gates Foundation Campus Master Plan would need to be modified to accommodate the Straight Sixth Avenue option.

**Parcel 199120 0785: Parking Lot.** This property is between John and Thomas Streets on the east side of Sixth Avenue N. It would be a partial acquisition because a portion of the property is within the required vertical clearance above the tunnel.

**Parcel 199120 0790/T55: Office Building.** This property is between John and Thomas Streets on the east side of Sixth Avenue N. It would be a partial acquisition because a portion of the property is within the required vertical clearance above the tunnel. A temporary tieback easement would also be required on this property. Temporary tieback easements are discussed in Chapter 6, Construction Effects and Mitigation.

**Parcel 199120 0845: Office Building.** This property is between Thomas and Harrison Streets on the east side of Sixth Avenue N. It would be full acquisition and the existing building would be demolished. The southbound and northbound mainline SR 99 out of the tunnel would unbraid through this area. It is also the proposed site of the north portal tunnel operations building.

## Zoning

No changes in zoning or amendments to existing land use plans would be required for the Bored Tunnel Alternative. Current City zoning for the south tunnel operations building site is IC-65, and it is also within the Stadium Transition Area Overlay District. Land within this overlay is subject to the regulations of the underlying Industrial Commercial zone. Although the intended uses of the tunnel operations building are not listed among those permitted outright, they are also not explicitly identifiable in the list of prohibited uses. Typical land uses allowed within this zone include light and general manufacturing, commercial uses, transportation facilities, and utilities. The range of allowed uses in IC-65 appears to be consistent with the architectural program developed for the tunnel operations building for the south portal.

Current City zoning for the north portal tunnel operations building site is SM-85. A broad variety of mixed land uses is permitted within this zone. The range of allowed uses in the SM-85 zone appears to be consistent with the architectural program developed for the tunnel operations building for the north portal.

The Seattle Design Commission is expected to review and provide input on the design features of structures and buildings, retaining walls, railings, and light standards in the south and north portal areas.

#### **Indirect Effects on Land Use**

The Bored Tunnel Alternative represents only one of numerous ongoing improvements occurring in the city. Overall, many factors influence land use decisions, including economic conditions, zoning, and land supply. Because the Bored Tunnel Alternative would replace an existing facility to meet safety and projected traffic demand growth, it would not likely have large, if any, influences on these factors. The potential to induce growth would be minor.

The Bored Tunnel Alternative is not expected to be a major catalyst for future growth. Large-scale redevelopment, as a direct or indirect result, is not likely, but the alternative would support planned future growth as identified in Seattle's Comprehensive Plan. Planning efforts for the neighborhood areas will also help determine the direction of future growth and land uses in the study area.

The two south portal area options would define new blocks of property that would be available for future development under the City's existing Industrial Commercial land use zone. The future development of this property would be required to be consistent and compatible with existing land use plans and is not expected to influence development activity or trends in the Pioneer Square or Greater Duwamish MIC neighborhoods.

The existing viaduct between S. King Street and the Battery Street Tunnel would be removed in 2016. It is expected that future development within this area would likely occur in the form of modest expansions of existing buildings on the east side of Alaskan Way. In addition, substantial changes would occur in the relationship between the waterfront and upland properties leading to the downtown core. To the extent that the existing viaduct has been perceived as a barrier to waterfront uses, new development on vacant or under-used property or redevelopment may take place around the new Alaskan Way surface street. No development within the existing viaduct right-of-way is proposed as part of the Bored Tunnel Alternative.

Removal of the existing viaduct would increase the potential for pedestrian traffic between downtown and the waterfront. Where enhanced pedestrian access could be provided, the connection between core commercial, office, retail, and service

uses downtown and the waterfront would be increased. Effects related to demolition of the viaduct would also occur (see Section 6.1.4, Viaduct Removal).

The SR 99 corridor has an influence on areas beyond the immediate neighborhoods through which it passes. Many of the daily commuters now using this route live in neighborhoods north and south of downtown, such as Ballard, Fremont, Greenwood, West Seattle, White Center, and Georgetown. For these commuters, the viaduct offers a convenient route either to downtown or around the city without using I-5. The Bored Tunnel Alternative may have an influence on growth in neighborhoods where the area's desirability is in part facilitated by the ease of access to downtown Seattle, including commute, retail, and residential trips.

### 5.2.2 Consistency with State, Regional, and Local Land Use and Transportation Plans and Implementing Regulations

As described in Chapter 4, Affected Environment, many plans and regulations are applicable to the Bored Tunnel Alternative. Plans and regulations, such as *VISION 2040*, *Transportation 2040*, Seattle's Comprehensive Plan, and the *Transportation Strategic Plan* focus on the efficient movement of freight, people, and goods, as well as on safety for all travel modes.

The Shoreline Management Act and Seattle's Shoreline Master Program are also considered in this land use analysis, because project elements are proposed within the Shoreline District. The proposed project elements are allowed and consistent with the City's land use and shorelines codes. They would not affect the ecological functions of the shoreline. Guidance from the environmentally critical areas regulations will be followed, as demonstrated in Appendix P, Earth Discipline Report.

The viaduct is considered "upland" in Seattle's Comprehensive Plan and Shoreline Master Program, and demolition of the viaduct and replacement with a surface street or tunnel would be allowed.

The Bored Tunnel Alternative, as well as the other planned elements of the transportation program and private development projects listed in Chapter 7, Cumulative Effects, would be consistent with the City's policies for coordinating transportation and development to concentrate and intensify urban development. In accordance with state, regional, and local plans and policies, these projects would provide mobility and access options that could accommodate higher densities and reduce land consumption. Because the Bored Tunnel Alternative would be compatible with state, regional, and local plans and implementing regulations, as discussed below, no mitigation would be required for compliance.

## Washington State

The GMA provides overview guidelines for comprehensive planning in the state and specifies important goals for designating areas where urban growth will be encouraged and where new facilities and infrastructure will be directed. The project area for the Bored Tunnel Alternative lies within an urban area and is consistent with the GMA requirement to direct infrastructure improvements to such areas. The Alaskan Way Viaduct is considered an essential public facility under the GMA. The Bored Tunnel Alternative would replace a deteriorated transportation facility, consistent with the principal investment guideline identified in the *Washington Transportation Plan 2007–2016*.

## Regional Plans

The Bored Tunnel Alternative is consistent with the regional transportation strategies and policies of *VISION 2040* and *Transportation 2040*. It has been designed to be compatible with several existing and planned regional and local transportation facilities, including SR 519 improvements, light rail, transit, and Washington State Ferries service, along with consideration of future high-occupancy vehicle (HOV) and pedestrian/bicycle facilities. The Bored Tunnel Alternative would also comply with the need to ensure continuance of urban-level facilities. In so doing, it would be consistent with long-range goals to direct high-density growth to already urbanized locations.

The Bored Tunnel Alternative would rebuild an existing urban transportation corridor to maximize the performance of the transportation system and to provide increased mobility and traffic circulation through the city. It would also increase accessibility and east-west connectivity at the portal areas, which would support potential future infill and development in these areas. The new east-west connectivity across SR 99 at the north portal, such as at John, Thomas, and Harrison Streets, would aid in the redevelopment of a low-density, automobile-dominated neighborhood into a high-density urban center.

Relevant policies in *VISION 2040* and *Transportation 2040* related to the Bored Tunnel Alternative include those discussed below.

**RF-3:** Strategically locate public facilities and amenities in a manner that adequately considers alternatives to new facilities, implements regional growth planning objectives, maximizes public benefit, and minimizes and mitigates adverse impacts.

**RT-8:** Develop a transportation system that emphasizes accessibility, includes a variety of mobility options, and enables the efficient movement of people, goods and freight, and information.

**RT-8.34:** Support the development of roadways when they are needed to provide more efficient connections for comprehensive roadway network to move people

and goods when such roadways will not cause the region to exceed air quality standards.

**RT-8.36:** Transportation investments in major facilities and services should maximize transportation system continuity and be phased to support regional economic development and growth management objectives.

In summary, the Bored Tunnel Alternative would generally be consistent with the policies described above. Replacement of the viaduct is necessary, as it serves as a vital local and regional transportation link to, or around, the downtown area from locations to the north and south. Replacement of the viaduct with the bored tunnel would maintain essential freight mobility conditions and improve the functionality of the highway.

### Local Plans and Implementing Regulations

The Bored Tunnel Alternative is consistent with Seattle's Comprehensive Plan because it would improve travel conditions within and through the city for drivers and conditions at the tunnel portal areas for drivers, pedestrians, and bicyclists. It would also support higher densities of development and reduce land consumption, which includes planned development north of Qwest Field near the south portal and the Bill and Melinda Gates Foundation Campus that is currently under construction northwest of the north portal. Seattle's Comprehensive Plan also allows for relocation or demolition of the existing Alaskan Way Viaduct.

The design for the Bored Tunnel Alternative was developed in accordance with the neighborhood plans and the following urban design objectives:

- Enhance the integration of the proposed improvements with the urban fabric and activities in the surrounding area.
- Provide adequate space and linkages for pedestrians and bicycles.
- Encourage the creation of a walkable, pedestrian-oriented environment and support transit service.
- Create opportunities for infill development and enhance the environment for existing uses.
- Create opportunities for landscaping and expansion of the urban forest.
- Further the legibility, clarity, and understanding of the movement systems within the city.
- Maintain and enhance the visual experience of the surrounding area and the city.
- Enhance existing open space and create new opportunities for open space and recreational activities.

- Enhance sociability and pride of place, minimizing leftover spaces that provide opportunities for antisocial behavior.

These urban design objectives were determined through a partnership between WSDOT and the City. Overall, they are consistent with local neighborhood planning in the study area. More detailed development of the street characteristics would be required to fully realize the environmental and aesthetic potential of the surface circulation design related to the south and north portals.

At the neighborhood level, the Bored Tunnel Alternative would offer consistency with individual plans but may contribute to cumulative changes that could influence future land uses in some locations. Cumulative effects are discussed in Chapter 7. Not all of the neighborhood plans have been adopted by the City in their entirety. In many instances, the City adopted some neighborhood goals and policies within its Comprehensive Plan but not all of them. Whether or not they are part of formal City policy, each neighborhood plan provides a clear preference or intent for future development and may help guide land use actions in those areas.

The removal of the existing viaduct as part of the Bored Tunnel Alternative is also a key component in achieving the goals included in Seattle's Central Waterfront Concept Plan.

The project team reviewed the relevant goals and policies for land use, transportation, and economic development and specific objectives for the City's neighborhood planning areas. Comments on the relevant goals and policies are included below.

#### Transportation

**T1:** Design transportation infrastructure in urban villages to support land use goals for compact, accessible, walkable neighborhoods.

**T3:** Encourage and provide opportunities for public involvement in planning and designing of City transportation facilities, programs, and services and encourage other agencies to do the same.

**TG6:** Promote efficient freight and goods movement.

**TG19:** Preserve and improve mobility and access for the transport of goods and services.

**TG21:** Promote healthy neighborhoods with a transportation system that protects and improves environmental quality.

**T54:** Identify, evaluate, and mitigate environmental impacts of transportation investments and operating decisions (including impacts on air and water quality, noise, environmentally critical areas, and endangered species). Pursue transportation projects, programs, and investment strategies consistent with noise

reduction, air quality improvement, vehicle trip reduction, protection of critical areas and endangered species, and water quality improvement objectives.

**T58:** Coordinate with regional, state, and federal agencies, local governments, and transit providers when planning and operating transportation facilities and services in order to promote regional mobility for people and goods and the urban center approach to growth management.

**TG25:** Promote the safe and efficient operation of Seattle's transportation system.

**T62:** In operating the transportation system, balance the following priorities: safety, mobility, accessibility, infrastructure preservation, and citizen satisfaction.

In summary, the Bored Tunnel Alternative would be consistent with and supportive of these transportation policies. As the existing Alaskan Way Viaduct structure nears the end of its useful life, the stability of the structure and the safety of its users are a major concern. The Bored Tunnel Alternative would create a seismically safe replacement for the existing viaduct. It would provide increased capacity in the transportation system, as well as more travel choices, and improve access and mobility to and through downtown by investing in transit and city streets. It would also maintain the economic strength of the region by maintaining essential freight mobility conditions and minimizing construction effects on businesses and the traveling public and by creating jobs.

#### Neighborhood Planning

**DT-G9:** Support transportation improvements that complement and reinforce desired land use patterns. Strive to accommodate growth in peak hour travel primarily by transit, and encourage transit and pedestrian travel as the primary means of internal circulation. Discourage vehicular traffic passing through downtown surface streets with a destination elsewhere. Recognize the importance of the automobile as a means of access to downtown for non-work trips.

In summary, the Bored Tunnel Alternative would be consistent with these urban design objectives and would support the downtown neighborhood goal listed above. The proposed alternative would enhance the integration of the proposed improvements with the urban fabric and activities in the surrounding area; provide adequate space and linkages for pedestrians and bicycles, as well as vehicles; encourage the creation of a walkable, pedestrian-oriented environment and supporting transit service; create opportunities for infill development and enhancement of the environment for existing uses; and further the understanding of the movement systems within the city.

**GD-G9:** A high level of general mobility and access is attained within the Greater Duwamish MIC.

**GD-G10:** The transportation network in the Greater Duwamish MIC makes appropriate connections and minimizes conflicts between different travel modes.

**GD-G12:** The transportation network in the Greater Duwamish MIC emphasizes the mobility of freight and goods.

**GD-G15:** Sufficient transportation infrastructure, particularly in the northern portion of the Greater Duwamish MIC, minimizes the transportation impacts of special events on industrial users.

**GD-P35:** Strive to minimize disruptions to freight mobility caused by construction (including construction of transportation facilities) in the Greater Duwamish MIC.

In summary, improvements in the south portal area would be consistent with and support the goals and policies listed above for the Greater Duwamish MIC neighborhood. The Bored Tunnel Alternative would include the construction of ramps providing northbound on, northbound off, southbound on, and southbound off movements to and from SR 99. In addition, new surface streets would be constructed to connect First Avenue S. and Alaskan Way S. between S. Royal Brougham Way and S. King Street. The improved roadway infrastructure and increased roadway connections should facilitate greater mobility in and around this area.

**SLU-P22:** Explore transportation improvements to link South Lake Union with its surrounding neighborhoods.

**SLU-P23:** Seek to provide improved access to and connections across Aurora Avenue N. that could result in a more integrated and efficient transportation system for multiple transportation modes.

In summary, improvements in the north portal area would be consistent with and supportive of the goals and policies listed above for the South Lake Union neighborhood. General improvements in the north portal area related to the Bored Tunnel Alternative include construction of a two-way Mercer Street from Dexter Avenue N. to Fifth Avenue N., an extension of Sixth Avenue N., removal of a portion of Broad Street, and access to and from SR 99. These improvements would improve circulation of traffic and provide better access across SR 99 to the South Lake Union neighborhood and its surrounding neighborhoods. Greater connectivity in the north portal area may also facilitate increased efficiencies for transit service.

#### Shoreline Master Program

The Department of Planning and Development is in the process of comprehensively updating Seattle's Shoreline Master Program for the first time since 1987. The requirement to update the Shoreline Master Program is a state

mandate under the State of Washington’s Shoreline Management Act. This act establishes policy goals for the management of shorelines, and the Shoreline Master Program guidelines establish the requirements for how to achieve the policy goals, with flexibility to acknowledge local concerns and conditions. The three major policy goals established by the Shoreline Management Act for the Shoreline Master Program are related to preferred shoreline uses, environmental protection, and public access.

**Preferred Shoreline Uses:** The Shoreline Management Act establishes a preference for uses that are water-oriented and that are appropriate for the environmental context (such as port facilities, shoreline recreational uses, and water-dependent businesses).

**Environmental Protection:** The Shoreline Management Act requires protection for shoreline natural resources to ensure no net loss of ecological function.

**Public Access:** The Shoreline Management Act promotes public access to shorelines by mandating inclusion of a public access element in the Shoreline Master Program and requiring provisions to ensure that new development maintains public access features.

In summary, the Bored Tunnel Alternative would be consistent with the three major policy goals listed above. Uses along the current shoreline designations affected by this alternative would remain unchanged. Removal of the existing viaduct would allow for greater water-oriented use of the shoreline area along the central waterfront.

The Bored Tunnel Alternative would provide a long-term benefit to the traveling public by providing improved accessibility for employees and customers of businesses along the waterfront. The tunnel would not be located directly on the waterfront; it would be in an upland underground location and would provide access to existing shoreline uses at the tunnel portals. Construction activities would include best management practices and site-specific mitigation measures that are intended to protect fragile shoreline areas that could be affected by construction.

The relevant shoreline goals and policies in the Land Use element of Seattle’s Comprehensive Plan include the following:

**LUG44:** Provide for the optimum amount of public access—both physical and visual—to the shorelines of Seattle.

**LUG46:** Develop a transportation network that supports and enhances use of and access to the shorelines.

**LUG47:** Relocate or demolish transportation facilities that are functionally or aesthetically disruptive to the shoreline, such as the aerial portion of the Alaskan Way Viaduct on the central waterfront between King Street and Union Street.

In summary, connections to upland areas and downtown are expected to continue, and access to the shoreline may improve. Because the Bored Tunnel Alternative would remove the existing viaduct, it would offer greater opportunities for enhancement of shoreline views. This change may also make the waterfront more appealing to more people, which would better support the goal of increasing opportunities for enjoying this area of the city.

**LU241:** (1) Streets, highways, freeways, and railroads should be located away from the shoreline in order to maximize the area of waterfront lots and minimize the area of upland lots. Streets, highways, freeways, and railroads not needed to access the shoreline lots should be discouraged in the Shoreline District. A replacement for the Alaskan Way Viaduct may be located in the Shoreline District because it represents a critical link in the transportation network. (2) To facilitate expeditious construction in an environmentally and fiscally responsible manner, standards for major state and regional transportation projects should be considered that will allow flexibility in construction staging, utility relocation, and construction-related mitigation and uses, provided that the projects result in no net loss of ecological function. (3) Prohibit aerial transportation structures over 35 feet high, such as bridges and viaducts, on the central waterfront in the shoreline environments between King Street and Union Street, except for aerial pedestrian walkways associated with Colman Dock, in order to facilitate the revitalization of downtown's waterfront, provide opportunities for public access to the central waterfront shoreline, and preserve views of Elliott Bay and the land forms beyond.

In summary, the Bored Tunnel Alternative would be implemented in an area away from the shoreline, and the existing viaduct would remain open during the construction of the bored tunnel, thereby minimizing disruptions to land uses. The Bored Tunnel Alternative would also offer enhanced connections to downtown through transportation improvements in the portal areas and removal of the existing viaduct. In addition, removing the viaduct would meet the goal of relocating aesthetically disruptive uses. Two staging and spoils transshipment areas (south Terminal 25 and Pier 46), would require short-term construction-related activities in shoreline locations.

### 5.3 Operational Mitigation

The overall operational effects on land use would be positive. Where acquisition and relocation are unavoidable, WSDOT would follow the provisions of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act

of 1970, as amended. Owners of private property have federal and state constitutional guarantees that their property will not be taken or damaged for public use unless they first receive just compensation.

After project construction is completed, some surplus properties used for staging and other construction activities may be sold, entirely or in part, at a future date. These sites could be used for other development in the project area.

### 5.3.1 Compensation

Compensation will be provided for parcel acquisitions, including buildings and structures, at fair market value and in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. These regulations also provide for relocation services for businesses and residences and include measures for providing assistance in locating suitable replacement housing and business sites. Presently, no residential properties would be directly affected by the Bored Tunnel Alternative. However, relocation assistance will be provided to all displaced businesses, persons, and organizations. The term “displaced persons” refers to any person who is required to move from real property or to move his or her personal property from the real property. Mitigation measures related to displacements are identified below.

### 5.3.2 Residential Relocation Assistance

State and federal laws require that no person be required to move from a residence unless comparable replacement property is available within that person’s financial means. The laws also stipulate that no displaced person, business, or organization be required to move from any dwelling or business facility without being given written assurance of relocation entitlements at least 90 days before the earliest date they would be required to move. Relocation services will be provided to all affected property owners and tenants without discrimination. Relocation assistance for affected residents will be provided by qualified personnel and will include moving payments, replacement housing payments, and relocation advisory services. Relocation advisory services include the following:

- Determination of any special needs and requirements.
- Explanation of relocation benefits.
- Individual assistance.
- Assurance of the availability of a comparable property in advance of a residential displacement.
- Inspection of houses for decent, safe, and sanitary conditions for a residence.

- Provision of counseling services to minimize hardships associated with the need to relocate.

### 5.3.3 Business Relocations

WSDOT staff would work directly with affected business owners to determine relocation needs and the best assistance measures for each affected business. For all displaced businesses, every effort would be made to assist the owners in finding suitable replacement locations. Where businesses would be required to relocate, lead agency staff would work with owners to ensure that the moves could be made in a timely manner, thereby reducing overall expenses, inconveniences, and the amount of time a business must remain closed during the move.

Assistance available to business owners includes reimbursement associated with moving costs. Actual moving costs and related expenses would be covered or, in some instances, a fixed payment would be provided. The types of costs that would be covered include disconnection, dismantling, removing, packing, transporting, unpacking, reassembling, and reinstalling personal property. Additional covered expenses under moving costs include reestablishment expenses of up to \$50,000; losses of personal property, storage, and insurance; planning and supervising expenses; replacement of stationery and business cards; and costs associated with telephone system network installation and call forwarding.

Advisory assistance would also be provided, which includes information on the availability, purchase price, and rental costs of suitable replacement properties. WSDOT staff would also work with businesses to help them become established in their new location and to minimize any hardships encountered in moving by providing advice regarding additional sources of assistance.

## 5.4 Operational Benefits

The Bored Tunnel Alternative would provide continued access to the waterfront through improvements at the south portal area. It would also improve the connection of the waterfront to downtown, the Pike Place Market, and historic Pioneer Square. After construction, this alternative would benefit the traveling public by providing improved accessibility for employees, customers, and residents in the portal areas. Improved accessibility may benefit these land uses.

In addition, both tunnel portal areas would experience substantial improvements that would benefit motorists and pedestrians. In the south portal area, new cross street extensions at S. Dearborn Street (and also S. Charles Street if the New Dearborn and Charles Intersections option is selected) would increase east-west connectivity between the historic Pioneer Square and Greater Duwamish MIC

neighborhoods and enhance the accessibility to existing land uses, such as the sports stadiums, ferry terminal, and waterfront businesses. Potential future development, such as the Qwest Field north lot, would benefit from the improved accessibility. The City Side Trail and the Port Side Pedestrian/Bike Trail would also benefit from the improved accessibility. In the north portal area, neighborhoods east and west of Aurora Avenue would be reconnected by connecting John, Thomas, and Harrison Streets with Aurora Avenue.

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# Chapter 6 CONSTRUCTION EFFECTS AND MITIGATION

## 6.1 Construction Effects

Construction effects are described below in terms of temporary disturbances to adjacent businesses and properties during construction and demolition, which includes temporary easements and staging areas. Any major construction project, public or private, inconveniences or disturbs the residents, businesses, and business customers adjacent to that construction project. Construction-related effects can and would vary considerably over time and in their geographic coverage. Furthermore, effects can also vary according to the methods used to stage and construct a project, especially one as large as the Bored Tunnel Alternative. Temporary construction effects would include the following:

- The presence of construction workers, heavy construction equipment, and materials, both within the construction area and along haul routes.
- An increase in traffic congestion around the work zone.
- Temporary road closures, traffic diversions, and alterations to property access (see Appendix C, Transportation Discipline Report).
- Loss of parking, especially on-street short-term parking (see Appendix C, Transportation Discipline Report).
- Airborne dust (see Appendix M, Air Discipline Report).
- Noise and vibrations from construction equipment (including tunnel boring equipment) and vehicles (see Appendix F, Noise Discipline Report).
- Decreased visibility and alterations of access to residences and businesses.
- Rerouted pedestrian walk-up and transit access to residences and businesses.

Effects due to construction staging and demolition of the viaduct would primarily result from the movement of materials, equipment, and personnel between the staging areas and construction zones. This movement could cause traffic disruptions and increase the noise, dust, and vibration effects on residences and businesses in the study area.

Disruptions to land uses could be caused by utility relocations before viaduct demolition, loss of use of loading areas under the viaduct, and loss of private parking areas under the viaduct.

Temporary tieback easements would be needed on one property in the south portal area and several properties in the north portal area. A temporary tieback easement allows for temporary use of a property below the surface for a wall shoring system that would be used to build a permanent wall and may be

abandoned after the permanent wall is constructed. The tiebacks in the temporary easement areas would be removed after construction is completed. Exhibit 6-1 lists the properties where temporary tieback easements would be needed and the approximate easement areas that would be required. The locations of these temporary tieback easements on properties in the south and north portal areas are shown in Attachment A, Exhibits A-2 and A-5, respectively.

**Exhibit 6-1. Temporary Tieback Easements**

Parcel ID	Existing Use	Approximate Easement Area (square feet)
<b>South Portal Area</b>		
7666207697	Port of Seattle, Terminal 46	147,000
<b>North Portal Area</b>		
1991200790/T55	Office	520
1991200405	Seattle City Light substation	17,500
1991200815	Vacant lot	18,200
1991200800	Seattle Pacific Hotel	19,100
Total 202,300 square feet (approximately 4.64 acres)		

To facilitate the construction associated with the Bored Tunnel Alternative, temporary construction easements would be needed on several properties along the tunnel alignment, at the south and north portals and adjacent to the viaduct. Temporary construction easements allow for temporary use of a property to facilitate construction and may include the purchase of existing improvements. Temporary construction easements may also be used for implementing the settlement mitigation measures in or under the buildings (e.g., building modifications and grouting).

Exhibit 6-2 lists the properties where temporary construction easements would be required. The locations of these properties are shown in Attachment A, Exhibits A-2 through A-5. Some of the affected properties are privately owned pay parking lots that are open to the public. The temporary construction easements would remove some of the parking spaces in these lots from use during the 9-month viaduct demolition period. As a result, businesses and residents that rely on these parking areas may be inconvenienced.

## Exhibit 6-2. Temporary Construction Easements

Parcel ID	Existing Use	Approximate Easement Area (square feet)
<b>Bored Tunnel</b>		
7666202575	Parking	7,732 <sup>1</sup>
7666202570/T252	Western Building	14,926 <sup>1</sup>
7666202565/T251	Polson Building	6,782
7666202560/A161	Parking	10,683
7666202545/A159	Office/Commuter Center Building	4,151
7666202540	Parking	3,498
7666202530/T243	Office	59,239 <sup>1</sup>
7666202515/T234	Office	24,011 <sup>1</sup>
1974600035/T237	Office/commercial	13,316 <sup>1</sup>
1974600025/T235 & T236	Office/commercial	13,316 <sup>1</sup>
9197200000/T231	Residential	13,316 <sup>1</sup>
1697500000/T230	Office/commercial	16,780 <sup>1</sup>
1976200076/T222 & T223	Office/commercial	50,220 <sup>1</sup>
1976200075/T216	Office/commercial	14,295 <sup>1</sup>
0697000064/T77	Office	50,414 <sup>1</sup>
0697000025/A110 & A167	Residential	55,810 <sup>1</sup>
1991200600/A166	Office	12,997 <sup>1</sup>
1991200790/T55	Office	4,081 <sup>1</sup>
<b>North Portal Area</b>		
1991200815	Vacant lot	18,200
Total: 393,767 square feet (about 9.04 acres)		

Note:

<sup>1</sup> Easement area is based on square footage of ground floor level, because settlement mitigation has not yet been determined for each property.

The proposed staging areas for the Bored Tunnel Alternative are listed in Exhibit 6-3. Effects from the use of these facilities for construction staging and demolition would primarily result from the movement of materials, equipment, and personnel between the staging areas and construction zones. This movement could cause traffic disruptions and increase the noise, dust, and vibration effects on residences and businesses in the study area. No permanent changes in land use would occur.

Exhibit 6-3. Proposed Construction Staging Areas and Construction Work Zones

Location	Size (acres)	Existing Use	Existing Zoning	Potential Uses
Terminal 106	14.3	Terminal/warehouse	General Industrial 1	<ul style="list-style-type: none"> <li>Storage of construction materials and equipment</li> <li>Fabrication of materials</li> <li>Equipment servicing</li> <li>Holding area for spoils</li> <li>Loading and unloading of material and supplies</li> </ul>
Terminal 25	10	Terminal/warehouse	General Industrial 1	<ul style="list-style-type: none"> <li>Storage of construction materials and equipment</li> <li>Fabrication of materials outside of 200-foot shoreline buffer</li> <li>Equipment servicing</li> <li>Loading and unloading of materials and supplies</li> </ul>
WOSCA site	7	Vacant	Industrial Commercial	<ul style="list-style-type: none"> <li>Location of permanent roadway connecting the tunnel to the new SR 99 and the tunnel operations building</li> <li>Staging area for construction</li> <li>Temporary power substation for tunnel boring machine</li> <li>Possible slurry production and recovery plant</li> <li>Potential concrete batch plant</li> </ul>
Pier 48, uplands only	1.2	Parking	Downtown Harborfront 1	<ul style="list-style-type: none"> <li>Parking for construction workers</li> <li>Storage of construction materials and equipment</li> </ul>
Pier 46 (north apron of Terminal 46)	0.8	Terminal/warehouse	General Industrial 1	<ul style="list-style-type: none"> <li>Erection of conveyors and hoppers for transfer of materials onto barges</li> <li>Trucking in and out of the site for support and maintenance of the conveyor system</li> <li>Storage of construction material</li> </ul>
I-90 HOV ramp site	0.4	Roadway	General Industrial 2	<ul style="list-style-type: none"> <li>Storage of construction materials and equipment</li> <li>Loading and unloading of material and supplies</li> </ul>

**Exhibit 6-3. Proposed Construction Staging Areas and Construction Work Zones  
(continued)**

Location	Size (acres)	Existing Use	Existing Zoning	Potential Uses
Alaskan Way: S. King Street to S. Jackson Street	1	Roadway	Pioneer Square Mixed	<ul style="list-style-type: none"> <li>• Location of rail-mounted gantry crane for lowering equipment and materials into the tunnel portal</li> <li>• Construction of south portal and launching of the tunnel boring machine</li> <li>• Storage of construction materials and equipment</li> <li>• Equipment servicing</li> </ul>
Railroad Way S. right-of-way	1	Roadway	General Industrial 2	<ul style="list-style-type: none"> <li>• Storage of construction materials</li> <li>• Access to the WOSCA work area</li> </ul>
Alaskan Way: S. Royal Brougham Way to S. King Street	6	Roadway	General Industrial 1	<ul style="list-style-type: none"> <li>• Location of permanent roadway connecting the tunnel to new SR 99</li> <li>• Permanent cut-and-cover structure</li> <li>• Staging area for construction</li> </ul>
First Avenue S. Bridge site	4	Terminal/warehouse	General Industrial 1	<ul style="list-style-type: none"> <li>• Storage of construction materials and equipment</li> <li>• Loading and unloading of material and supplies</li> </ul>
Fischer site, Fourth Avenue S. (SR 519 project staging site)	1	Terminal/warehouse	General Industrial 2	<ul style="list-style-type: none"> <li>• Storage of construction materials and equipment</li> <li>• Fabrication of materials</li> </ul>
I-90 westbound off-ramp area	0.3	Roadway	Industrial Commercial	<ul style="list-style-type: none"> <li>• Storage of construction materials</li> </ul>
Broad Street right-of-way	1	Roadway	Seattle Mixed	<ul style="list-style-type: none"> <li>• Access into north portal and north access work area</li> <li>• Construction staging and storage</li> </ul>
Construction zone within City right-of-way	0.1	Roadway	Downtown Harborfront 1, Downtown Harborfront 2, Downtown Mixed Residential/Residential	<ul style="list-style-type: none"> <li>• Construction zone right-of-way</li> <li>• Demolition and removal of the viaduct structure</li> </ul>

**Exhibit 6-3. Proposed Construction Staging Areas and Construction Work Zones (continued)**

Location	Size (acres)	Existing Use	Existing Zoning	Potential Uses
Seattle City Light parking lot south of the Battery Street Tunnel	0.1	Parking	Downtown Mixed Residential/ Residential	<ul style="list-style-type: none"> <li>Storage of construction materials</li> </ul>
City of Seattle maintenance yard	2	Vacant	Seattle Mixed	<ul style="list-style-type: none"> <li>Location of permanent roadway connecting the tunnel to new SR 99</li> <li>Staging area for construction</li> </ul>
Sixth Avenue N. site: Thomas Street to Harrison Street	0.5	Roadway	Seattle Mixed	<ul style="list-style-type: none"> <li>Storage of construction materials</li> </ul>
Thomas Street site/	0.5	Roadway	Seattle Mixed	<ul style="list-style-type: none"> <li>Parking for construction workers</li> <li>Storage of construction materials and equipment</li> <li>Temporary contractor office</li> </ul>
Republican Street site	0.7	Vacant	Seattle Mixed	<ul style="list-style-type: none"> <li>Storage of construction materials</li> </ul>
Harrison Street site	1.4	Office	Seattle Mixed	<ul style="list-style-type: none"> <li>Location of permanent cut-and-cover structure including the tunnel operations building</li> <li>Staging area for construction</li> </ul>
Right-of-way required for street widening		Roadway	Seattle Mixed, Neighborhood Commercial 3	<ul style="list-style-type: none"> <li>Right-of-way for street widening</li> </ul>
BNSF/Lenora Street construction zone	0.3	Utility	Downtown Harborfront 2	<ul style="list-style-type: none"> <li>Storage of construction materials</li> </ul>
Closed Broad Street		Roadway	Seattle Mixed	

Notes:

HOV = high-occupancy vehicle

WOSCA = Washington-Oregon Shippers Cooperative Association

Construction-related detours, closures, and traffic congestion would result in changes in mobility on streets in the project area. Residents would experience some degree of inconvenience, and businesses would experience disruptions in the flow of customers and employees and in the delivery or shipment of materials and supplies.

The loss of parking, especially on-street short-term parking, could reduce the convenience of access to land uses. In addition, transit service could be adversely affected by construction-related detours. The economic effect of construction on businesses is discussed in Appendix L, Economics Discipline Report. Throughout the duration of construction, on-street parking spaces in the south and north portal areas would be temporarily unavailable. Pedestrian and vehicle access, including freight deliveries to buildings in these areas, may be affected for the entire construction period.

Temporary roadway closures are expected to result in a redistribution of traffic to nearby streets throughout the study area. The effects would vary during each stage of construction. The greatest changes in access to adjacent land uses would occur in the north portal area when traffic would be diverted along the west side of SR 99 to the Battery Street Tunnel. For some parcels, the effects would occur only during construction activities at a given location. Other parcels that depend on existing vehicle circulation patterns and access, including public transit, could be affected during the entire construction period. Access to the Seattle Ferry Terminal would be maintained throughout the construction period.

Spoils from the bored tunnel and portal excavations are proposed to be transported by barge to the Mats Mats Quarry, near Port Ludlow, Washington, for disposal.

### 6.1.1 South Portal

Construction of the south portal includes the construction of a tunnel operations building and ramps providing northbound on, northbound off, southbound on, and southbound off movements to and from SR 99. Demolishing a short section of the viaduct just north of S. Royal Brougham Way where the WOSCA detour crosses the existing viaduct's path would require a 1-week closure of SR 99. During this closure, the Elliott/Western ramps and midtown ramps would still be in operation; Alaskan Way S. would continue to operate on the East Frontage Road detour route between S. King Street and S. Royal Brougham Way. The 1-week closure would have temporary effects on the street network as well as access to residences and businesses in the area, including the sports stadiums.

Once the demolition is completed in this location, both SR 99 northbound and southbound traffic would travel on the WOSCA detour. The WOSCA detour would route traffic to the WOSCA property at S. Royal Brougham Way and connect back to SR 99 using the existing ramp structure along Railroad Way S. The northbound on-ramp and southbound off-ramp would remain on the temporary ramps. First Avenue S. would still convey two lanes of traffic in each direction between S. King Street and S. Royal Brougham Way.

Access to and from the Seattle Ferry Terminal at Colman Dock may be disrupted as a result of reduced lanes during the viaduct demolition and the construction of the north and south end surface improvements. Access to the ferry and marine terminals may be rerouted at times but would be retained during construction. Also, pedestrian access to and from Colman Dock, although maintained throughout construction, may be rerouted at times.

For the cruise ship terminal at Pier 66, pedestrian access would be maintained, and vehicle access on the Alaskan Way surface street would be maintained with at least one lane in each direction. Locations for pedestrian access and bus and taxi cab pickups would likely vary throughout construction to accommodate construction activities. Operations at the cruise ship terminal could limit construction activities.

The delivery of oversized loads, such as the tunnel boring machine (TBM), could cause significant spot disruptions along principal streets, which may require short-term lane or street closures. However, work would be planned to minimize any lane closures from south of S. King Street to just south of S. Royal Brougham Way during special events. Increased congestion on SR 99, Alaskan Way, and First Avenue S. would likely disrupt transit services along these routes.

Trucks accessing streets affected by construction would be subject to the same traffic delays as general-purpose vehicles. During construction, public parking would not be available on either side of the affected street throughout the designated construction zone, thereby prohibiting unrestricted use of curbside lanes for truck parking and loading or off-loading. Alternatively, trucks would have to park on nearby side streets, two blocks or more from the construction zones. Access to businesses for customers, freight, and deliveries is important, and a program to identify and address these issues would be developed.

The conversion of existing on-street parking lanes into peak-period vehicle travel lanes in the vicinity of each portal would preclude public parking in these construction zones. This would increase demand for the limited on-street parking spaces available upstream and downstream of these construction zones and neighboring streets.

The combined effect of sequencing utility diversions, ground improvement, and installation of shoring walls for each access point would temporarily eliminate on-street parking for consecutive blocks throughout the duration of construction. This problem would be less severe after the excavations are decked over.

Construction workers would park in the upland area of Pier 48, northwest of Qwest Field. Pier 48 is part of the large industrial area that includes Terminal 46 to the south. Workers would enter and exit the site from Alaskan Way S., which could increase traffic congestion along this roadway. Traffic congestion could be

a temporary inconvenience for those traveling to and from the ferry terminal and businesses along the waterfront.

A conveyor system could be used to transport excavated materials from the south tunnel portal, above roadways and the adjacent railroad tracks, to barges docked along Pier 46. The excavated materials would be barged to an off-site location for disposal, such as the Mats Mats Quarry, near Port Ludlow in Jefferson County, Washington. The conveyors and hoppers would be erected to avoid roadway closures and obstructions to ferry terminal and Terminal 46 access.

Excavated materials could also be transported by truck along E. Marginal Way S. to Terminal 25, which is northwest of the Alaskan Way Viaduct/S. Spokane Street interchange. These materials could be barged to an off-site location for disposal. Terminal 25 is part of the Port of Seattle operations and is currently used for trucking and shipping container storage. Operations on the property may need to be reconfigured to accommodate the transfer of excavated material from trucks to barges. Increased truck traffic along the E. Marginal Way S. haul route could result in travel delays for north-south traffic and could result in traffic congestion at the points of vehicle access to the marine cargo area of Terminal 46 and Colman Dock. Use of E. Marginal Way S. as a haul route also could affect other marine, industrial, and water-dependent uses west of E. Marginal Way S., including Terminals 25 and 30. In addition, access to the U.S. Coast Guard facility at Pier 36 and existing business locations between Pier 36 and Terminal 30 could be affected.

Staging and laydown of construction materials in the south portal area would occur primarily at Terminal 106, northwest of the E. Marginal Way S./S. Nevada Street intersection. Terminal 106 currently includes several warehouses along the Duwamish waterway and is used for the storage of shipping containers. Terminal 106 is part of the larger industrial area that includes several large warehouses and facilities. The Ash Grove Cement plant is immediately north of Terminal 106. Increased construction vehicle traffic along E. Marginal Way S. would be noticeable throughout the day while construction vehicles enter and exit the Terminal 106 site. Increased truck traffic in this area could also disrupt the flow of customers and employees and the delivery or shipment of materials and supplies at nearby businesses.

### **6.1.2 Bored Tunnel**

A project work site would be established on the WOSCA property to support the construction of the bored tunnel. The facilities would include laydown areas for materials, a potential concrete batch plant, a slurry separation plant (if required), maintenance workshops, storage areas for excavated spoils and precast concrete segments, and parking and field offices for on-site personnel. A temporary

substation would be constructed at this location, and electrical systems in the area would be extended to this substation to provide power to the TBM. Construction-related detours, closures, and traffic congestion would result in changes in mobility, primarily on Alaskan Way S., E. Marginal Way S., and First Avenue S. Residents in the Pioneer Square neighborhood would also experience some degree of inconvenience, and businesses would experience disruptions in the flow of customers and employees and the delivery or shipment of materials and supplies.

The tunnel boring may affect land uses and specific buildings within the settlement trough of the bored tunnel. To identify and prepare for potential building and area settlement, a structural building inventory was prepared and baseline conditions were assessed in advance of construction (PB 2010). Before the boring begins, monitoring instrumentation would be installed to detect any settlement under sensitive buildings and structures during or after the boring.

Approximate areas and buildings likely to experience settlement are as follows:

- Alaskan Way S. between S. King and Main Streets
- Alaskan Way S. at Yesler Way
- Western Building
- Polson Building, Commuter Center Building, Federal Office Building, and Harbor Steps

In these areas and for these specific buildings, two types of grouting could be used to mitigate settlement: jet grouting and compensation grouting (described in more detail in Appendix B, Alternatives Description and Construction Methods Discipline Report). Both of these grouting techniques stabilize or stiffen the soil by introducing into the soil pores either a cementitious or chemical grout that displaces air and water. Compensation grouting would be performed at a pressure low enough to prevent fracture of the soil formation and excessive motion (heave). Grouting of the tunnel face in advance of the cutter head and tail grouting to fill void space between the formation and the tunnel lining would occur during tunnel boring to reduce the potential for settlement of overlying land and buildings in the settlement trough.

Use of these mitigation measures would require the acquisition of temporary property rights from property owners. Any acquisitions would be completed according to the federal regulations discussed in Chapter 5.

It is possible that the settlement risks for a specific building cannot be mitigated through the use of jet or compensation grouting or that a building not previously identified as being at risk for settlement would later be determined to have sustained structural damage. In such cases, compensation to the building owners

and tenants could include repair without temporary relocation, repair with temporary relocation, repair with permanent relocation, or condemnation of the building. Displaced businesses would be relocated as discussed in Chapter 5 for permanent relocation related to full acquisitions.

### 6.1.3 North Portal

Tunnel boring operations would end just north of Thomas Street. The TBM would be dismantled and extracted at this location. A recovery shaft would be excavated to remove the boring machine. The decked roadway would begin to unbraid at the end of the tunnel and transition into a cut-and-cover access structure. The cut-and-cover access structure would then transition into an open trench before transitioning again into the at-grade surface roadway.

Businesses adjacent to project construction would experience increased noise, dust, and vibrations associated with the tunnel evacuation and street improvements. Also, vehicle, transit, and pedestrian access to businesses adjacent to construction would require rerouting (discussed in detail in Appendix C, Transportation Discipline Report).

Periodic short-term lane closures would be required on Sixth Avenue N., Taylor Avenue N., Broad Street, and Harrison Street for the construction of the north portal. SR 99 traffic would be rerouted onto a temporary roadway for approximately 39 months during the construction of the TBM recovery shaft and the cut-and-cover structure for the north portal.

Similar to the south portal, trucks accessing streets affected by construction would be subject to the same traffic delays that general-purpose vehicles would experience. During construction, public parking would not be available on either side of the affected street throughout the designated construction zone, thereby prohibiting unrestricted use of curbside lanes for truck parking and loading or off-loading at businesses. Alternatively, trucks would have to park on nearby side streets. Access to businesses for freight and deliveries is important, and a program to identify and address these issues would be developed.

The combined effect of sequencing utility diversions, ground improvement, and installation of shoring walls for each access point would temporarily eliminate on-street parking and could adversely affect transit access for consecutive blocks for the duration of construction. The loss of parking, especially on-street short-term parking, could affect access to adjacent businesses. In addition, transit service could be adversely affected by construction related detours. The economic effect of construction on businesses is discussed in Appendix L, Economics Discipline Report.

#### 6.1.4 Viaduct Removal

After the completion of the new SR 99 bored tunnel, the existing viaduct would be removed. Utilities located on and, where necessary, under the viaduct would be relocated. In early 2016, the viaduct demolition would begin to affect parking under the viaduct and along Alaskan Way. There are approximately 560 on-street parking spaces under the viaduct and ramps from S. King Street to the Battery Street Tunnel portal that would be affected during viaduct demolition.

The removal of parking in this area could inconvenience the businesses and residents that rely on these parking areas. However, some of these parking spaces may be restored to use after the viaduct is demolished. During the demolition, the majority of on-street parking spaces would remain in use. Directly after viaduct demolition and removal, the City expects to begin work on the waterfront promenade and the new Alaskan Way surface street. Construction of these projects will likely affect parking availability until they are completed. These projects are separate from the Alaskan Way Viaduct Replacement Project and are discussed in more detail in Chapter 7, Cumulative Effects. Refer to Appendix C, Transportation Discipline Report, for more information on parking issues.

Demolition of the existing viaduct would require various surface street closures at several locations during the 9-month removal period. During demolition, pedestrians would be rerouted from the work zone to alternative routes in the area from S. King Street to Battery Street.

Some private parking and loading areas along Alaskan Way would experience disruptions to access while the viaduct is being demolished and the utilities that are currently on the viaduct are being relocated. These parking and loading areas are primarily narrow strips of land about 8 to 10 feet wide. Periodically, parking and loading in these areas would be temporarily unavailable as demolition progresses along the corridor. Most of these properties also have access along Western Avenue.

#### 6.1.5 Decommissioning of the Battery Street Tunnel

After the new SR 99 bored tunnel is completed and the viaduct is removed, the Battery Street Tunnel would be decommissioned. Decommissioning the Battery Street Tunnel would likely entail filling it with crushed concrete debris from the viaduct demolition. While the tunnel is being filled, truck traffic into and out of the tunnel would increase, resulting in increased noise and dust primarily around the south portal of the Battery Street Tunnel. The increased truck traffic, noise, and dust effects on residences and businesses at the portal and above the tunnel would be temporary, and buildings would be monitored for vibration effects and stability.

## 6.2 Construction Mitigation

Mitigation measures for potential effects on land use during construction activities would include providing advance notice to property owners in the project area regarding demolition and construction activities, utility disruptions, and detours. In addition, a construction website with a 24-hour project information line would be established and updated regularly. Construction traffic, dust, and noise would be mitigated to the extent possible, as described in Appendix F, Noise Discipline Report; Appendix M, Air Discipline Report; and Appendix C, Transportation Discipline Report.

Major special events at the sports stadiums and operations at the Pier 66 cruise ship terminal could limit construction activities. Construction activities could be managed to avoid and minimize impediments to vehicle access to the marine cargo area of Terminal 46 and Colman Dock.

Right-of-way acquisition and potential relocations would occur before construction. Property acquisitions will be compensated by measures identified in Section 5.3, Operational Mitigation. Additional mitigation measures related to business and community effects are described in Appendix L, Economics Discipline Report, and Appendix H, Social Discipline Report.

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## Chapter 7 CUMULATIVE EFFECTS

Cumulative effects are effects on the environment that result from the incremental impacts of the proposed action when added to other past, present, and reasonably foreseeable future actions. The focus of the cumulative effects analysis is the combined effects of the Bored Tunnel Alternative, the other Program elements, and other past, present, and reasonably foreseeable future projects that could contribute to effects on land use in the study area.

This chapter discusses the following topics:

- Current land use trends
- Effects of the roadway elements of the Program
- Effects of the non-roadway elements of the Program
- Cumulative effects of the Bored Tunnel Alternative when combined with the effects of the other Program elements
- Cumulative effects of the Bored Tunnel Alternative when combined with the effects of the other Program elements and the effects of other past, present, and reasonably foreseeable future projects

### 7.1 Trends Leading to Present Land Use Conditions

Large earth-moving projects over the past 100 years and development of multiple modes of transportation infrastructure have shaped the land use patterns in the Program area. Many of the land use patterns that were established by 1900 are still present today: commercial and industrial development in the south portal area, retail with some residential use to the north, and primarily residential (condominiums) in the north portal area.

A new emphasis is on housing opportunities and increasing livability in the city core that would bring people closer to jobs and amenities. The City's last 10-year update of its Comprehensive Plan (2009) attempts to encourage this policy. The new plan continues with many of the concepts first introduced in the 1994 Comprehensive Plan. Key changes to the plan include the following:

- Addition of an Urban Village element that provides goals and policies for directing growth in urban village areas
- New goals and policies for environmentally critical areas
- New policies for historic preservation
- Limitations in building height and density for structures outside urban villages and centers in the Land Use element

- New goals to limit the number of single-occupant vehicle trips within each urban center under the Transportation element

In addition to the Comprehensive Plan changes described above, in 2003 the City changed the downtown height and density limits in its Land Use Code. These changes were put into effect to encourage more housing adjacent to the downtown core. These changes will continue to affect the Commercial Core and Denny Triangle neighborhood planning areas, as well as portions of the Belltown neighborhood. These policies are also reinforced with the City's overall Center City Strategy, an approach that promotes locating new jobs and affordable housing within the downtown neighborhoods.

The City has continued with its central waterfront planning process, which includes the following objectives:

- A focus on the central waterfront area
- Redevelopment at the Seattle Ferry Terminal
- New development on Alaskan Way
- Redevelopment at the Pike Place Market and Seattle Aquarium sites
- Redevelopment of Pier 48 in coordination with WSDOT
- An open promenade along the waterfront, with larger development sites on the east side of Alaskan Way
- Mixed-use development on the street side of the Seattle Ferry Terminal
- New development over rail lines in the Belltown area
- A lid over Alaskan Way to link Pier 57 and the Pike Place Market
- Broad Street improvements to connect the waterfront with Seattle Center
- Redevelopment on both sides of Western Avenue

The City has been studying development plans for the South of Downtown area that are intended to stimulate housing and development in the area. The planning addresses issues and opportunities related to future growth in South Downtown. In general, the plan considers five subareas:

- Pioneer Square
- Chinatown/International District west of I-5
- Chinatown/International District east of I-5 to Rainier Avenue S. (also referred to as Little Saigon)
- The predominantly industrial vicinity south of Chinatown, west of I-5, and north of Interstate 90 (I-90)
- The mostly industrial "stadium transition area" along First Avenue S. to S. Holgate Street

The goals of the plan include stimulating housing and jobs, respecting existing neighborhood character, promoting an integrated mix of land uses, supporting quality connections between neighborhoods and downtown, encouraging economic vitality and environmental sustainability, and accommodating regional services while ensuring that they respect the goals of the community.

The Seattle City Council passed rezoning measures for the South Lake Union neighborhood in 2005. The new measures included changing the name of the Seattle Cascade Mixed (SCM) zone to Seattle Mixed (SM) and rezoning some commercial zones within the planning area to the new SM classification, including parcels adjacent to Aurora Avenue between Denny Way and Galer Street.

These changes were proposed to encourage housing and job opportunities in the South Lake Union neighborhood. The new SM zone allows residential uses and also commercial and manufacturing uses. The provision for commercial uses was intended in part to support biotechnology uses and biotechnology research and development laboratories.

Cumulative effects can include both construction and operational effects. The cumulative effects in the study area could contribute to the following:

- Reduced traffic congestion
- Further urbanization of the area
- Increased likelihood of redevelopment for underdeveloped properties
- Increased demand for transit and municipal public services and facilities

During construction, the cumulative effect of development activity is also expected to contribute noise, dust, and traffic congestion in the general areas where construction would occur.

Attachment B, Cumulative Effects Analysis, provides a more detailed analysis of cumulative effects. It describes the specific geographic area evaluated for cumulative effects and the period considered, and provides a list of past, present, and foreseeable actions used to evaluate these effects.

## 7.2 Effects From Other Roadway Elements of the Program

The other roadway elements of the Program would provide better accessibility to the waterfront and improve connections in the waterfront and other downtown area neighborhoods via the new four-lane Alaskan Way surface street. They would provide new connections from Pike Street to Battery Street via the new Elliott/Western Connector and improve the Mercer Street corridor from Fifth Avenue N. to Elliott Avenue. These elements would also contribute to achieving the goals of Seattle's Central Waterfront Concept Plan, facilitating and encouraging many aspects of Seattle's future vision for the waterfront.

### 7.3 Effects From Non-Roadway Elements of the Program

The non-roadway elements of the Program include replacing the seawall, building a promenade on the location of the existing Alaskan Way surface street, and adding a First Avenue streetcar, along with other enhancements to transit service. These elements would improve access to downtown and enhance connections to surrounding land uses, primarily along the waterfront, by providing increased space and linkages for pedestrians and bicycles. A new streetcar on First Avenue and increased transit service would increase accessibility to residences and businesses along this corridor. The non-roadway elements would also contribute to the reconnection of downtown neighborhoods with the natural environment of Elliott Bay, including public spaces and recreational resources.

### 7.4 Cumulative Effects of the Project and Other Program Elements

The Program has the potential to make several downtown neighborhoods more attractive and accessible, including Pioneer Square and the Greater Duwamish MIC, as well as the Commercial Core, Belltown, and South Lake Union. Physical appeal combined with ease of travel may attract new interest to these areas. The Program is also expected to contribute noise, dust, and traffic congestion to the project area during construction, which would affect adjacent land uses.

The Program may also influence future land uses, primarily in the portal areas and along the new Alaskan Way surface street and promenade. In the south portal area, improved connections to SR 99 could add to influences on local land uses that have resulted from recent development around the sports stadiums, such as the Starbucks office building. Although the Bored Tunnel Alternative would not create large areas of land for redevelopment, changes in land uses that are consistent with existing land use plans and zoning may be encouraged by the overall improvement associated with the new bored tunnel.

In the south portal area, the two south portal area options would define new blocks of property that would be available for future development under the City's existing Industrial Commercial land use zone. The future development of this property would be required to be consistent and compatible with existing land use plans and is not expected to influence development activity or trends in the Pioneer Square or Greater Duwamish MIC neighborhoods.

In the north portal area, land use changes may be promoted by improvements along the Mercer Street corridor in conjunction with the enhanced connections to SR 99 that are part of the Bored Tunnel Alternative.

The Program may also make the downtown area more desirable for residential uses. In recent years, the Commercial Core, Pioneer Square, and Belltown

neighborhoods have experienced increases in residential development. Eventually, improved connections downtown could indirectly increase business interest there, which could also lead to new commercial or retail uses. As noted earlier, neighborhoods in the south and north portal areas may experience some land use changes related to changes in roadway locations, property access, and travel patterns. Where improved connections to the downtown core and the waterfront may facilitate commute trips from surrounding neighborhoods, some development activity may be stimulated by the desirability of these connections.

Many factors influence decisions about land use, including economic conditions, zoning, and the supply of land. The Bored Tunnel Alternative is not likely to have substantial influences on these factors; therefore, it is not expected to be a major catalyst for future growth. The cumulative effects of the Bored Tunnel Alternative would contribute to effects associated with other proposed and future changes that may occur based on Seattle's Comprehensive Plan and land use regulations.

The Program has been designed to minimize the need for right-of-way acquisitions; therefore, its contribution to changes in right-of-way is not expected to be substantial. However, the other roadway and non-roadway elements would likely result in other displacements in and around the study area, which could result in the conversion of additional land uses to transportation use.

Appendix C, Transportation Discipline Report, presents additional information on expected trip distributions, levels of service, and traffic conditions. Additional information regarding potential effects on businesses is provided in Appendix L, Economics Discipline Report.

## 7.5 Cumulative Effects of the Project, Other Program Elements, and Other Actions

The potential overall influence on growth in the Seattle area is difficult to predict. While there may be opportunities for additional development, the potential for large-scale redevelopment as part of the other roadway and non-roadway projects is not expected to be substantial. However, the Program represents a substantial contribution to the numerous ongoing improvements occurring in the city, and in the downtown area in particular. Because the Program focuses on replacing and enhancing existing facilities, its role as a potential inducement to a measurable cumulative growth in downtown would not likely be as great as one that provided substantial new transportation routes to the area. The City is currently engaged in efforts to develop a new central waterfront plan, which will be the primary guide for determining the types and areas of future land uses along the waterfront.

Neighborhoods located north and south of downtown—such as Ballard, Fremont, Greenwood, West Seattle, White Center, and Georgetown—that use SR 99 as an

alternative route to access downtown and other parts of the city would benefit from the various improvements expected to occur. Enhancements to existing facilities and transit service, such as the new public transit RapidRide projects, would make access to current land uses easier and more desirable for individuals from surrounding neighborhoods. However, extensive growth in these neighborhoods as a result of the Program and all other roadway and non-roadway projects is not expected.

Several private development projects are expected to occur during the construction period for the Program. This general development would include private land use actions, such as residential, retail, and commercial development identified on Exhibits 4-8 and 4-9. Taken together, the Program, along with planned private development projects, would be expected to contribute noise, dust, and traffic congestion in the study area during construction, which would affect adjacent land uses.

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## Chapter 8 PERMITS AND APPROVALS

The Bored Tunnel Alternative would require a number of permits and approvals from federal, state, and local agencies. Many of these permits and approvals would not specifically involve right-of-way acquisitions; however, a few may be related to parcel and land use considerations. Federal, state, and local permits and approvals that may be required include the following:

- Underground Storage Tank Removal Permit
- Seattle Street Use Permit
- Seattle Demolition Permit
- Section 106 (National Historic Preservation Act) consultation on historic/archaeological resources
- Noise variance
- National Pollutant Discharge and Elimination System (NPDES) Permit
- King County Industrial Wastewater Discharge Permit or authorization
- CZM Act consistency determination
- Pioneer Square Historic District Certificate of Approval
- Shoreline Substantial Development Permit
- Endangered Species Act Section 7 consultation

Conditions attached to these permits and approvals may affect the removal or relocation of existing buildings and structures at the portal areas of the bored tunnel.

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**ATTACHMENT A**

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**Tunnel Subsurface Property Acquisitions**

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## TUNNEL SUBSURFACE PROPERTY ACQUISITIONS

Subsurface property acquisitions required for the Bored Tunnel Alternative are indicated on Exhibit A-1. Exhibits A-2 through A-5 show the locations of these properties.

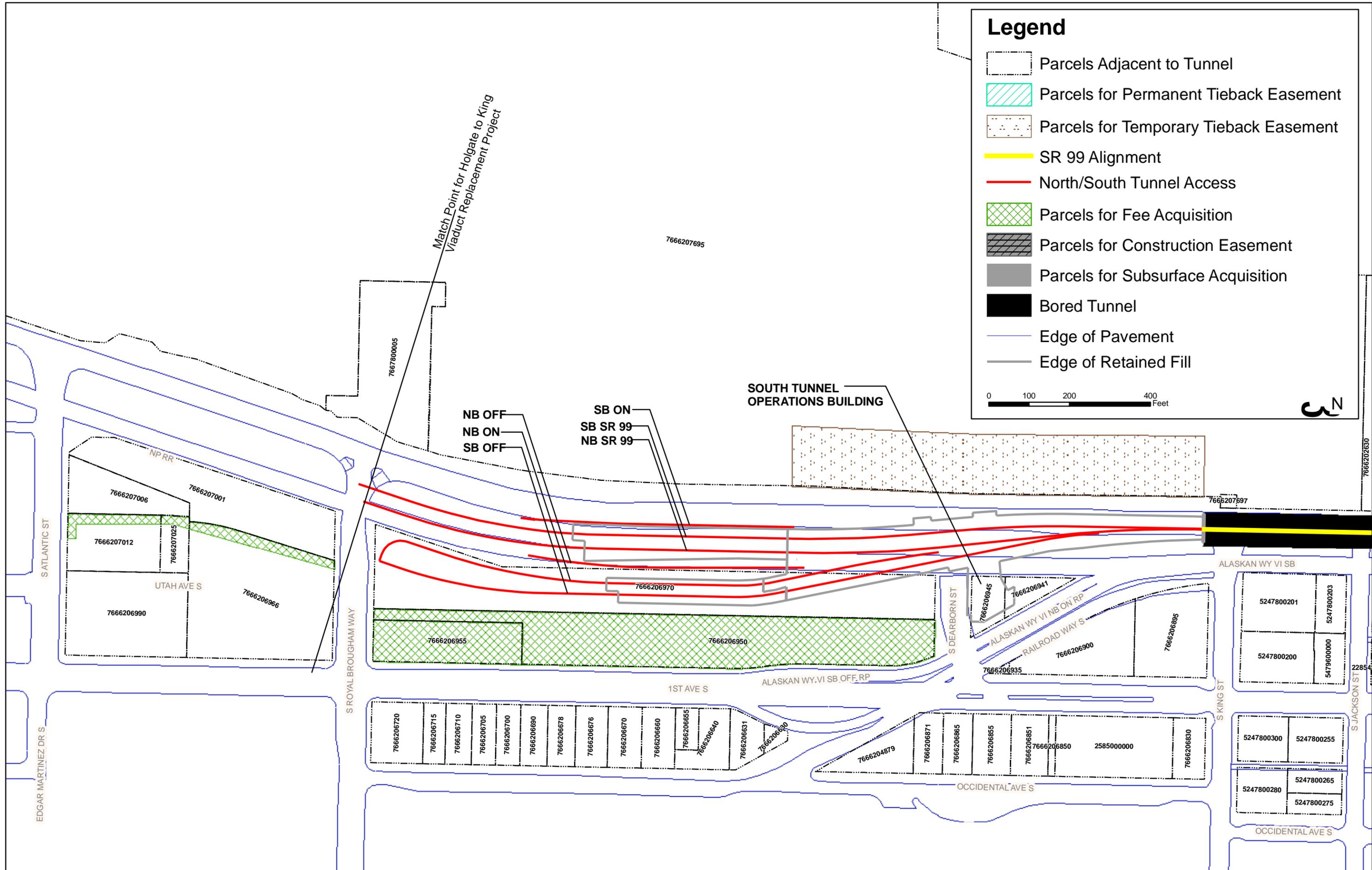
Special consideration for the following parcels along the bored tunnel alignment would need to be negotiated: 7666202575, 7666202570, 7666202565, 7666202560, 7666202545, and 7666202540. These parcels are generally bounded by Alaskan Way and Western Avenue between Yesler Way and University Street. These properties are considered to be on nonbearing soil and if they are further developed to the limits of current zoning, would require piling that would fall within the 54-foot vertical subsurface boundary of the tunnel. Special consideration for these subsurface parcel acquisitions would need to be negotiated on a case-by-case basis regarding how further development of the site over the tunnel would be affected.

**Exhibit A-1. Tunnel Subsurface Property Acquisitions**

Tax Parcel	Present Use	Property Address	Area Required (square feet)	Volume (cubic feet)
7666202530	Office	901 First Avenue 98104	18,930	3,066,585
1974600035	Retail/service	1007 First Avenue 98104	2,247	363,932
7666202515	Office	1008 Western Avenue 98104	4,429	717,525
1974600025	Retail/service	1007 First Avenue 98104	5,641	913,802
9197200000	Multifamily	1107 First Avenue 98101	9,938	1,609,998
1697500000	Mixed use	1119 First Avenue 98101	12,380	2,005,545
1976200076	Mixed use	1201 First Avenue 98101	16,509	2,674,448
1976200075	Mixed use	1301 First Avenue 98101	2,827	457,907
7666202566	Utility		94	15,161
1976200060	Retail/service	1315 First Avenue 98101	675	109,365
6094670000	Parking	1321 First Avenue 98101	1,844	298,642
6094500000	Multifamily	Union Street 98101 98003	94	15,161
1977200435	Office	1901 First Avenue 98101	17	2,677
1977200960	Parking		2,421	392,265
1977200955	Parking		3,020	489,183
1977200940	Multifamily	1920 First Avenue 98101	4,289	694,825
1977200935	Retail/service	1924 First Avenue 98101	2,610	422,885
1977200920	Office	1932 First Avenue 98101	7,742	1,254,178
1977201200	Parking		1,960	317,497

**Exhibit A-1. Tunnel Subsurface Property Acquisitions (continued)**

Tax Parcel	Present Use	Property Address	Area Required (square feet)	Volume (cubic feet)
1977201181	Office	2106 Second Avenue 98121	9,215	1,492,750
1977201165	Retail/service	2120 Second Avenue 98121	4,636	750,950
1977201160	Office	2124 Second Avenue 98121	2,685	434,989
1977201145	Multifamily	2132 Second Avenue 98121	717	116,209
1977201170	Retail/service	2121 Third Avenue 98121	316	51,204
1977201155	Retail/service	2125 Third Avenue 98121	2,109	341,651
1977201150	Office	2133 Third Avenue 98121	4,148	671,929
6391350000	Mixed use	2000 First Avenue 98121	2,670	432,536
1977200900	Parking		6,066	982,664
1977200885	Retail/service	2013 Second Avenue 98121	5,194	841,390
1843050000	Mixed use	2033 Second Avenue 98101	10,444	1,691,870
2867400000	Multifamily	2201 Third Avenue 98121	5,381	871,759
694000055	Retail/service	2217 Third Avenue 98121	58	9,411
694000080	Multifamily	306 Blanchard Street 98121	0	2
694000090	Parking		1,158	187,572
694000100	Parking		3,472	562,415
694000105	Office	2226 Third Avenue 98121	5,576	903,317
694000110	Retail/service	2230 Third Avenue 98121	4,282	693,664
656000540	Multifamily	304 Bell Street 98121	23	3,700
694000115	Multifamily	2225 Fourth Avenue 98121	896	145,192
656000615	Other	314 Bell Street 98121	9,579	1,551,808
656000605	Retail/service	2315 Fourth Avenue 98121	1,237	200,453
697000025	Mixed use	500 Wall Street 98121	13,303	2,155,026
696000155	Retail/service	2316 Fourth Avenue 98121	203	32,826
696000160	Government service	2318 Fourth Avenue 98121	12,483	2,022,277
696000175	Office	2335 Fifth Avenue 98121	894	144,831
696000250	Multifamily	2400 Fourth Avenue 98121	8,835	1,431,287
697000064	Office	521 Wall Street 98121	7,045	1,141,216
1991200520	Office	203 Sixth Avenue N. 98109	172	27,852
1991200765	Retail/service	200 Sixth Avenue N. 98109	115	18,616
1991200580	Retail/service	566 Denny Way 98109	1,761	285,338
1991200600	Office	552 Denny Way 98109	861	139,551



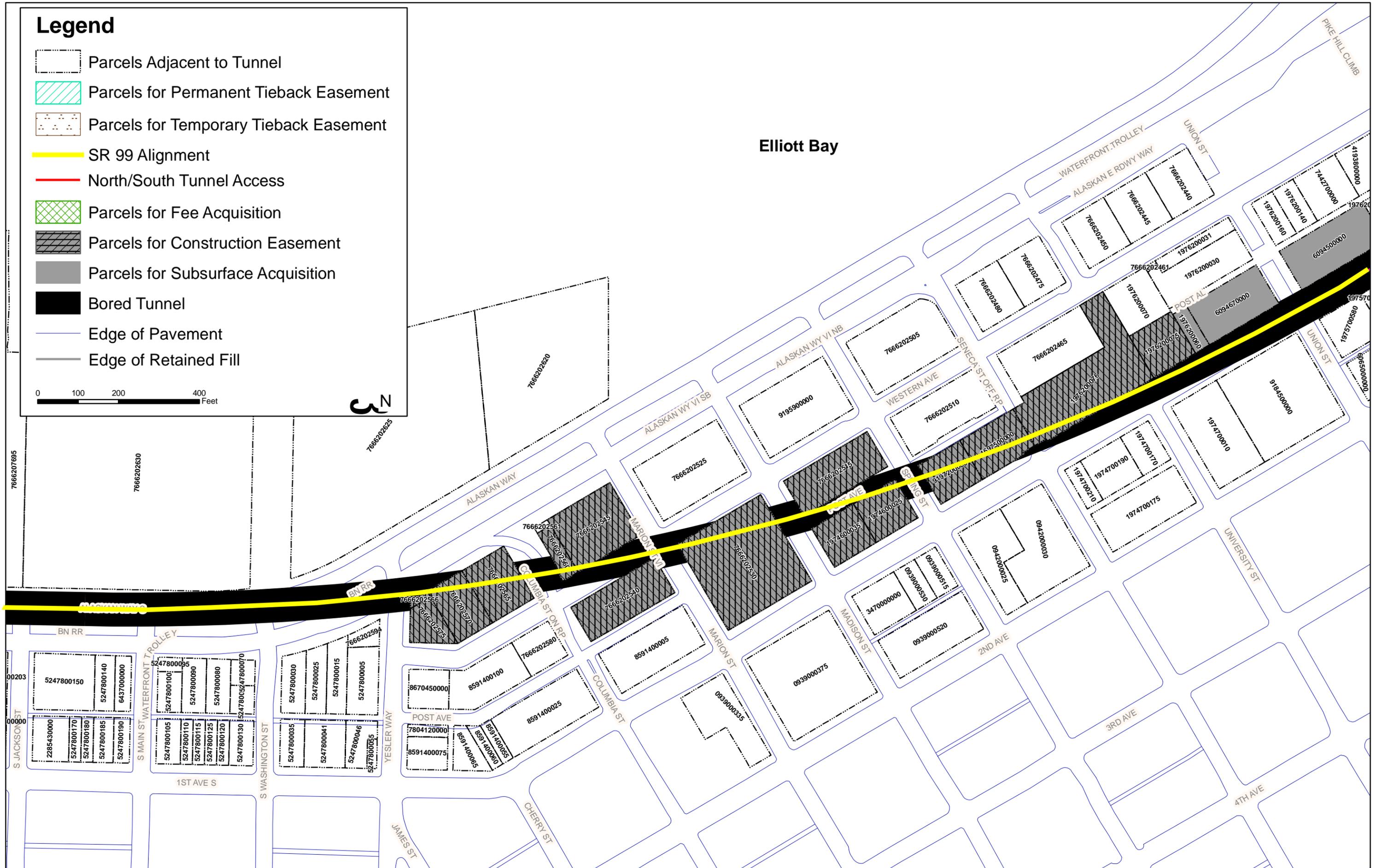
A-2 Right of Way Impacts Map from S. Atlantic Street to Jackson Street

# Legend

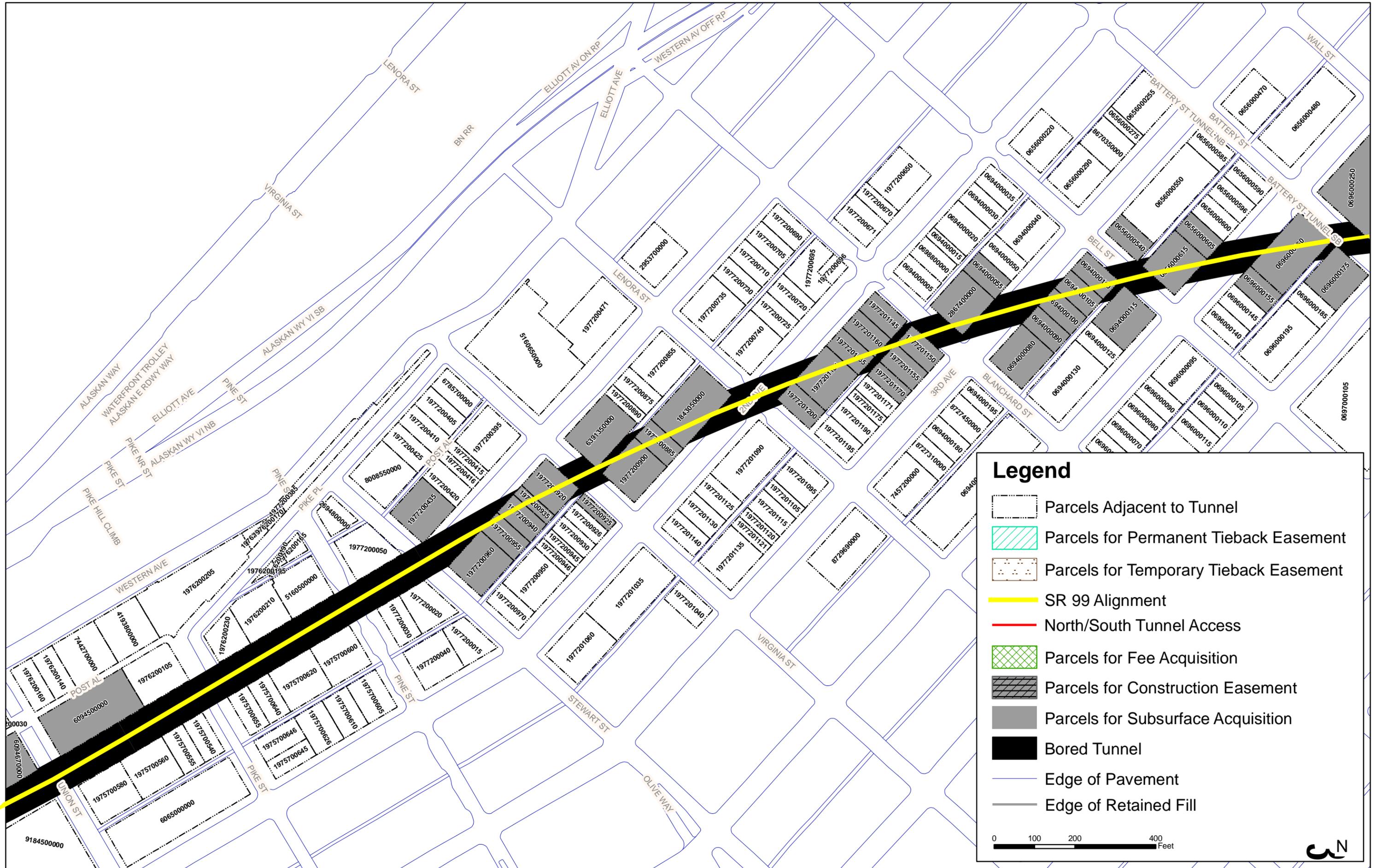
-  Parcels Adjacent to Tunnel
-  Parcels for Permanent Tieback Easement
-  Parcels for Temporary Tieback Easement
-  SR 99 Alignment
-  North/South Tunnel Access
-  Parcels for Fee Acquisition
-  Parcels for Construction Easement
-  Parcels for Subsurface Acquisition
-  Bored Tunnel
-  Edge of Pavement
-  Edge of Retained Fill



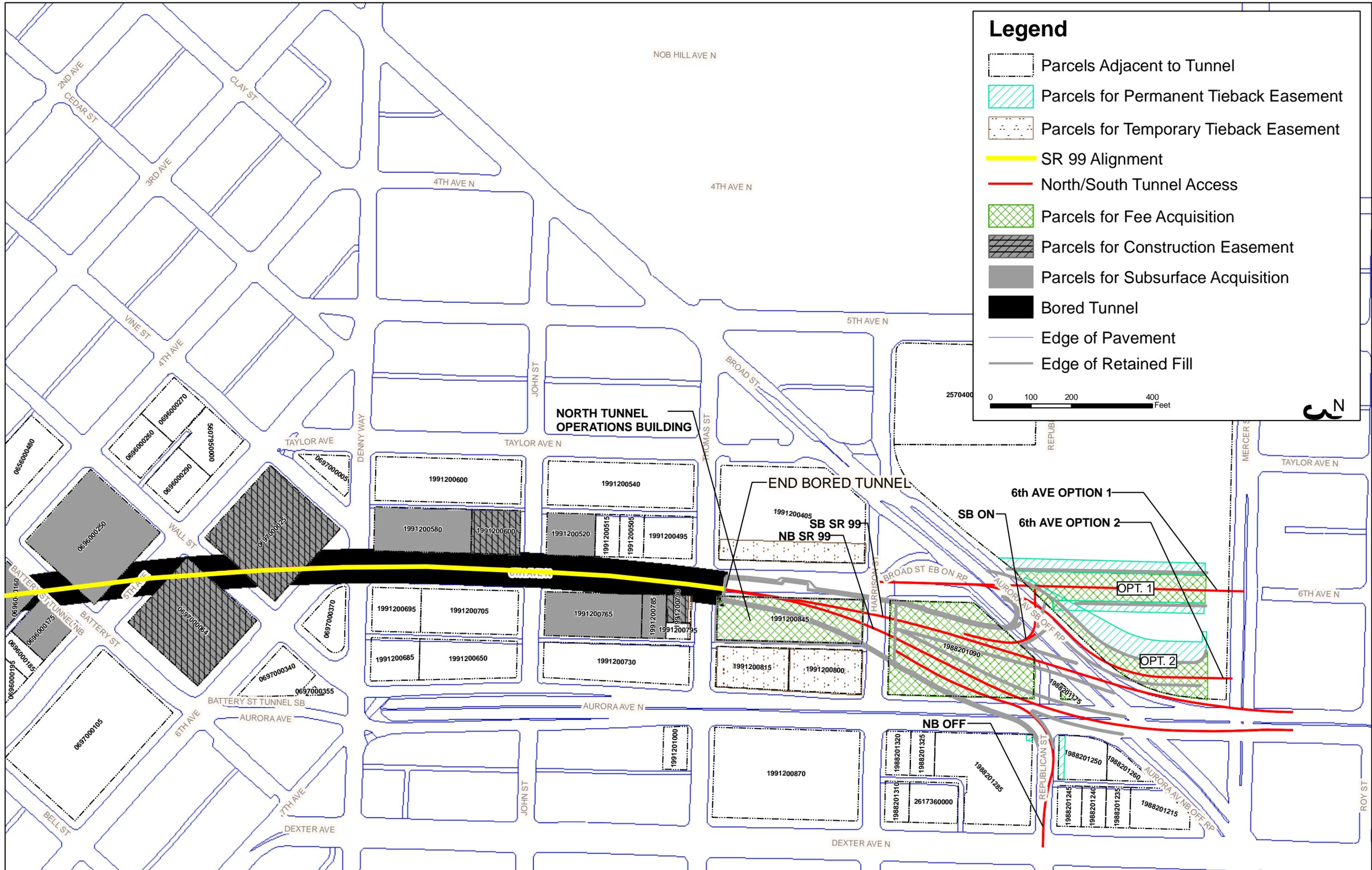
## Elliott Bay



A-3 Right of Way Impacts Map from Jackson Street to Union Street



A-4 Right of Way Impacts Map from University Street to Battery Street



A-5 Right of Way Impacts Map from Battery Street to Roy Street

**ATTACHMENT B**

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**Cumulative Effects Analysis**

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# CUMULATIVE EFFECTS ANALYSIS

This cumulative effects analysis follows *Guidance on Preparing Cumulative Impact Analyses*, published by Washington State Department of Transportation (WSDOT) in February 2008. The guidance document was developed jointly by WSDOT, Federal Highway Administration (FHWA) – Washington Division, and U.S. Environmental Protection Agency – Region 10. The guidance can be used for FHWA’s National Environmental Policy Act (NEPA) compliance (Code of Federal Regulations Title 23, Part 771) and fulfillment of Washington State Environmental Policy Act (SEPA) requirements for evaluation of cumulative effects (Washington Administrative Code, Section 197-11-792).

The approach provided in the WSDOT guidance calls for early consideration of cumulative impacts while direct and indirect effects are being identified, preferably as part of the scoping process. For analysis, the guidance recommends the use of environmental documents such as discipline reports, as well as other relevant information such as local comprehensive plans, zoning, recent building permits, and interviews with local government. The guidance also advocates a partnership approach among agencies that includes early collaboration and integrated planning activities.

The guidance established eight steps to serve as guidelines for identifying and assessing cumulative impacts. These eight steps have been used in the following cumulative effects evaluation for the Bored Tunnel Alternative of the Alaskan Way Viaduct Replacement Project (the project). A matrix that identifies projects with the potential for cumulative effects with this project and an assessment of likely contributions to cumulative effects is also included.

## **Step 1. Identify the resource that may have cumulative impacts to consider in the analysis**

Land use

## **Step 2. Define the study area and timeframe for the affected resource**

The study area for land use comprises the urban environment of downtown Seattle that is generally bounded by Interstate 5 (I-5) to the east and Elliott Bay to the west. The southern boundary is S. Atlantic Street and the northern boundary is Valley Street. This area covers the proposed construction areas surrounding the south and north termini of the bored tunnel, and other roadway and non-roadway elements of the Alaskan Way Viaduct and Seawall Replacement Program (the Program).

The timeframe for the affected resource discussion is from 1980 to the present. The timeframe for construction-related (temporary) impacts is the approximately

5.5-year construction duration for the Bored Tunnel Alternative (2011–2017). After construction, the timeframe for operational impacts is from the year of opening (2017) to the design year of the project (2030).

**Step 3. Describe the current health and historical context for each affected resource**

In general, historical land use patterns have persisted since around 1900: commercial and industrial development to support both marine and land-based shipping via ships and trains in the south portal area (Seattle’s south and central waterfront) and the Commercial Core with retail and some residential uses to the north. Located just north of the Commercial Core are mixed uses with some businesses and residential with restaurants, and the area farther north is predominantly residential uses, with small supporting retail and commercial uses in the north portal area.

The development activity and overall land use characteristics in the study area continue to evolve from primarily employment-related uses to a major center for tourism, retail shopping, meeting and convention activities, and entertainment. Continuing long-term trends, downtown Seattle’s land use character is a relatively dense and growing Urban Center, the largest in the Pacific Northwest. The downtown area has continued to evolve from a predominantly commercial office and retail center to a more diverse character that includes numerous residential uses, shopping, convention and meeting facilities, tourism, and entertainment-oriented uses.

Within the study area, there has been an increased emphasis on providing more residential opportunities and better livability, placing residents close to jobs and amenities. According to the Downtown Seattle Association, in 2009 there were several residential development projects under construction or scheduled to begin construction (Downtown Seattle Association 2009).

The area south of Seattle’s Commercial Core includes the areas of Pioneer Square, the Stadium Transition Area Overlay District, and the Greater Duwamish Manufacturing and Industrial Center (MIC). Land uses in Pioneer Square are primarily tourism, services, and residential. The Stadium Transition Area Overlay District and the First Avenue S. corridor are a mix of industrial and commercial uses, consistent with City policies. This area generally trends toward increased diversity, with the presence of commercial uses mixed with warehouse and industry-oriented uses.

Infill and redevelopment trends in the past few years are mostly related to office and residential high-rise development in Belltown and the Denny Triangle. This has increased residential densities in Belltown with a general pattern of office core infill and continuing the growth of the downtown office core outward. Similarly,

infill development has occurred within the Pioneer Square neighborhood as part of an overall downtown growth trend. South of the Commercial Core, the trend has included occasional development projects that involve filling in available vacant parcels and remodeling existing buildings in Pioneer Square and along the First Avenue S. corridor. However, recent economic conditions have brought most short-term development prospects to a halt.

The South Lake Union neighborhood in the northernmost portion of the study area has experienced substantial redevelopment in the last decade, with an increasing number of biotechnology and high-technology companies locating in this area. Redevelopment along the Mercer corridor has also begun in the last few years, and efforts continue toward economic development in the South Lake Union neighborhood through several redevelopment projects planned along this corridor.

The City of Seattle has made ongoing efforts to continue the planning process for several of the neighborhoods located south of downtown Seattle. This planning process has resulted in the identification of City land use actions that may result in a more livable community by encouraging residential and job-related development in appropriate ways and by balancing local and regional uses while respecting the rich culture and history of the area.

**Step 4. Identify the direct and indirect impacts that may contribute to a cumulative impact**

The potential to induce growth would be minor. The Bored Tunnel Alternative is not expected to be a major catalyst to future growth. Large-scale redevelopment, as a direct or indirect result, is not likely, but this alternative would support planned future growth as identified in Seattle's Comprehensive Plan. Planning efforts for the neighborhood areas will also help determine the direction of future growth and land uses in the study area.

The Bored Tunnel Alternative's two south portal area options would define new blocks of property that would be available for future development under the City's existing Industrial Commercial land use zone. The future development of this property would be required to be consistent and compatible with existing land use plans and is not expected to influence development activity or trends in the Pioneer Square or Greater Duwamish MIC neighborhoods.

Future development in the area from which the viaduct would be removed would likely occur in the form of modest expansions of existing buildings on the east side of Alaskan Way. In addition, changes would occur in the relationship between the waterfront and upland properties leading to the downtown core. To the extent that the existing viaduct has been viewed as a physical barrier to waterfront uses, new development on vacant or under-used property or

redevelopment may take place around the new Alaskan Way surface street. No development within this right-of-way is proposed as part of the Bored Tunnel Alternative. To the extent that the existing viaduct has been perceived as a barrier, removal of the viaduct could increase the potential for pedestrian traffic between downtown and the waterfront. The connections between core commercial, office, retail, and service uses downtown and the waterfront would likely be increased.

Many of the daily commuters now using SR 99 and the viaduct live in neighborhoods north and south of downtown, such as Ballard, Fremont, Greenwood, West Seattle, White Center, and Georgetown. For these commuters, the viaduct offers a convenient route either to downtown or around the city without using I-5. Because the Bored Tunnel Alternative would change access to downtown for some trips, it may have an influence on growth in neighborhoods where the area's desirability is in part enhanced by the ease of access to downtown Seattle.

The Bored Tunnel design has been engineered to current safety standards, including seismic safety design standards to reduce potential adverse effects on land use from structural failure. In addition, the tunnel design and construction techniques are being developed to address property owners' concerns related to ground settlement. Once constructed, the tunnel will have no long-term direct or indirect effects on properties above ground.

Subsurface property acquisitions are not likely to affect property values. See Appendix L, Economics Discipline Report, for additional discussion of effects on property values.

Indirect effects would result from a permanent loss of on-street and off-street parking. The loss of parking would result in less convenient access to businesses by patrons and would represent an adverse effect. Other indirect effects would include the disposal of construction spoils. Spoils from the bored tunnel and portal excavations are proposed to be transported to an off-site disposal location, such as the Mats Mats Quarry, near Port Ludlow, Washington. The Mats Mats Quarry is one of the largest rock quarries in Jefferson County.

**Step 5. Identify other historic, current, or reasonably foreseeable actions that may affect resources**

The project team considered 39 projects (shown in the matrix at the end of this attachment) for potential activities that could have a cumulative effect on land use in Seattle. None of the 39 projects would have a negative cumulative effect on land use. The following 21 projects were determined to have a beneficial cumulative effect.

- A1. Alaskan Way Surface Street Improvements – S. King Street to Pike Street
- A2. Elliott/Western Connector – Pike Street to Battery Street
- A3. Mercer West Project – Mercer Street becomes two-way from Fifth Avenue N. to Elliott Avenue, and Roy Street becomes two-way from Aurora Avenue to Queen Anne Avenue N.
- B2. Alaskan Way Promenade/Public Space
- B3. Transit Enhancements – (1) Delridge RapidRide and (2) additional service hours on West Seattle and Ballard RapidRide lines, (3) peak hour express routes added to South Lake Union and Uptown, (4) local bus changes to several West Seattle and northwest Seattle routes, (5) transit priority on S. Main and/or S. Washington Streets between Alaskan Way and Third Avenue, and (6) simplification of the electric trolley system
- B4. First Avenue Streetcar Evaluation
- C1. S. Holgate Street to S. King Street Viaduct Replacement Project
- C2. Transportation Improvements to Minimize Traffic Effects During Construction
- F1. Bridging the Gap Projects
- F4. Mercer East Project from Dexter Avenue N. to I-5
- H1. First Hill Streetcar
- H2. Sound Transit University Link Light Rail Project
- H3. RapidRide
- H4. Sound Transit North Link Light Rail
- H5. Sound Transit East Link Light Rail
- H6. Washington State Ferries Seattle Terminal Improvements
- I2. Sound Transit Phases 1 and 2
- I3. Other Transit Improvements
- J1. Sound Transit Central Link Light Rail (including the Sea-Tac Airport extension)
- J2. South Lake Union Streetcar
- J3. SR 519 Intermodal Access Project, Phase 2

**Step 6. Assess potential cumulative impacts to the resource; determine the magnitude and significance**

The potential overall influence on land use and growth in the Seattle area is difficult to predict. While there are likely to be opportunities for additional

development, the potential for large-scale redevelopment as part of the other roadway and non-roadway projects is not expected to be substantial. However, the Program does represent a major contribution to the numerous other ongoing improvements occurring in the city, particularly in the downtown area. Because the Program focuses on replacing and enhancing existing transportation facilities (both SR 99 and the proposed surface street improvements), its role as a potential inducement to measurable cumulative growth in downtown would not likely be as great as one that would provide substantial new transportation routes to the area.

The City is currently engaged in efforts to develop a new central waterfront plan, which will be a primary guide for determining the areas and types of future land uses along the waterfront.

Neighborhoods located north and south of downtown—such as Ballard, Fremont, Greenwood, West Seattle, White Center, and Georgetown—that use SR 99 to access downtown and other parts of the city would benefit from the various improvements that are proposed. Enhancements to existing facilities and transit service, such as the new public transit RapidRide program, would make access to current land uses easier and more desirable for those traveling from surrounding neighborhoods. However, extensive growth in these neighborhoods as a result of the Program and all other roadway and non-roadway projects is not expected.

Private development projects are expected to occur during the construction timeframe for the Program. This general development would include private land use actions, such as residential, retail, and commercial development.

Construction effects of the projects would include the following temporary effects:

- Noise, dust, and traffic congestion would increase in the general areas where construction would occur.
- Construction-related detours, closures, and traffic congestion would cause changes in mobility on project area streets. It is expected that temporary roadway closures would result in redistribution of traffic to nearby streets throughout the study area.
- Traffic congestion could be a temporary inconvenience for those traveling to and from the Seattle Ferry Terminal at Colman Dock and businesses along the waterfront.
- Increased truck traffic along the E. Marginal Way S. haul route could result in travel delays for north-south traffic and could result in traffic congestion at the points of vehicle access to the marine cargo area of Terminal 46 and Colman Dock. Use of E. Marginal Way S. as a haul route

also could affect other marine, industrial, and water-dependent uses west of E. Marginal Way S., including Terminals 25 and 30. In addition, access to the U.S. Coast Guard facility at Pier 36 and existing business locations between Pier 36 and Terminal 30 could be affected.

- Access to residential buildings and businesses abutting construction would be reconfigured or changed.

There could be a lot of simultaneous construction activity occurring in the same *areas in which the Alaskan Way Viaduct Replacement Project is being constructed*. Construction-related detours, closures, and traffic congestion would cause changes in mobility on project area streets. Residents would experience some degree of inconvenience, and businesses would experience disruption in the flow of customers, employees, and the delivery or shipment of materials and supplies.

The loss of parking, especially on-street short-term parking, could affect convenient access to land uses. In addition, transit service could be adversely affected by construction-related detours. The magnitude of effects would vary during each stage of construction.

#### **Step 7. Report the results**

The cumulative effects would be highly localized around the area of direct effects. However, there would be no significant cumulative effect on land use in most of the study area. In addition, improvements to the roadway network should have a net positive effect on land use in the study area, with improved connections from the waterfront to downtown, the Pike Place Market, and historic Pioneer Square. The traveling public would benefit through improved accessibility to land uses for employees, customers, and residents in the study area.

#### **Step 8. Assess and discuss potential mitigation issues for all adverse impacts**

After construction, the overall effects on land use would be positive. No mitigation is proposed for the cumulative effects.

The following matrix identifies project-specific potential cumulative effects.

## PROJECT-SPECIFIC CUMULATIVE EFFECTS MATRIX

PROJECT	POTENTIAL CUMULATIVE EFFECTS
<b><i>A. Roadway Elements</i></b>	
<b>A1.</b> Alaskan Way Surface Street Improvements – S. King Street to Pike Street	Beneficial effect. Would increase accessibility to land uses in the study area.
<b>A2.</b> Elliott/Western Connector – Pike Street to Battery Street	Beneficial effect. Would increase accessibility to land uses in the study area.
<b>A3.</b> Mercer West Project – Mercer Street becomes two-way from Fifth Avenue N. to Elliott Avenue, and Roy Street becomes two-way from Aurora Avenue to Queen Anne Avenue N.	Beneficial effect. Would increase accessibility to land uses in the study area.
<b><i>B. Non-Roadway Elements</i></b>	
<b>B1.</b> Elliott Bay Seawall Project	No effect. Not of a size or scale to have an effect on land use in the study area.
<b>B2.</b> Alaskan Way Promenade/Public Space	Beneficial effect. Would enhance connections to surrounding land uses, primarily along the waterfront, by providing increased space and linkages for pedestrians and bicycles.
<b>B3.</b> Transit Enhancements – 1) Delridge RapidRide 2) Additional service hours on West Seattle and Ballard RapidRide lines 3) Peak hour express routes added to South Lake Union and Uptown 4) Local bus changes to several West Seattle and northwest Seattle routes 5) Transit priority on S. Main and/or S. Washington Streets between Alaskan Way and Third Avenue 6) Simplification of the electric trolley system	Beneficial effect. Would enhance connections to surrounding land uses.
<b>B4.</b> First Avenue Streetcar Evaluation	Beneficial effect. Would enhance connections to surrounding land uses.
<b><i>C. Projects Under Construction</i></b>	
<b>C1.</b> S. Holgate Street to S. King Street Viaduct Replacement Project	Beneficial effect. Would increase accessibility to land uses in the study area.
<b>C2.</b> Transportation Improvements to Minimize Traffic Effects During Construction	Beneficial effect. Would help maintain accessibility to land uses in the study area.
<b><i>D. Completed Projects</i></b>	
<b>D1.</b> SR 99 Yesler Way Vicinity Foundation Stabilization (Column Safety Repairs)	No effect. Not of a size or scale to have an effect on land use in the study area.

## PROJECT-SPECIFIC CUMULATIVE EFFECTS MATRIX (CONTINUED)

PROJECT	POTENTIAL CUMULATIVE EFFECTS
<b>D2.</b> S. Massachusetts Street to Railroad Way S. Electrical Line Relocation Project (Electrical Line Relocation Along the Viaduct's South End)	No effect. Not of a size or scale to have an effect on land use in the study area.
<b><i>E. Seattle Planned Urban Development</i></b>	
<b>E1.</b> Gull Industries on First Avenue S.	No effect. Not of a size or scale to have an effect on land use in the study area.
<b>E2.</b> North Parking Lot Development at Qwest Field	No effect. Not of a size or scale to have an effect on land use in the study area.
<b>E3.</b> Seattle Center Master Plan (EIS) (Century 21 Master Plan)	No effect. Not of a size or scale to have an effect on land use in the study area.
<b>E4.</b> Bill and Melinda Gates Foundation Campus Master Plan	No effect. Will be completed before bored tunnel construction begins.
<b>E5.</b> South Lake Union Redevelopment	No effect. Likely to occur incrementally in response to market demands.
<b>E6.</b> U.S. Coast Guard Integrated Support Command	No effect. Not of a size or scale to have an effect on land use in the study area.
<b>E7.</b> Seattle Aquarium and Waterfront Park	No effect. Not of a size or scale to have an effect on land use in the study area.
<b>E8.</b> Seattle Combined Sewer System Upgrades	No effect. Not of a size or scale to have an effect on land use in the study area.
<b><i>F. Local Roadway Improvements</i></b>	
<b>F1.</b> Bridging the Gap Projects	Beneficial effect. Would help maintain accessibility to land uses in the study area.
<b>F2.</b> S. Spokane Street Viaduct Widening	No effect. Outside the geographic study area where impacts may be anticipated.
<b>F3.</b> SR 99/East Marginal Way Grade Separation	No effect. Outside the geographic study area where impacts may be anticipated.
<b>F4.</b> Mercer East Project from Dexter Avenue N. to I-5	Beneficial effect. Would increase accessibility to land uses in the study area.
<b><i>G. Regional Roadway Improvements</i></b>	
<b>G1.</b> I-5 Improvements	No effect. Outside the geographic study area where impacts may be anticipated.
<b>G2.</b> SR 520 Bridge Replacement and HOV Program	No effect. Outside the geographic study area where impacts may be anticipated.
<b>G3.</b> I-405 Corridor Program	No effect. Outside the geographic study area where impacts may be anticipated.
<b>G4.</b> I-90 Two-Way Transit and HOV Operations, Stages 1 and 2	No effect. Outside the geographic study area where impacts may be anticipated.

## PROJECT-SPECIFIC CUMULATIVE EFFECTS MATRIX (CONTINUED)

PROJECT	POTENTIAL CUMULATIVE EFFECTS
<b><i>H. Transit Improvements</i></b>	
<b>H1.</b> First Hill Streetcar	Beneficial effect. Would enhance connections to surrounding land uses along route.
<b>H2.</b> Sound Transit University Link Light Rail Project	Beneficial effect. Would enhance connections to land uses in downtown Seattle.
<b>H3.</b> RapidRide	Beneficial effect. Would enhance connections to land uses in downtown Seattle.
<b>H4.</b> Sound Transit North Link Light Rail	Beneficial effect. Would enhance connections to land uses in downtown Seattle.
<b>H5.</b> Sound Transit East Link Light Rail	Beneficial effect. Would enhance connections to land uses in downtown Seattle.
<b>H6.</b> Washington State Ferries Seattle Terminal Improvements	Beneficial effect. Would enhance connections to land uses in downtown Seattle.
<b><i>I. Transportation Network Assumptions</i></b>	
<b>I1.</b> HOV Definition Changes to 3+ Throughout the Puget Sound Region	No effect. Outside the geographic study area where impacts may be anticipated.
<b>I2.</b> Sound Transit Phases 1 and 2	Beneficial effect. Would enhance connections to land uses near stations in downtown Seattle.
<b>I3.</b> Other Transit Improvements	Beneficial effect. Would enhance connections to surrounding land uses.
<b><i>J. Completed but Relevant Projects</i></b>	
<b>J1.</b> Sound Transit Central Link Light Rail (including the Sea-Tac Airport extension)	Beneficial effect. Would enhance connections to surrounding land uses near stations in downtown Seattle.
<b>J2.</b> South Lake Union Streetcar	Beneficial effect. Would enhance connections to surrounding land uses along route.
<b>J3.</b> SR 519 Intermodal Access Project, Phase 2	Beneficial effect. Would increase accessibility to land uses in the study area.