FINAL ENVIRONMENTAL IMPACT STATEMENT
AND FINAL SECTION 4(F) AND 6(f) EVALUATIONS
SR 520 BRIDGE REPLACEMENT AND HOV PROGRAM

May 2011

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

Cultural Resources Assessment Discipline Report

Washington State Department of Transportation

U.S. Department of Transportation Federal Highway Administration

SR 520, I-5 to Medina: Bridge Replacement and HOV Project Final Environmental Impact Statement and Final Section 4(f) and 6(f) Evaluations

Cultural Resources Assessment Discipline Report

Prepared for

Washington State Department of Transportation
Federal Highway Administration

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MAY 2011

Executive Summary

The Washington State Department of Transportation (WSDOT) proposes to replace the State Route (SR) 520 Portage Bay and Lake Washington bridges and make other highway improvements under the SR 520, Interstate 5 (I-5) to Medina: Bridge Replacement and High-Occupancy Vehicle (HOV) Project (the "SR 520, I-5 to Medina project" or the "project"). As part of the environmental documentation for this project and to comply with Section 106 of the National Historic Preservation Act (NHPA), WSDOT, acting on behalf of the Federal Highway Administration (FHWA), is required to determine if significant historic properties are located within the area of potential effects (APE) established for the project and evaluate project effects on these properties.

WSDOT established the APE (the geographic area within which an undertaking may directly or indirectly cause alterations to the character or use of historic properties) in consultation with interested tribes, the State Historic Preservation Officer (SHPO), and other consulting parties. WSDOT retained consultants to conduct investigations in the project APE to identify and evaluate cultural resources for historic significance; assess project effects on identified historic properties; and recommend mitigation measures or additional investigation, as needed.

In late 2010, WSDOT prepared a Section 106 Technical Report in support of compliance with Section 106 of the NHPA that described the methods used to inventory, evaluate, and assess cultural resources in the APE; synthesized results of the previous investigations conducted within the APE; analyzed the effects of the project on historic properties; and discussed recommendations for additional investigations. The Section 106 Technical Report was prepared in two volumes: Volume 1 addressed archaeological resources (Elder et al. 2011); Volume 2 addressed historic built environment resources within the APE (Gray et al. 2011). This report was submitted to the SHPO in January 2011 for comment on the determination of effect, and there was agreement among the parties that the project would have an adverse effect on historic properties.

WSDOT, on behalf of FHWA, has determined that there are 367 properties in the APE that are listed in or eligible for listing in the National Register of Historic Places (NRHP), which qualifies them as historic properties for the purposes of Section 106. These historic properties include 8 historic bridges, 3 historic landscapes, 2 historic districts, 1 historic waterway, 1 historic boulevard, 1 traditional cultural property (TCP), and 351 historic buildings. No NRHP-eligible archaeological sites were found in the APE during testing for this project.

WSDOT and its consultants conducted investigations to identify, evaluate, and assess properties located in the APE. The APE includes the anticipated construction footprint (including staging and laydown areas); a buffer area (one property deep or 200 to 300 feet from the limits of construction, as appropriate); additional areas outside the limits of construction, determined through consultation, such as the entire Roanoke Park Historic District, the entire Washington Park Arboretum (Arboretum),[1] the navigable waters of Portage Bay, potential construction haul routes, sites at the Port of Olympia and the Port of Tacoma that were considered for pontoon construction and staging, and possible Section 6(f) mitigation sites.

The results of the inventory, as well as the effects analysis, are presented by study area along the project corridor. These are the Seattle, Lake Washington, and Eastside transition study areas. Within the Seattle study area, project elements are described by approximate geographic segments: I-5/Roanoke, Portage Bay, Montlake, and West Approach. Additional sites at Port of Olympia and Port of Tacoma that were investigated as potential pontoon construction sites are included in a separate group.

- **Seattle Study Area:** This study area is made up of the I-5/Roanoke, Portage Bay, Montlake, and West Approach segments. A total of 355 historic properties were identified and evaluated in these geographical segments of the APE, including two historic districts, the contributing elements to the districts, and individual properties outside district boundaries that are listed in or eligible for listing in the NRHP. The Foster Island TCP is located in the West Approach segment in this study area.

- **Lake Washington Study Area:** Four historic built environment properties were identified and determined eligible for listing in the NRHP in this geographical segment of the project APE: the

[1] A small, noncontiguous portion of the Arboretum, east of the main park and southeast of Foster Island, is not included in the APE.

Governor Albert D. Rosellini (Evergreen Point) Bridge, which was identified and determined eligible for listing in the NRHP in this portion of the APE, and three properties that were once, but no longer, under consideration as potential Section 6(f) replacement sites.

- **Eastside Transition Study Area:** Two historic properties of the built environment were identified in this study area.
- **Pontoon Production Sites:** Five historic properties listed in the NRHP or eligible for listing in the NRHP are located within the APE at the Port of Tacoma. Of the five historic properties, four NRHP-eligible buildings are elements of the Concrete Technology Corporation facility, and have been recommended as a historic district. At the Port of Olympia site, there is one identified historic property within the APE that is eligible for listing in the NRHP.

A total of 366 built environment historic properties and 1 TCP were identified in the APE (see Exhibit ES-1). This total includes previously identified properties, the properties presented in the 2009 Draft Cultural Resources Discipline Report (see Attachment 7 to the Final Environmental Impact Statement [EIS]), and properties identified during the additional cultural resources survey investigations in 2010 and 2011. The geographic segments used to describe the Seattle study area in this Cultural Resources Assessment Discipline Report were established to organize the cultural resources within the APE in a manageable framework due to the large number of properties. The geographic segments discussed here, and depicted in the exhibits in this document, may differ slightly from the supporting tables and from the segments used in other environmental documents prepared for the SR 520 Bridge Replacement and HOV Program (SR 520 Program). The number of historic properties within the APE is constant among all current analyses for the SR 520 Program.

WSDOT, on behalf of FHWA, has evaluated each historic property within the APE, and assessed the Preferred Alternative of the SR 520, I-5 to Medina project's effects on each property's integrity. The assessment resulted in one of four potential findings for each property: Does Not Alter Integrity, Alters Integrity, Diminishes Integrity, or Temporarily Diminishes Integrity, which are defined in Chapter 2 of this Cultural Resources Assessment Discipline Report.

Exhibit ES-1. Summary of Historic Properties Located in the Area of Potential Effects, listed by Study Area and Segment

Study Area	Segment	Historic Properties
Seattle Study Area	I-5/Roanoke	146
	Portage Bay	31
	Montlake	174
	West Approach	4
Lake Washington Study Area		4
Eastside Transition Study Area		2
Pontoon Production Sites		6
Total		**367**

Note: The historic property totals include previously identified properties and properties surveyed as a part of this project.

Although no archaeological sites eligible for listing in the NRHP were found in any of the studies conducted to date, study results indicate that there is the potential for the project to affect unknown and potentially significant archaeological resources within the limits of construction. Several specific areas within the limits of construction were called out as sensitive for intact archaeological sites (or were inaccessible during the initial investigations) and were flagged for additional investigation prior to construction or monitoring during construction.

Based on the collected research, the field investigations, and the analysis of effects, WSDOT, on behalf of FHWA, and in consultation with the SHPO, has determined that the project would have an adverse effect on historic properties within the APE.

To address the adverse effect on historic properties, a Section 106 Programmatic Agreement was developed, in consultation with the SHPO, Advisory Council on Historic Preservation, interested tribes, and other Section 106 consulting parties (the Programmatic Agreement is provided in Attachment 9 to the Final EIS). The Programmatic Agreement stipulates means to avoid, minimize, and mitigate the adverse effect on historic properties. One of the stipulations of the Programmatic Agreement is the execution of an Archaeological Treatment Plan, which will provide a detailed, yet flexible process by which WSDOT and FHWA can comply with and complete the Section 106 process in regards to archaeological resources.

Foster Island was determined eligible for the NRHP as a TCP, and the Preferred Alternative would diminish the integrity of the TCP. To address this, the Programmatic Agreement includes development of a Foster Island Treatment Plan that will identify mitigation measures for project effects on the Foster Island TCP.

Measures to mitigate the adverse effect on historic properties stipulated in the Programmatic Agreement are summarized in Chapter 8 of this Cultural Resources Assessment Discipline Report.

Contents

Attachments

1. Master Lists of Identified Properties for the SR 520, I-5 to Medina Project

   1A All Surveyed and Identified Properties in the Area of Potential Effects
   1B Historic Properties in the Area of Potential Effects
   1C Historic Properties Identified along Potential Haul Routes
   1D Surveyed NRHP-Eligible Properties Identified in the I-5/Roanoke Segment of the Seattle Study Area
   1E Surveyed NRHP-Eligible Properties Identified in the Portage Bay Segment of the Seattle Study Area
   1F Surveyed NRHP-Eligible Properties Identified in the Montlake Segment of the Seattle Study Area

2 Agency Correspondence

3 Forms for Previously Identified Properties

4 Historic Property Inventory Forms for Surveyed Properties

   4A Historic Property Inventory Forms for Properties Surveyed for the SDEIS (Property ID Nos. 1 through 238)
   4B Historic Property Inventory Forms for Properties Surveyed for the Final EIS (Property ID Nos. 239 through 601)
   4C Historic Property Inventory Forms for Properties at the Pontoon Production Sites (Property ID Nos. 700 through 714 and 801)

List of Exhibits

Acronyms and Abbreviations

1x1	1 by 1 meter
2x2	2 by 2 meter
ACHP	Advisory Council on Historic Preservation
AIA	American Institute of Architects
APE	area of potential effects
Arboretum	Washington Park Arboretum
BMPs	best management practices
BOAS	BOAS, Inc.
CCMP	Community Construction Management Plan
CENPA	Center for Experimental Nuclear Physics and Astrophysics
CFR	Code of Federal Regulations
CTC	Concrete Technology Corporation
CWA	Civil Works Administration
DAHP	Department of Archaeology and Historic Preservation
dBA	A-weighted decibels
DOCOMOMO – WEWA	Documentation and Conservation of the Modern Movement, Western Washington
EIS	Environmental Impact Statement
Evergreen Point Bridge	Governor Albert D. Rossellini (Evergreen Point) Bridge
FHWA	Federal Highway Administration
GIS	geographic information system
GLO	General Land Office
GPR	ground-penetrating radar

HOV	high-occupancy vehicle
HPI	Historic Property Inventory
I-5	Interstate 5
ICF	ICF International
ID#	identification number
LWCF	Land and Water Conservation Fund
LiDAR	light detection and ranging
MHz	megahertz
MOHAI	Museum of History and Industry
mph	miles per hour
NAC	noise abatement criteria
NAIP	National Agriculture Imagery Program
n.d.	no date
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NOAA	National Oceanic and Atmospheric Administration
NPS	U.S. National Park Service
SDEIS	Supplemental Draft Environmental Impact Statement and Section 4(f)/6(f) Evaluation
SDOT	Seattle Department of Transportation
Seattle Parks Board	Seattle Board of Park Commissioners
SEPA	State Environmental Policy Act
Seward School	Denny-Fuhrman (Seward) School
SP	shovel probe
SHPO	State Historic Preservation Officer
SR	State Route

SR 520 Program	SR 520 Bridge Replacement and HOV Program
SR 520, I-5 to Medina project	SR 520, I-5 to Medina: Bridge Replacement and HOV Project
SR 520, Medina to SR 202 project	SR 520, Medina to SR 202: Eastside Transit and HOV Project
TCP	traditional cultural property
TUs	test units
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
UW	University of Washington
WERA	Washington Emergency Relief Administration
WHR	Washington Heritage Register
WISAARD	Washington Information System for Architectural and Archaeological Records Data
WPA	Works Progress Administration
WSAPM	Washington Statewide Archaeology Predictive Model
WSDOT	Washington State Department of Transportation

1. Introduction

The Washington State Department of Transportation (WSDOT) proposes to replace the State Route (SR) 520 Portage Bay and Lake Washington bridges and make other highway improvements under the SR 520, Interstate 5 (I-5) to Medina: Bridge Replacement and High-Occupancy Vehicle (HOV) Project (the "SR 520, I-5 to Medina project" or the "project"). As part of the environmental documentation and to comply with Section 106 of the National Historic Preservation Act (NHPA), WSDOT, acting on behalf of the Federal Highway Administration (FHWA), is required to determine if significant historic properties are located within the area of potential effects (APE) established for the project and to evaluate project effects on these properties. This report summarizes the cultural resources investigations conducted as a component of the preconstruction environmental review in accordance with Section 106 of the NHPA.

WSDOT retained consultants to conduct investigations in the project APE to identify and evaluate cultural resources for historic significance; assess project effects on identified historic properties; and recommend mitigation measures or additional investigation, as needed. Since the initiation of the environmental review for the SR 520, I-5 to Medina project, both the details of construction and the project APE have evolved due to design refinements and in response to public comments. Along with these changes, WSDOT has contracted for several cultural resources investigations of the APE to support project environmental review and Section 106 consultation.

In late 2010 WSDOT prepared a technical report in support of compliance with Section 106 of the NHPA. The Section 106 Technical Report was prepared in two volumes: Volume 1 addressed archaeological resources and Foster Island (Elder et al. 2011) and Volume 2 addressed historic built environment resources within the APE (Gray et al. 2011). This report was submitted to the State Historic Preservation Officer (SHPO) in January 2011 for comment on the determination of effect. This discipline report is adapted from the two volumes of the Section 106 Technical Report.

This introduction presents an overview of the project description, a discussion of the No Build and Preferred Alternatives, a description of the project APE, the regulatory context for the cultural resources studies conducted in support of the project, and a summary of agency and consulting party consultations.

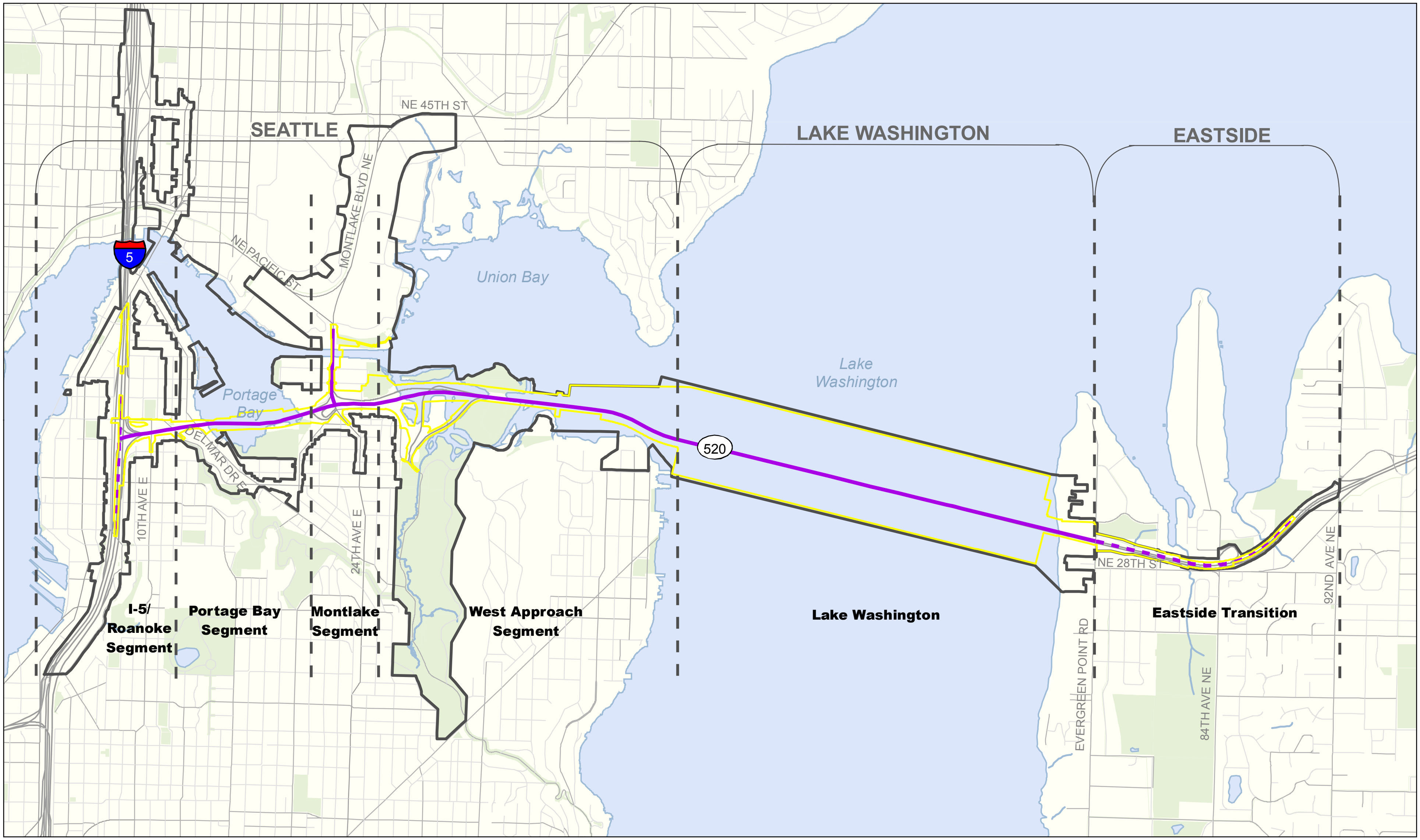
Project Description

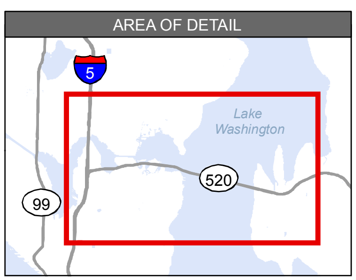
The project is part of the SR 520 Bridge Replacement and HOV Program (SR 520 Program). The project encompasses parts of three study areas—Seattle, Lake Washington, and the Eastside. Within these study areas, project elements are described by their location within smaller geographic segments across the SR 520 corridor. Project limits for this project extend from I-5 in Seattle to 92nd Avenue NE in Yarrow Point, where it transitions into the SR 520, Medina to SR 202: Eastside Transit and HOV Project (the "SR 520, Medina to SR 202 project"). Exhibit 1-1 shows the APE with the project study areas and the geographic segments.

The *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Supplemental Draft Environmental Impact Statement* (SDEIS), published in January 2010 (WSDOT 2010a; see Attachment 10 to the Final Environmental Impact Statement [EIS]), evaluated a 6-Lane Alternative with three design options (Options A, K, and L) for the Seattle portion of the SR 520 corridor and a No Build Alternative. Since the SDEIS was published, WSDOT and FHWA announced a Preferred Alternative for the project. All components of the Preferred Alternative were evaluated in the SDEIS, and the design of the SR 520 corridor has been further refined in response to comments received during public review of the SDEIS. This report presents the inventory and evaluation of properties within the APE and an analysis of the Preferred Alternative effects on historic properties.

No Build Alternative

Under the No Build Alternative, SR 520 would continue to operate as it does today between I-5 and Medina—a 4-lane highway with nonstandard shoulders and without a bicycle/pedestrian path. Exhibit 1-2 depicts a cross section of the No Build Alternative. No new facilities would be added to SR 520 between I-5 and Medina, and none would be removed, including the unused R.H. Thomson Expressway ramps near the Washington Park Arboretum (Arboretum). WSDOT would continue to manage traffic using its existing transportation demand management and intelligent transportation system strategies.





Limits of Construction
Area of Potential Effects
Project Extent
Limited Improvement
Stream
Park

N
0 1,000 2,000 4,000 Feet

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 1-1. **Area of Potential Effects and Project Study Areas with Geographic Segments**
SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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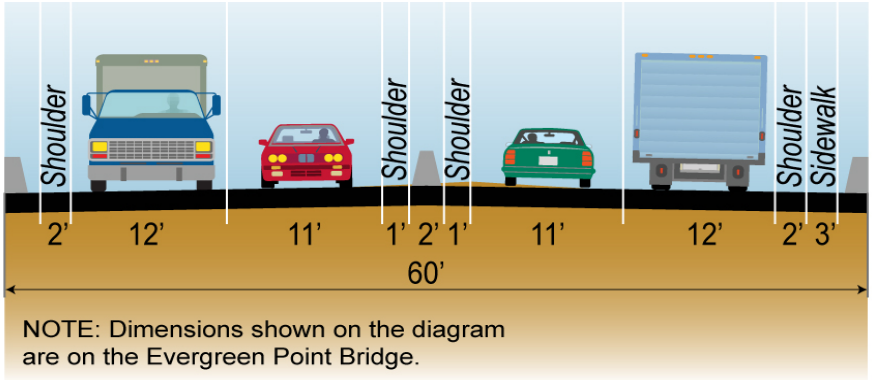

Exhibit 1-2. No Build Alternative Cross Section

The No Build Alternative assumes that the Portage Bay and Evergreen Point bridges would remain standing and functional through 2030 and that no catastrophic events, such as earthquakes or extreme storms, would cause major damage to the bridges. The No Build Alternative also assumes completion of the SR 520, Medina to SR 202 project as well as other regionally planned and programmed transportation projects. The No Build Alternative provides a baseline against which project analysts can measure and compare the effects of the Preferred Alternative.

Preferred Alternative

The Preferred Alternative would widen the SR 520 corridor to six lanes from I-5 in Seattle to Evergreen Point Road in Medina and would restripe and reconfigure the lanes in the corridor from Evergreen Point Road to 92nd Avenue NE in Yarrow Point. It would replace the vulnerable Evergreen Point Bridge (including the west and east approaches) and Portage Bay Bridge, as well as the existing local street bridges across SR 520. The Preferred Alternative would complete the regional HOV lane system across SR 520, as called for in regional and local transportation plans. New stormwater facilities would be constructed for the project to provide stormwater treatment.

The new SR 520 corridor would be six lanes wide (two 11-foot-wide outer general-purpose lanes and one 12-foot-wide inside HOV lane in each direction), with 4-foot-wide inside shoulders and 10 foot-wide outside shoulders across the floating bridge. In response to community interests expressed during public review of the SDEIS, the SR 520 corridor between I-5 and the Montlake area would operate as a boulevard or parkway with median plantings and a posted speed limit of 45 miles per hour. To support the boulevard concept, the width of the inside shoulders in this section of SR 520 would be narrowed from

4 feet to 2 feet, and the width of the outside shoulders would be reduced from 10 feet to 8 feet.

The Preferred Alternative would include design elements that would also provide noise reduction such as reduced speed limits between I-5 and the Montlake area, 4-foot concrete traffic barriers, noise-absorptive material on the inside of the traffic barriers and around the lid portals, and encapsulated bridge joints. The Preferred Alternative, like the SDEIS options, would also include quieter concrete pavement along the main line between I-5 and the floating bridge. Traffic noise modeling completed for the Final EIS resulted in fewer recommended noise walls for the Preferred Alternative than for the SDEIS options. Noise walls would meet all FHWA and WSDOT requirements for avoidance and minimization of negative noise effects. In areas where noise walls are warranted, they would only be constructed if approved by the affected communities.

As previously noted, the description of the Preferred Alternative is organized by three study areas along the project corridor: Seattle, Lake Washington, and Eastside. Within the larger area Seattle study area, project elements are described by geographic segment: I-5/Roanoke, Portage Bay, Montlake, and West Approach. The elements of the Preferred Alternative are summarized in Exhibit 1-3 by study area and geographic segment.

Exhibit 1-3. Summary of Preferred Alternative by Study Area and Geographic Segment

Study Area	Geographic Segment	Preferred Alternative Design Elements
Seattle	I-5/Roanoke	The SR 520 and I-5 interchange ramps would be reconstructed with generally the same ramp configuration as the ramps for the existing interchange. A new reversible transit/HOV ramp would connect with the I-5 express lanes.
	Portage Bay	The Portage Bay Bridge would be replaced with a wider and, in some locations, higher structure with six travel lanes and a 10-foot-wide westbound managed shoulder.
	Montlake	The Montlake interchange would remain in a similar location as today. A new bascule bridge would be constructed over the Montlake Cut. A 1,400-foot-long lid would be constructed between Montlake Boulevard and the Lake Washington shoreline, and would include direct-access ramps to and from the Eastside. Access would be provided to Lake Washington Boulevard via a new intersection at 24th Avenue East.

Exhibit 1-3. Summary of Preferred Alternative by Study Area and Geographic Segment

Study Area	Geographic Segment	Preferred Alternative Design Elements
	West Approach	The west approach bridge would be replaced with wider and higher structures, maintaining a constant profile rising from the shoreline at Montlake out to the west transition span. Bridge structures would be compatible with potential future light rail construction through the corridor.
Lake Washington		A new floating span would be located approximately 190 feet north of the existing bridge at the west end and 160 feet north of the existing bridge at the east end. The floating bridge would be approximately 20 feet above the water surface (about 10 to 12 feet higher than the existing bridge deck).
Eastside Transition		A new east approach for the floating bridge and a new SR 520 roadway would be constructed between the floating bridge and Evergreen Point Road.

Seattle Study Area

I-5/Roanoke Segment

SR 520 would connect to I-5 in a configuration similar to the way it connects today. Improvements to the I-5/SR 520 interchange would include a new reversible HOV ramp connecting the new SR 520 HOV lanes to existing I-5 reversible express lanes, shown in Exhibit 1-4. The new reversible HOV ramp would reduce the number of I-5 express lanes from four to three between SR 520 and 42nd Street NE. The project would include an enhanced bicycle/pedestrian crossing adjacent to the East Roanoke Street bridge over I-5, and a landscaped lid across SR 520 at 10th Avenue East and Delmar Drive East to help reconnect the communities on either side of the roadway.

Portage Bay Segment

The new Portage Bay Bridge design under the Preferred Alternative would have two general-purpose lanes and an HOV lane in each direction, plus a managed westbound shoulder. In response to community interest and public comment on the SDEIS, the width of the new Portage Bay Bridge at the midpoint has been reduced from previous designs, and a planted median would separate the westbound and eastbound travel lanes. The Preferred Alternative design of the Portage Bay Bridge would operate as a boulevard with a speed limit of 45 miles per hour (mph).

- Column
- Lid
- Proposed Bicycle/ Pedestrian Path
- Stormwater Treatment Facility
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Westbound Managed Shoulder
- Park

N

0 125 250 500 Feet

Exhibit 1-4. **Preferred Alternative from I-5/Roanoke to Portage Bay**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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Montlake Segment

Under the Preferred Alternative, the SR 520 interchange with Montlake Boulevard would be similar to today's interchange, connecting to the University District via Montlake Boulevard and the Montlake bascule bridge (Exhibit 1-5). A new bascule bridge would be added to Montlake Boulevard NE, parallel to and east of the existing bridge, and Montlake Boulevard would be restriped and reconfigured between SR 520 and the Montlake Cut to include two general-purpose lanes and one HOV lane for improved transit connectivity.

A large new lid would be provided over SR 520 in the Montlake area, configured for transit and bicycle/pedestrian connectivity, and designed to reconnect communities on either side of SR 520. The lid would function as a vehicle crossing for eastbound SR 520 traffic exiting to Montlake Boulevard and Lake Washington Boulevard. The lid would also serve as a pedestrian crossing, a landscaped area, and an open space. The Lake Washington Boulevard ramps and the Montlake Freeway Transit Station would be removed. Most transfers that currently take place at the freeway station would occur at the new multimodal transit station at Montlake Boulevard and NE Pacific Street.

West Approach Segment

The SR 520 roadway would maintain a constant-slope profile rising from the east portal of the new Montlake lid, through Union Bay, across Foster Island, out to the west transition span of the Evergreen Point Bridge. This profile is slightly steeper than previous designs considered for the west approach structure for improved stormwater management.

The bridge design for the Preferred Alternative as it crosses Foster Island has been refined from previous conceptual designs to address concerns raised during tribal consultations. The new bridge across Foster Island would have a higher profile than previous designs, and has been engineered to use the fewest number of columns possible to minimize the amount of ground disturbance on the island. In contrast to existing conditions, the new SR 520 bridge over Foster Island would reconnect the north and south sides of the island. Construction activities would include building a construction work bridge on the island that would be removed after the permanent structure has been completed.

Lake Washington Study Area

The floating span would be located approximately 190 feet north of the existing bridge at the west end and 160 feet north at the east end. The new floating bridge would be supported by 21 longitudinal pontoons, 2 cross pontoons, and 54 supplemental stability pontoons. The longitudinal pontoons would not be sized to carry future high-capacity transit, but would be equipped with connections for additional supplemental stability pontoons to support high-capacity transit in the future.

The new bridge would have two 11-foot-wide general-purpose lanes in each direction, one 12-foot-wide HOV lane in each direction, 4-foot-wide inside shoulders, and 10-foot-wide outside shoulders. As a result of comments on the SDEIS, the height of the bridge deck above the water has been lowered from previous designs to reduce visual effects. At midspan, the floating bridge would now rise approximately 20 feet above the water, about 10 feet higher than the existing bridge deck. At each end of the floating bridge, the roadway would be supported by rows of concrete columns. The remainder of the roadway across the pontoons would be supported by steel trusses. Exhibit 1-6 shows the alignment, cross section, and profile of the new floating bridge.

Routine access, maintenance, monitoring, inspections, and emergency response for the floating bridge would be based out of a new bridge maintenance facility located underneath SR 520 between the east shore of Lake Washington and Evergreen Point Road in Medina. This bridge maintenance facility would include a working dock, an approximately 7,200-square-foot maintenance building, and a parking area.

Eastside Transition Study Area

The SR 520, I-5 to Medina project and the SR 520, Medina to SR 202 project overlap between Evergreen Point Road and 92nd Avenue NE in Yarrow Point. Work planned as part of the SR 520, I-5 to Medina project between Evergreen Point Road and 92nd Avenue NE would include moving the Evergreen Point Road transit stop west to the lid (part of the SR 520, Medina to SR 202 project) at Evergreen Point Road, adding new lane and ramp striping from the Evergreen Point lid to 92nd Avenue NE, and moving and realigning traffic barriers as a result of the new lane striping. The restriping would transition the SR 520, I-5 to Medina project improvements into the improvements to be completed as part of the SR 520, Medina to SR 202 project, shown in Exhibit 1-7.

Pontoon Production Sites

WSDOT has completed planning and permitting a new facility in Aberdeen, Washington, that would build and store the 33 pontoons needed to replace the existing capacity of the floating portion of the Evergreen Point Bridge in the event of a catastrophic failure. If the bridge does not fail before its planned replacement, WSDOT would use the 33 pontoons constructed and stored as part of the SR 520 Pontoon Construction Project in the SR 520, I-5 to Medina project.

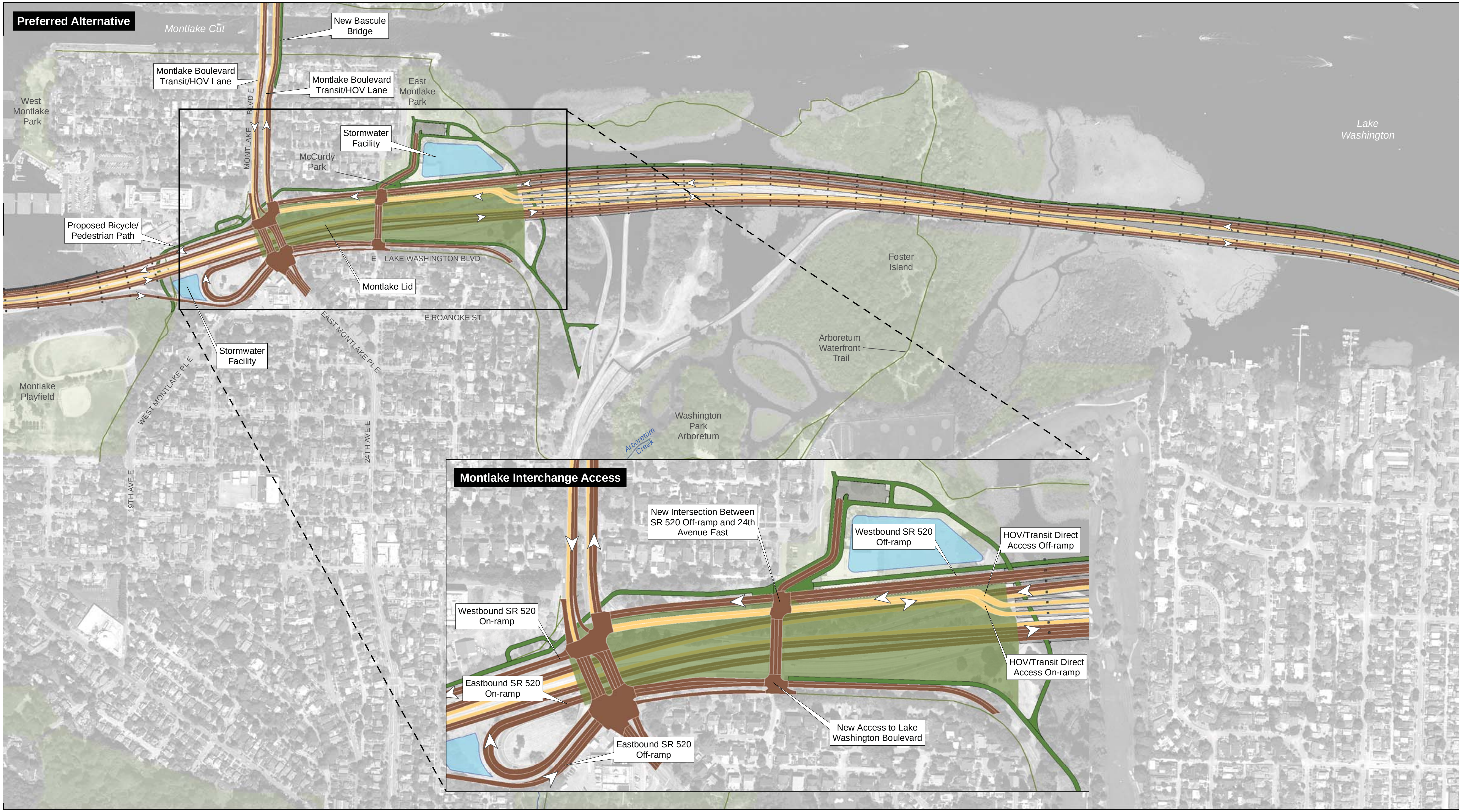
An additional 44 pontoons would be needed to complete the new six-lane floating bridge planned for the SR 520, I-5 to Medina project. The additional pontoons would be constructed as part of this project at the Concrete Technology Corporation (CTC) casting basin in the Port of Tacoma, and, if available, at the new pontoon construction facility located on the shores of Grays Harbor in Aberdeen. Final pontoon construction locations will be identified at the discretion of the contractor.

As part of the SR 520, I-5 to Medina project, the pontoons built and stored in Grays Harbor would be towed from a moorage location in Grays Harbor to Puget Sound for outfitting, or would be towed directly to Lake Washington for incorporation into the floating bridge. The additional 44 pontoons would be towed either to an outfitting location in Puget Sound, or to Lake Washington for incorporation into the floating bridge.

Section 6(f) Replacement Properties

Under the Preferred Alternative, selected properties that are protected under Section 6(f) of the Land and Water Conservation Fund (LWCF) Act would be converted from public outdoor recreation land to transportation right-of-way. This includes a portion of Foster Island, a portion of the Arboretum, and a portion of East Montlake Park and the Ship Canal Waterside Trail, both of which are within the Montlake Historic District.

Four historic properties were identified on sites that were considered for replacement property to fulfill the requirements of Section 6(f): the Bryant Building site at 1139-1299 NE Boat Street in the Seattle Study Area, and 10034 Rainier Avenue, 10036 Rainier Avenue, and 10038 Rainier Avenue in the Lake Washington study area. This undertaking identified and evaluated those historic properties to help inform the



AREA OF DETAIL

- Column
- Existing Regional Bicycle/Pedestrian Path
- Lid
- Proposed Bicycle/Pedestrian Path
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Westbound Managed Shoulder
- Park
- Stormwater Treatment Facility

Source: King County (2006) Aerial Photo, King County (2005) GIS Data (Stream), CH2M HILL (2008) GIS Data (Park). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 1-5. **Preferred Alternative from Portage Bay to Lake Washington**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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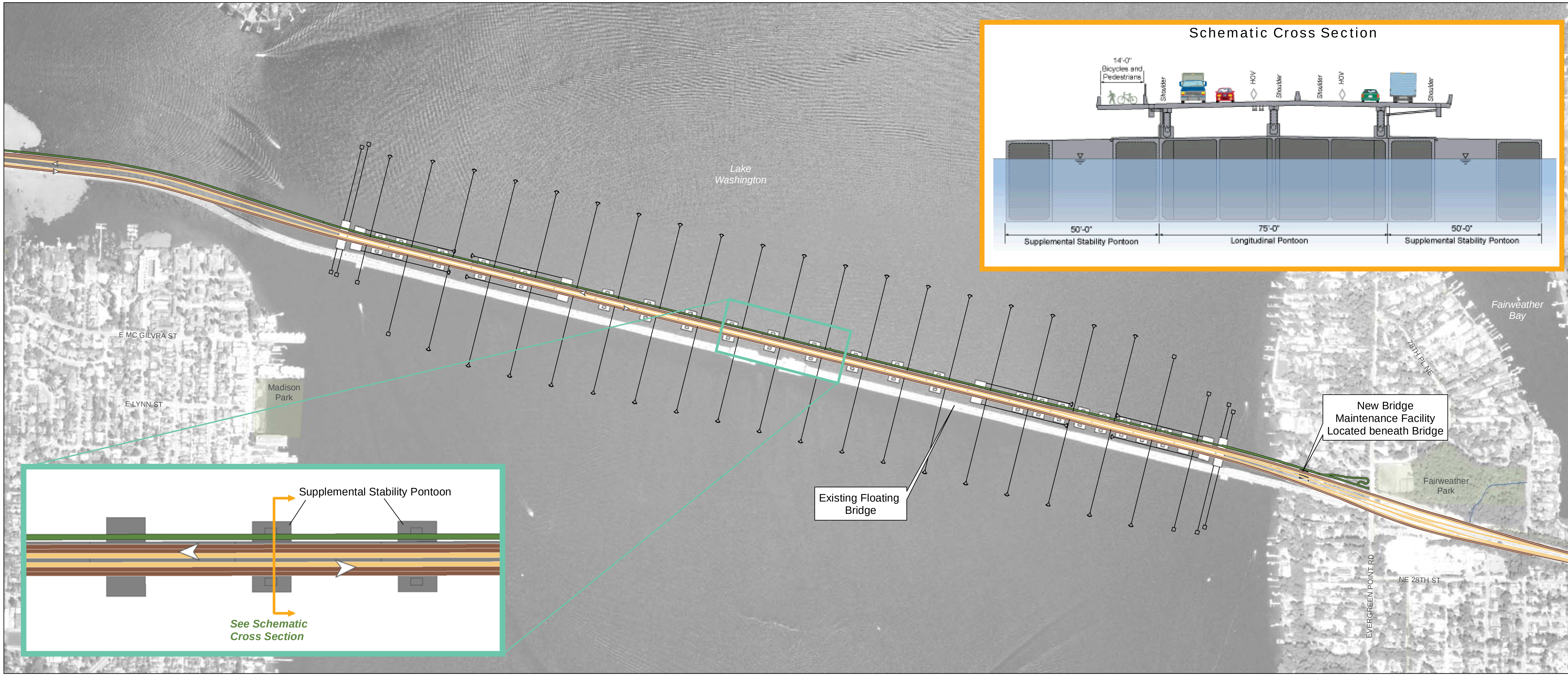

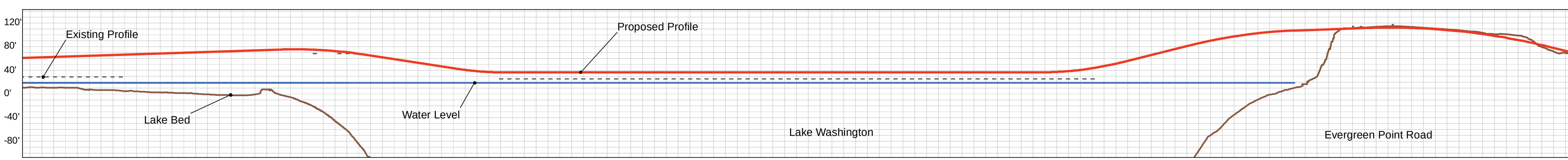

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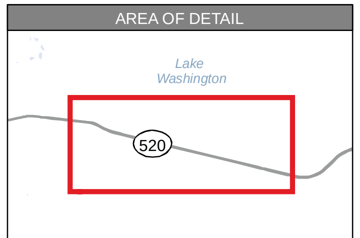

- Anchor and Cable
- Pontoons
- Proposed Bicycle/Pedestrian Path
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Park

N

0 500 1,000 2,000 Feet

Source: King County (2006) Aerial Photo, CH2M HILL (2008) GIS Data (Park). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 1-6. **Preferred Alternative in the Lake Washington Study Area**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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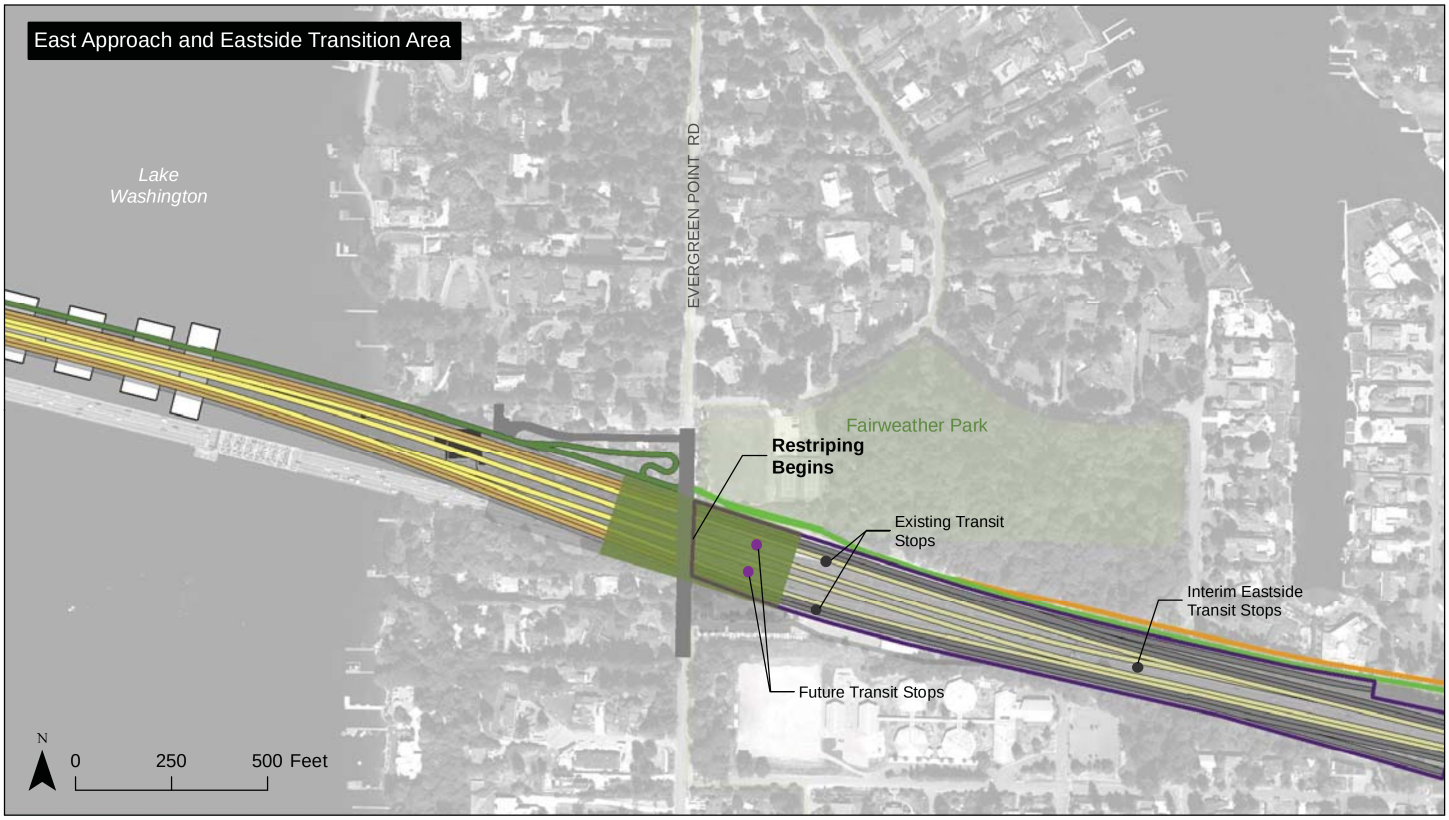

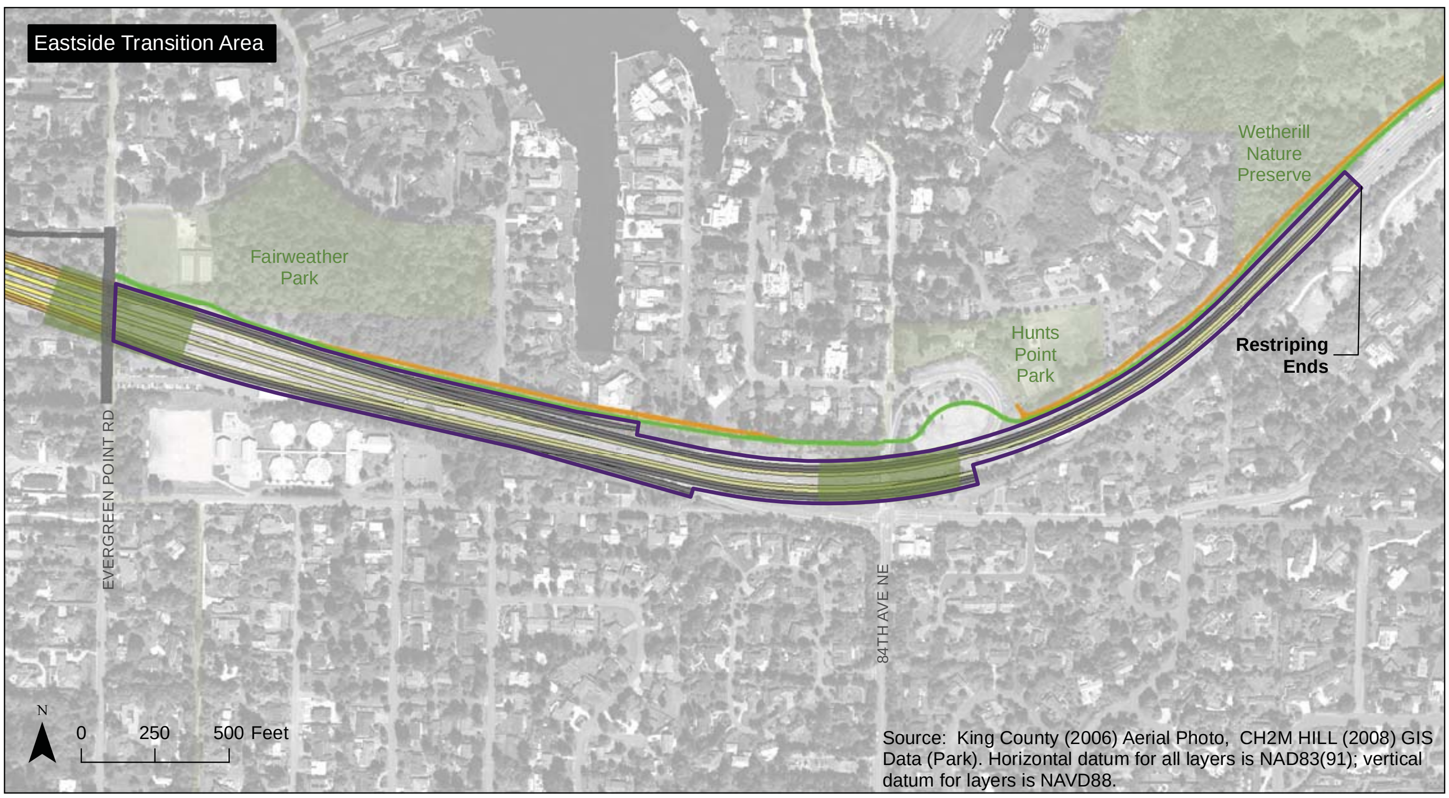

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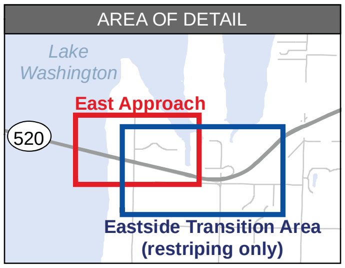


I-5 to Medina Project Elements

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Proposed bicycle/Pedestrian Path
- Pavement
- Restriping Area

Medina to SR 202 Project Elements

- General-Purpose Lane
- HOV Lane
- Local Road Improvement
- Eastside Project Lid

- Bike Path
- Points Loop Trail

Exhibit 1-7. **Preferred Alternative in the Eastside Transition Study Area**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

\\JAFAR\PROJ\PARAMETRIX_400707\MAPFILES\WESTSIDE\DR\CULTURALRESOURCES\WS_DR_CR_EASTSIDE.MXD RGRABAREK 5/7/2011 7:02:42 PM decision by the Section 6(f) grantees—the University of Washington and the City of Seattle—as to which sites they would select to serve as replacement properties for park and recreation use.

At the time of publication of this Cultural Resources Assessment Discipline Report, the Section 6(f) replacement site selected by the University of Washington and the City of Seattle is the Bryant Building site, a multi-component warehouse and commercial building with several docks. The site that contains three historic properties located on Rainier Avenue was not chosen as the Section 6(f) replacement property and would be unaffected by the project.

Regulatory Context

Federal, state, and local regulations recognize the public's interest in cultural resources and the public benefit of preserving them. These laws and regulations require analysts to consider how a project might affect cultural resources and take steps to avoid or reduce potential damage to them. A cultural resource can be considered to be any property valued by a group of people (be it monetary, aesthetic, religious, or other value). Valued properties can be historical in character or date to the prehistoric past (the time prior to written records).

The SR 520, I-5 to Medina project involves federal funding and permits; therefore, this project is required to satisfy requirements established under the National Environmental Policy Act (NEPA) (United States Code Title 42, Chapters 4321 through 4347 [42 U.S.C. 4321-4347]) and Section 106 of the NHPA of 1966, as amended [16 U.S.C. 470 et seq.]). The NHPA is the primary mandate governing projects under federal jurisdiction that might affect cultural resources.

Federal Regulations

National Historic Preservation Act

Section 106 of the NHPA requires federal agencies to consider the effects of actions they fund or approve on any district, site, building, structure, or object that is listed in or eligible for listing in the National Register of Historic Places (NRHP). Per 36 Code of Federal Regulations (CFR) 800.16(l)(1), a historic property is any "historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP."

The regulations implementing Section 106 are codified at 36 CFR 800. The Section 106 review process involves four steps:

- Initiate the Section 106 process by establishing the undertaking, developing a plan for public involvement, and identifying other consulting parties.
- Identify cultural resources within an APE, and evaluate their eligibility for inclusion in the NRHP.
- Assess adverse effects by applying the criteria of adverse effect on historic properties.
- Resolve adverse effects by consulting with the SHPO and other agencies and consulting parties, including the Advisory Council on Historic Preservation (ACHP), if necessary, to develop an agreement that addresses the treatment of historic properties.

To determine whether an undertaking could affect historic properties, cultural resources (including archaeological, historic, and traditional cultural properties [TCPs]) must be inventoried and evaluated for eligibility for listing in the NRHP.

Section 4(f) of the Department of Transportation Act

For transportation-related projects, Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303) and its implementing regulations (23 CFR 774) is another federal regulation that protects historic properties. Section 4(f) resources include any significant publicly owned park, recreation area, or wildlife refuge, or any publicly or privately owned historic property listed in, or eligible for listing in, the NRHP. Section 4(f) applies to all projects that require approval by an agency of the U.S. Department of Transportation, including FHWA. For more information on Section 4(f), see the Final Section 4(f) Evaluation in Chapter 9 of the Final EIS.

National Environmental Policy Act

NEPA requires that all major actions sponsored, funded, permitted, or approved by federal agencies (generally referred to as federal undertakings) undergo planning to ensure that environmental considerations, such as effects on cultural resources, are given due weight in decision-making. The federal implementing regulations for NEPA are in 40 CFR Part 1500 through 1508 (40 CFR 1500-1508; Council on Environmental Quality), and for FHWA actions, 23 CFR 771. The Council on Environmental Quality regulations include sections on urban quality, historic and cultural resources, and the design of the built environment (40 CFR 1502.16(g)).

State Regulations

State Environmental Policy Act

Washington's State Environmental Policy Act (SEPA) requires that all major actions sponsored, funded, permitted, or approved by state and/or local agencies be planned so that environmental considerations—such as effects on historic and cultural resources—are considered when state agency-enabled projects affect properties of historical, archaeological, scientific, or cultural importance (Washington Administrative Code, Title 197, Chapter 11, Section 960); these regulations closely resemble NEPA. Similar to NEPA, SEPA considers cultural resources to be properties listed in or eligible for the Washington Heritage Register (WHR), which is the state equivalent of the NRHP and sets forth similar criteria for evaluating cultural resources. The WHR, which is administered by the Department of Archaeology and Historic Preservation (DAHP), identifies and records significant historic and prehistoric resources at the state level. A property that is listed in the NRHP is also listed in the WHR.

In the State of Washington, DAHP is the department for the SHPO. Both terms (DAHP and SHPO) are used in this report to refer to the office with which WSDOT consulted.

Local Regulations

The Seattle Landmarks Preservation Board may designate historic properties within the Seattle city limits as local landmarks or landmark districts. Once Seattle landmarks or landmark districts are designated by a City ordinance and approved by the Seattle City Council, they are protected under a Controls and Incentives Agreement from demolition and unsympathetic changes. Certificates of Approval are necessary to permit specific changes to the landmark building or within the district. The steps necessary to permit demolition of a designated landmark are detailed in Seattle Municipal Code 25.12.835. The eligibility of properties noted as "eligible Seattle landmarks" in this report is based on professional judgment of their potential eligibility; they are not officially designated.

City regulations support and relate to SEPA as detailed in Seattle Municipal Code 25.05. For projects involving structures or sites that have been designated as historic landmarks, compliance with the

Landmarks Preservation Ordinance is required. For projects involving structures or sites that are not yet designated as historic landmarks but appear to meet the criteria for designation, the site or structure may be referred to the Seattle Landmarks Preservation Board for consideration. If the Board approves the site or structure for nomination as a historic landmark, consideration of the site or structure for designation as a historic landmark and application of controls and incentives would proceed as provided by the Landmarks Preservation Ordinance. If the property is rejected for nomination, the project would not be conditioned or denied for historic preservation reasons.

When a project is proposed adjacent to or across the street from a designated site or structure, the proposal must be referred to the City's Historic Preservation Officer for an assessment of adverse effects on the designated landmark and for comments on possible mitigating measures. Mitigation may be required to ensure the compatibility of the project with the designated landmark and to reduce effects on the character of the landmark's site. For sites with potential archaeological significance, an assessment of the archaeological potential of the site may be required.

Unlike the City of Seattle, the City of Medina has no specific historic property or landmarks regulation or recognition.

Consultation

WSDOT initiated formal consultation with the SHPO under Section 106 of the NHPA in December 2008 for the SR 520, I-5 to Medina project. Consultation with interested and affected parties is an essential and critical aspect of the Section 106 process. Because of the size and scope of the project, as well as the historic and cultural significance of many resources in the APE, WSDOT contacted, or was contacted by, several groups who were invited to participate as Section 106 consulting parties, per provisions in 36 CFR 800.2(c)(5)(d)(i).

WSDOT consulted with the SHPO, interested tribes, and other consulting parties to develop the project APE. WSDOT conducted outreach and held regular briefings with the SHPO and area tribes between 2008 and the present. Interested tribes were formally invited to participate in the NEPA process and Section 106 consultation in 2009. WSDOT sent letters of request to the following area tribes to initiate government to government consultation:

- Muckleshoot Indian Tribe
- Suquamish Tribe
- Snoqualmie Tribe
- Tulalip Tribes
- Yakama Nation

The Puyallup and Nisqually tribes were invited to participate in Section 106 consultation in August 2010. However, the Puyallup Tribe of Indians deferred to the tribes mentioned above with regard to the Foster Island TCP; the Nisqually Indian Tribe was informed about the project. Both tribes will be consulted as required if future design or construction decisions indicate that the undertaking will affect areas of significance for these tribes.

Due to the size and scope of the project, as well as the historic and cultural significance of many resources within the APE, WSDOT invited numerous non-tribal groups to participate as Section 106 consulting parties. The majority of these parties were invited to participate in Section 106 consultation on March 2, 2009.

The Section 106 consulting parties (non-tribal) include the following:

- DAHP
- City of Seattle Department of Neighborhoods, Historic Preservation Program
- King County Historic Preservation Office
- University of Washington (UW)
- National Oceanic and Atmospheric Administration (NOAA) Northwest Fisheries Science Center
- Washington Trust for Historic Preservation
- Historic Seattle
- Friends of Seattle's Olmsted Parks
- Washington Park Arboretum Foundation
- Portage Bay/Roanoke Park Community Council
- Montlake Community Club
- Concerned Citizens of Montlake—SR 520

- North Capitol Hill Neighborhood Association
- Seattle Yacht Club
- Documentation and Conservation of the Modern Movement; Western Washington (DOCOMOMO WEWA)
- Historic Bridge Foundation
- Eastlake Community Council
- Shelby-Hamlin Residents
- Madison Park Community Council

WSDOT invited consulting parties to participate in project and Section 106 briefings on May 28, June 4, October 20, and October 21, 2009. These meetings focused on the Section 106 process, the APE, determinations of NRHP eligibility for resources located in the APE, and early discussions of potential effects on historic properties. Individual meetings with the consulting parties were also held in 2009 and early 2010, as requested. This time period coincided with the publication of the SDEIS (WSDOT 2010a; see Attachment 10 to the Final EIS), and some consulting parties provided written comments during the NEPA public comment period. Additionally, WSDOT invited the ACHP to participate in the Section 106 process in May 2010. In June 2010, the ACHP accepted the invitation to participate.

The consulting parties actively participated and contributed valuable input to the determination of the APE, identification of historic properties, and assessment of effects. They also participated in the development of the Section 106 Programmatic Agreement (see Attachment 9 to the Final EIS), which identifies measures for avoiding, minimizing, and mitigating the Preferred Alternative's adverse effect on historic properties.

In June 2010, WSDOT retained the services of SRI Foundation to act as liaison between the project team and the consulting parties and facilitate better understanding of the issues regarding the Preferred Alternative's potential effects on historic properties. SRI Foundation developed a consultation plan and carried out the following steps:

- June 2010: Conducted an introductory meeting with all consulting parties to introduce them to the SRI Foundation consultants and provide an overview of the Section 106 process.

- July 2010: Met with consulting parties to introduce and describe the Preferred Alternative and answer questions about potential temporary and permanent effects.
- July-August 2010: Collected comments from consulting parties about potential project effects.
- September 2010: Brainstormed with consulting parties on measures to resolve adverse effects.
- November-December 2010: Continued conversations about resolving adverse effects.
- January 10, 2011: Sent a first draft of the Programmatic Agreement to consulting parties for their review and comment.
- January 25, 2011: Met with consulting parties to further discuss the Section 106 consultation process, and to answer questions pertaining to the first draft of the Programmatic Agreement.
- February 2011: Collected comments from the consulting parties on the first draft of the Programmatic Agreement.
- March 16, 2011: Sent a second draft of the Programmatic Agreement to consulting parties for their review and comment.
- March 22, 2011: Met with consulting parties to discuss implementation of the commitments contained within the Programmatic Agreement, review development of the Community Construction Management Plan (CCMP), and answer questions pertaining to the second draft of the Programmatic Agreement.
- April 2011: Collected comments from the consulting parties on the second draft of the Programmatic Agreement.
- May, 2011: Sent the final Programmatic Agreement to consulting parties for their review and signature.
- May-June 2011: Consulting parties concurred with the project's final Section 106 Programmatic Agreement.

Consultations will continue throughout design and construction of the project in accordance with the stipulations and commitments in the Programmatic Agreement, the Archaeological Treatment Plan, and the Foster Island Treatment Plan. All required signatories to the Programmatic Agreement will the sign the agreement prior to issuance of the Record of Decision.

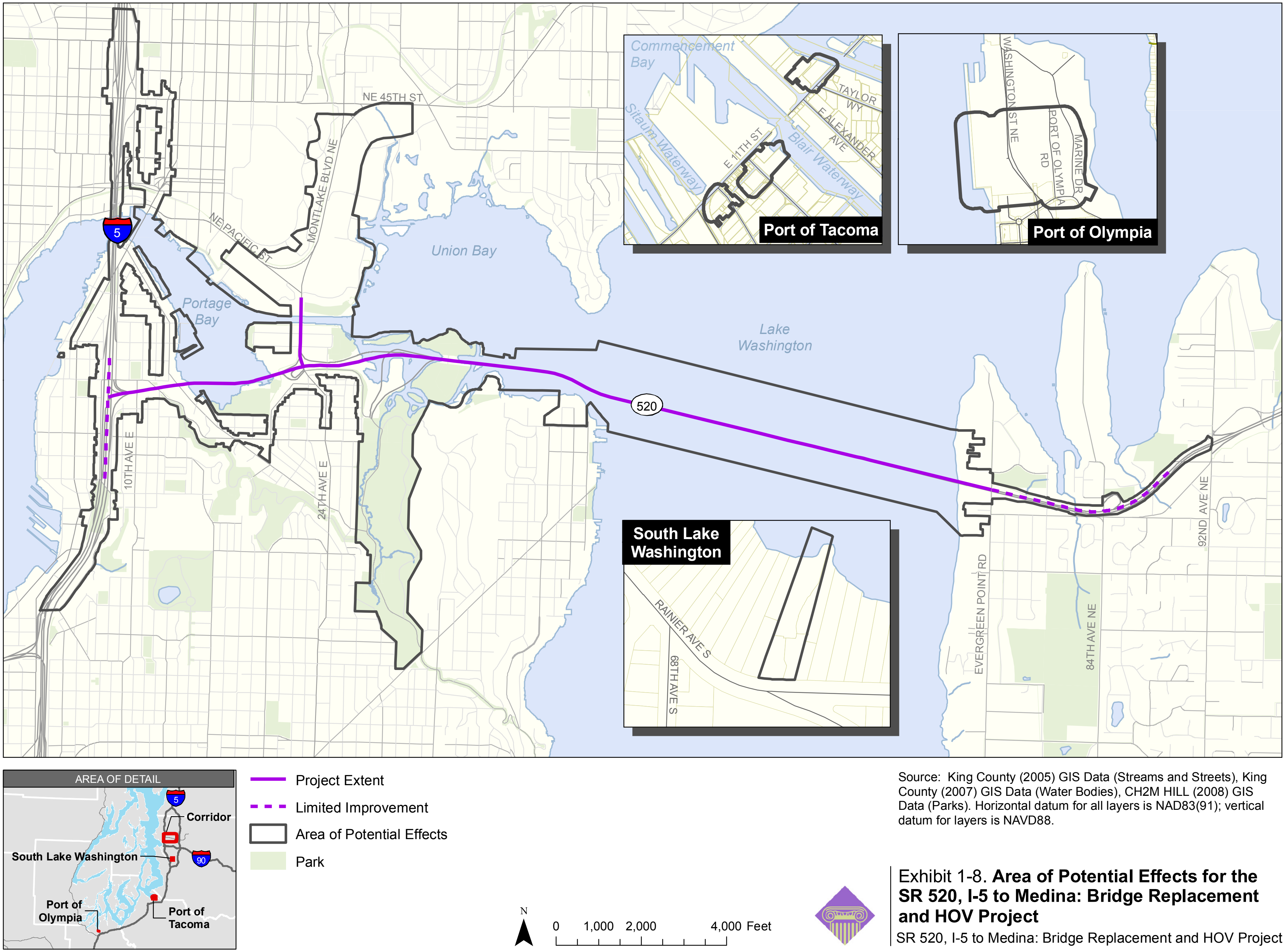
Area of Potential Effects

The APE is defined as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties (i.e., archaeological sites, TCPs, and/or built environment resources listed or eligible for listing in the NRHP). The APE for the SR 520, I-5 to Medina project evolved over time and at each stage, the SHPO and the consulting parties were notified and invited to comment. The opening consultation with DAHP included a request for a review of the initial APE; DAHP agreed with the initial APE on April 16, 2009. Comments from the consulting parties were received and taken into consideration. The APE was amended to accommodate these concerns and WSDOT formally requested DAHP's review of the revisions to the APE in July 2009 and June 2010. DAHP agreed with the revisions in August 2009 and June 2010, respectively. In August 2010, the APE was expanded to include the potential Section 6(f) mitigation sites and the Port of Olympia and Port of Tacoma sites, which are not contiguous with the rest of the APE. The SHPO responded to this revised APE on August 17, 2010, with no additional comments. The APE was expanded a final time in early 2011 to include the barge anchoring location. Concurrence from the SHPO on the revised APE was received on January 31, 2011.

The project APE (see Exhibit 1-8) consists of four footprints:

- The known or anticipated construction footprint (referred to as the limits of construction), which includes staging and laydown areas.
- A buffer area (one property deep or 200 to 300 feet from the limits of construction, as appropriate), which includes sufficient area to encompass historic structures, commercial buildings and residences, historic districts, and public facilities (including parks and bridges) that might be directly or indirectly affected by demolition, change of land use, noise, dust, vibration, degraded visual quality, or other effects.
- Additional areas outside the construction footprint, determined through consultation, such as the entire Roanoke Park Historic District, the Arboretum,[2] identified potential construction haul

[2] A small, noncontiguous portion of the Arboretum, east of the main park and southeast of Foster Island, is not included in the APE.



Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 1-8. **Area of Potential Effects for the SR 520, I-5 to Medina: Bridge Replacement and HOV Project**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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routes, potential Section 6(f) replacement sites, and all the navigable waters of Portage Bay.

- Additional sites at the Port of Olympia and the Port of Tacoma that were considered for pontoon construction and staging and that are not contiguous with the rest of the APE.

The limits of construction define the area within which potential archaeological deposits could be affected. This boundary includes all potential vertical and horizontal ground disturbance associated with the project.

Archaeological Resources

WSDOT has assisted FHWA with previous consultations in the project area, beginning with the Trans-Lake Washington Study and continuing through the Draft EIS (WSDOT 2006a; see Attachment 12 to the Final EIS). In 2005, WSDOT retained BOAS, Inc. (BOAS) to conduct cultural resources investigations in the APE. BOAS conducted an extensive inventory of the APE, which included ethnographic research, subsurface investigations, and a geomorphological assessment. Additional studies have been conducted in peripheral support of the Section 106 process, including the use of ground-penetrating radar (GPR), geomorphological and historic map analysis of the historic shoreline, and conducting ethnographic research and subsequent archaeological studies in response to the redesign and alteration of project alternatives and the limits of construction. In 2010, WSDOT retained ICF International (ICF) to prepare the Section 106 Technical Report (Elder et al. 2011; Gray et al. 2011), which presented the methods used to inventory, evaluate, and assess the project's effect on historic properties, synthesized results of the numerous investigations conducted within the APE, and discussed recommendations for additional investigations. This Cultural Resources Assessment Discipline Report was adapted from that technical report, which was submitted to the SHPO in January 2011.

The archaeological investigations for the SR 520, I-5 to Medina project focused primarily on the boundary defined for the limits of construction (Exhibit 1-8). This boundary includes potential vertical and horizontal ground disturbance associated with the project. The vertical extent of the limits of construction are from the level of existing ground surface to 120 feet below ground surface, which allows for the maximum extent of potential subsurface ground disturbance. Depths of the proposed ground disturbance will vary depending on the proposed activity. Project activities include the following categories:

- Surface Improvements: repaving and restriping (limited to the surface)
- Facilities: stormwater facilities, detention pond, bioswales, maintenance building (maximum depth 40 feet below surface)
- Roadway Excavation/Earthwork: retaining walls and roadway excavation (maximum depth 30 feet below surface)
- Shaft Excavation: specific to overcrossings and temporary work bridge piles (maximum depth 100 feet below surface)
- Pile-Driving: associated with piers and temporary work bridges (maximum depth 120 feet below surface)

This discipline report summarizes the archaeological investigations conducted as a component of the preconstruction environmental review, in accordance with Section 106 of the NHPA. As a part of this reporting process, ICF archaeologists reviewed all reports, field notes, and data collected by BOAS, the GPR, and geomorphological studies. ICF also conducted supplemental research to determine if additional investigations were needed to adequately assess the project’s effects on historic properties.

Historic Built Environment Resources

The intensive and reconnaissance-level investigation of historic built environment resources in the APE included built environment resources constructed prior to 1972. The results are organized by the three overarching study areas: the Seattle, Lake Washington, and Eastside transition study areas. Within the Seattle study area, there are four approximate geographical segments: I-5/Roanoke, Portage Bay, Montlake, and West Approach. Other study areas include two sites at the Port of Tacoma and the Port of Olympia, initially investigated as possible pontoon production sites, and other locations as potential Section 6(f) replacement sites.

2. Methods

This chapter discusses the methods used to conduct cultural resource investigations of archaeological and historic built environment resources. The expectations for the archaeological sensitivity of the limits of construction within the APE and the potential for archaeological sites to be present are also discussed.

Archaeological investigations were conducted by BOAS in 2006 (Blukis Onat et al. 2007); however, supplemental research has been conducted to build upon the sensitivity assessment and probability model initially established by BOAS. In Volume 1 of the Section 106 Technical Report (Elder et al. 2011), the Probability Areas discussed in this discipline report were identified by number. To protect the exact locations, the numbers have been removed from the summaries in this report, and these locations are presented by project segment. The objective of the historic built environment investigations was to identify previously recorded historic properties located in the APE, as well as to identify additional historic properties in the APE through field survey. This section describes where and how the information was gathered, and how it informs the results of the archival research and field survey. Results of the studies are presented in Chapters 5 and 6.

The research design and survey methods for this project fall into four primary categories: records and archival research, development of the historic context, consultation under Section 106, and built environment resource inventory.

Archaeological Resources

Archaeological Research Design

The following section integrates the expectations previously presented by BOAS with supplemental research to evaluate the potential for archaeological sites and deposits within the limits of construction. ICF archaeologists conducted this supplemental research to help determine the potential for archaeological sites to be located within the limits of construction.

Several methods were used to assess the archaeological sensitivity of the limits of construction to determine where archaeological sites may be located. These methods include the identification of ethnographic place name locations through background research, analysis of the probability model provided by the DAHP, geologic landform analysis, and the use of light detection and ranging (LiDAR) images to identify areas of previous ground disturbance and sediment removal.

Ethnographic Place Name and Resource Procurement Locations

Previous ethnographic research (Miller and Blukis Onat 2004) revealed that Lake Washington and associated shorelines were used extensively by the Lakes Duwamish people in precontact and ethnohistoric times. Additional research (Blukis Onat and Kiers 2007; Blukis Onat et al. 2006) identified several locations within and adjacent to the APE, which had associated Lushootseed place names or areas that would have supported ethnographic resource procurement activities. BOAS (Blukis Onat and Kiers 2007; Blukis Onat et al. 2006) made the implicit assumption that modern locations tied to ethnographic place names and resource exploitation areas would have a high potential to contain archaeological deposits. It is, therefore, expected that these localities, delineated as Probability Areas by BOAS, have a high potential to contain archaeological deposits.

Washington Statewide Archaeology Predictive Model

Subsequent to the identification of ethnographic place name and resource procurement locations, the Washington Statewide Archaeology Predictive Model (WSAPM), maintained by DAHP, was used to determine whether additional areas that were not located within previously defined high probability areas had the potential for archaeological deposits. The WSAPM correlates several environmental datasets (elevation, slope, aspect, distance to water, geology, soils, and landforms) and cultural datasets (archaeological sites recorded with DAHP, archaeological survey locations, General Land Office [GLO] records) to generate predictions about where archaeological resources might be located on the landscape.

Geologic Landform Analysis

To determine the potential for deeply buried archaeological deposits in the APE, local geologic maps were consulted (Booth et al. 2009; Waldron et al. 1962). This analysis revealed that most of the land surface located in the limits of construction was formed during the Pleistocene epoch, as a result of the advance, and subsequent retreat, of glacial ice into the region, a period when there would have been no opportunity for human occupation of the land surface. Because human occupation of the land surface could only occur after the formation of these landforms, the physical remains of these activities would be located at or near the ground surface. If the ground surface has been removed or redeposited, then there is no potential for intact archaeological deposits.

A smaller portion of the land surface within the limits of construction was formed after the advance and retreat of glacial ice in the region. These locations include areas that have been inundated by Lake Washington or are located within stream drainages. Since there is evidence for human occupation of the region since the early Holocene, there is the potential for deeply buried intact archaeological deposits in Holocene-aged sediments. Therefore, any landforms composed of Holocene sediments have the potential to contain intact archaeological sites and deposits.

Analysis of Previous Ground Disturbance

Much of the APE was extensively modified during the excavation of the Montlake Cut, during the construction of SR 520, and by urban development along the SR 520 corridor. Because of this widespread disturbance and the presence of Pleistocene-aged landforms within the limits of construction, an analysis of previous ground disturbance using LiDAR imagery was undertaken. This analysis revealed that much of the SR 520 corridor and Montlake Cut has been subject to extensive sediment removal. Analysis of the paved and constructed areas adjacent to the SR 520 corridor was not possible, since no clear indications of sediment removal were present at the ground surface or on LiDAR maps. It is highly unlikely that archaeological sites or deposits will be discovered on Pleistocene-aged landforms where extensive sediment removal has occurred.

Summary

Based on the analysis above, the following four nested expectations were developed:

- Intact archaeological sites will be located at or near the surface of Pleistocene-aged landforms, and have the potential to be deeply buried below the surface in areas that contain Holocene aged landforms.

- If extensive ground disturbance has occurred on Pleistocene-aged landforms, there is no potential for the discovery of intact archaeological sites.
- If ground disturbance has occurred in Holocene-aged sediments, the potential for intact archaeological sites is not reduced until all Holocene-aged sediments have been removed.
- On all undisturbed Pleistocene landforms and in Holocene sediments, archaeological sites that warrant further investigation may be located in areas with ethnographic place names, in traditional resource processing locations, and/or in areas designated as very high or high probability localities, as defined by the WSAPM model.

When combined, these expectations provide three levels of archaeological potential, which include the following:

- Holocene Landform: Buried archaeological deposits possible
- Pleistocene Landforms: Archaeological deposits possible
- Cut Areas – Pleistocene Landforms: Intact archaeological deposits unlikely

Previous Investigations

Research

BOAS conducted ethnographic, historic, and geological research to define areas in the APE that had a high probability for containing archaeological deposits. These Probability Areas were defined where archaeological investigations should occur within the limits of construction. To define the Probability Areas, BOAS first identified post-glacial landforms that would have been available for use and/or occupation during the Holocene epoch (Blukis Onat at al. 2005). Areas of ethnographic importance, resource procurement areas, and places associated with historic activities were identified on these landforms. An analysis of post-glacial processes and historic landscape modification using historic and geologic research and field reconnaissance (Blukis Onat et al. 2006; Blukis Onat and Kiers 2007) was implemented to determine whether these areas had been extensively modified in the historic or recent past. Once the Probability Areas were defined, polygon and point features of these areas were created using a geographic information system (GIS) computer program.

Research materials were obtained from the City of Seattle Municipal Archives, the Museum of History and Industry (MOHAI), the UW Archives and Special Collections, the UW Map Library, the Miller Library at the Center for Urban Horticulture, the Seattle Public Library, DAHP, and the City of Seattle Solid Waste Department.

Field Survey

BOAS designed and implemented an archaeological field testing program based on the identified Probability Areas (Blukis Onat and Kiers 2007; Blukis Onat et al. 2006, 2007). Between April and October 2006, BOAS conducted archaeological investigations within the proposed limits of construction in the APE. BOAS excavated 81 shovel probes (SPs), 8 trenches, and a 2-by-2 (2x2) meter excavation unit in the APE. Of these probes, 61 were excavated within the current limits of construction and 20 were located within Probability Areas that fall outside of the limits of construction but are located in the APE.

A total of 33 SPs were excavated in the vicinity of the Miller Street Landfill. The 2x2 excavation unit was placed within the boundaries of the landfill in response to the discovery of a human patella in one SP. The excavation unit, referred to by BOAS as the “block excavation unit,” expanded the SP where the human patella was found to evaluate the context and determine the probability for other human remains in the vicinity (Blukis Onat et al. 2007).

From September 26 to September 29, 2006, BOAS conducted backhoe trenching at selected locations in the APE to delineate and characterize the Miller Street Landfill deposit and assess local geomorphology in three Probability Areas in the West Approach segment. Trenching was intended to explore deeply buried deposits to characterize the landfill deposits. No further archaeological investigations were conducted (Blukis Onat et al. 2007).

Shovel Probes

Eighty-one SPs were excavated in the APE. SPs were approximately 40 centimeters in diameter and placed at 20-meter intervals. The probes were excavated by shovel to an average depth of 0.9 meter, although some were terminated because of standing groundwater, severely compacted deposits, or unsafe conditions. A 10-centimeter-diameter bucket auger was used to excavate further in some probes to define the vertical limits of fill in select areas (Blukis Onat et al. 2007). The average depth for augured probes was 1.76 meters, although some reached 3 meters or more below the surface. All sediments were screened through 0.25-inch hardware mesh (Blukis Onat et al. 2007).

Trenches

BOAS excavated eight trenches in the APE. Three trenches were excavated within the boundaries of the Miller Street Landfill. Archaeologists recorded stratigraphy, cultural materials, and evidence of disturbance on standardized forms. The excavation of these trenches proceeded in 1 meter arbitrary intervals. Sediments were not screened, but the archaeological monitors examined the sediments in the back dirt piles adjacent to each trench (Blukis Onat et al. 2007).

Unit Excavation

As noted above, BOAS excavated a 2x2 block excavation unit expanded from the SP where a human patella was found. The block was divided into four 1-by-1 (1x1) meter units, oriented to true north. One unit was the northwest quadrant, one was the northeast, another was the southwest, and the fourth was the southeast. Each unit was excavated and documented separately, but the same level was completed in all four units before the next level was begun. For the initial 80 centimeters below the datum at the southwest corner, excavation proceeded by shovel in 20-centimeter arbitrary levels. Once an 80-centimeter depth was reached, excavation continued in 10-centimeter arbitrary levels as the units approached the depth at which the patella was found. All sub-units were excavated to 1.2 meters below the surface. After 1.2 meters, a 0.5-by-1.0 meter unit was opened in the northern portion of the block. This smaller unit was excavated to 1.5 meters below surface, and an auger was used to reach a depth of 2.5 meters. All sediments were screened through 0.25-inch hardware mesh, and all block excavation was documented with standardized forms for each 10- to 20-centimeter arbitrary level. A field director's log recording all aspects of fieldwork was kept, and digital photographs with an accompanying photo log were maintained to provide additional documentation of the excavation. In addition, stratigraphic profiles of the four block walls were drawn upon completion of the excavation. A monitor for the Snoqualmie Indian Tribe was present during these excavations (Blukis Onat et al. 2007).

Artifact Collection

Artifact collection was conducted for investigations within the Miller Street Landfill. Collection methods varied with the method of excavation. In SP excavations, a few diagnostic artifacts were collected for reference, while the majority were described on the field forms according to vertical provenience and then reburied as the probe was backfilled. Artifacts recovered from the backhoe trenches were grouped by arbitrary 1-meter levels. Only potentially diagnostic artifacts (mostly whole bottles and unique items) were collected. Other cultural materials were noted, photographed, and reburied as the trench was backfilled with the excavated sediment. Most of the artifact descriptions from the SPs and trenches did not include quantities or size, only artifact types.

During the block excavation, potentially diagnostic historic artifacts were collected by unit and level provenience; others were noted, photographed, and reburied as the unit was backfilled with the excavated sediment. The uncollected artifacts were listed and counted on the field forms (Blukis Onat et al. 2007).

Supplemental Research, Investigations, and Analysis

Additional studies conducted in support of the Section 106 process included the use of GPR, geomorphological and historic map analysis of the historic Lake Washington shoreline, ethnographic research, and subsequent archaeological studies in response to redesign of project alternatives and changes to the limits of construction boundaries.

Subsequent to the initiation of the environmental review process for the SR 520 project in 2005, DAHP made the WSAPM available to professional archaeologists. This model prompted the additional research to ensure that all areas within the SR 520, I-5 to Medina project APE having the potential to contain archaeological deposits had been identified. All additional supplemental analysis was conducted to address this concern. Additional research included analyzing the APE using the WSAPM, a geologic landform analysis, an analysis of previous disturbance in the APE, and a review of previous archaeological studies. Brief descriptions of these supplemental investigations and their methods are provided below.

Foster Island Ground-Penetrating Radar Study

The Geophysical Archaeometry Laboratory Inc. conducted a GPR survey of Foster Island in July 2008. Based on the hypothesis that the original island sediments would differ from those that "accumulated as shallow lake bed deposits" and are now exposed above the lower Lake Washington water level, the GPR survey was intended to map sediment changes and identify those that were part of the original island landform prior to 1916 (Goodman et al. 2008). Because of property access and instrument constraints, the survey was focused on the northern portion of the island in low-cut grassy areas that were devoid of underbrush. The GPR survey consisted of setting stakes at 10-meter intervals along east-west–oriented linear transects across the study area. The GPR device, which included a radar transmitter and receiver, was manually transported across the ground surface along these transect lines. Data were collected continuously by the GPR device along the transect lines, with temporary pauses at the staked locations to check for accuracy and control. In order to provide two levels of resolution for the GPR data, two antennas were used (270 megahertz [MHz] and 400 MHz). The 270-MHz antenna penetrated deeper into the ground than the 400-MHz antenna, but the resulting data had a lower resolution. Approximately 5,565 square meters of ground surface were surveyed with the 270-MHz antenna and 5,609 square meters were surveyed using the 400-MHz antenna, for total surface area coverage of 11,174 square meters.

The resulting GPR data were processed using GPR-SLICE® software to filter out background noise. The resulting radargrams (vertical subsurface profiles) were compiled and separated into horizontal slices representing the entire survey area at different depths. These "time slices" were then corrected using LiDAR-obtained elevation data to accurately represent the varied topography of Foster Island. The final data were analyzed to identify the presence and depths of sediment variations on the island (Goodman et al. 2008).

Foster Island Historical Map Research

In 2009, ICF conducted a historic records and map research project to supplement the previous shoreline analysis and GPR survey of Foster Island. Ten historic maps were georeferenced using GIS to track the landform and shoreline changes of Foster Island between circa 1850 and the present day. ICF archaeologists examined aerial photographs and maps on file at the Maps and Records office at the U.S. Army Corps of Engineers (USACE), Seattle District headquarters and UW's map collections and the online repository Early Washington Maps: A Digital Collection. Maps varied in terms of their original intended function, and included U.S. Coast and Geodetic Survey (now NOAA) T-sheets (nineteenth-century coast survey maps), GLO survey maps, U.S. Geological Survey Land Classification maps, and City of Seattle directory and engineering development maps.

The digital maps and aerial photographs were georeferenced to a 2006 United States Department of Agriculture, National Agriculture Imagery Program (NAIP) King County aerial image. The georeferencing process involved overlaying the historic map image onto a projected coordinate system base and applying control points to known spatial points that are shared between the georeferenced maps and NAIP imagery. The most common control points used for the older historic maps were the section boundary corners, section midpoints, and quarter-section corners. Common landforms, street intersections, rail line intersections, and landmarks were used as additional control points when section lines were unavailable or inaccurate. The final georeferenced maps were saved as GIS spatial layers that could be overlain, compared, and analyzed to document changes to the historic shoreline over time.

Foster Island Geomorphic Analysis

Geomorphic analysis investigations were conducted at Foster Island in May 2010 by Pacific Geoarchaeological Services. This investigation was designed to ground-truth the results of the GPR study and identify the location of relict shoreline in the APE through hand-excavated units and micromorphological analysis. The excavation units ranged from 0.5-by-0.5 meter to 1.0-by-0.5 meter and were placed within the limits of the 2008 GPR study area (Hodges 2010). In addition, a 6.5-meter-long trench (0.5 meter wide) was excavated where the GPR results indicated an anomaly considered to be the southern shoreline of the island. Sediments in the excavation unit walls were characterized in the field following standardized lithostratigraphic nomenclature provided by Hodges (2010). An additional 0.75-inch soil probe was used to investigate the modern shoreline’s landform history. Further sedimentary micromorphological analysis was conducted in an off-site laboratory to determine the formation processes of the sediment horizons observed during the investigations.

Miller Street Landfill—NRHP Eligibility Evaluation

As a result of archaeological studies conducted in 2006, the Miller Street Landfill (45KI760) was initially recommended as potentially eligible for listing in the NRHP, but no evaluation or formal significance assessment was undertaken (Blukis Onat et al. 2007). Additional research and analysis were necessary to assess the site's data potential and significance. In 2010, ICF reviewed the previous BOAS reports, data, files, and sample artifacts and conducted additional research to evaluate the eligibility of the site for listing in the NRHP. The evaluation of significance was based on data from the previous archaeological investigations conducted at the site, as well as extensive additional archival research and comparative archaeological studies.

The additional historical research focused on refuse collection and management within Seattle, including primary source materials from the Seattle Municipal Archives. These materials were records relating to the City of Seattle Parks Department, Health and Sanitation Services, and Engineering Department, and included historical maps, photographs, department reports, correspondence, petitions, ordinances, and laws. Additional maps and photographs were found at the UW and the Seattle Public Utilities records vault. ICF also used a number of secondary sources, including books, journals, theses, and unpublished reports.

In addition, ICF conducted comparative archaeological research at both the regional and national levels to further determine the research potential of the Miller Street Landfill. This comparative research included the review of seven regional studies and four national studies.

Foster Island Field Investigations

In August and September 2010, ICF conducted Phase 1 and Phase 2 archaeological investigations at Foster Island. Phase 1 involved excavating 116 1x1 test units (TUs); Phase 2 included excavating 497additional TUs. TUs were excavated in layers (one sediment layer was removed at a time) until culturally sterile sediments, either glacially deposited clays or till, were reached. The depth of these sterile glacial deposits ranged between 11 and 110 centimeters below ground surface. In TUs that contained deep deposits of fill, round SPs or augers were excavated in the bottom of the TUs to reach the natural glacial deposits and confirm that intact Holocene soils were not present below the fill.

Supplemental Analysis

To further analyze the archaeological sensitivity of the APE, ICF archaeologists reviewed and analyzed BOAS' original research, fieldwork, and all subsequent research and investigations conducted in the APE. ICF consulted and analyzed the probability model provided by DAHP, geologic landform analysis data, original engineering construction as-built drawings, and LiDAR imagery. ICF also conducted field reconnaissance visits to identify and confirm areas of previous ground disturbance and sediment removal to better determine whether all areas that had the potential to contain archaeological deposits had been investigated.

Historic Built Environment Resources

Records and Archival Research

Intensive research of primary and secondary source data was conducted to identify previously recorded historic properties; historical developments that influenced the project area; and important architectural, engineering, and development trends that would help inform the historic significance of resources within the APE. Background information that provided a historic and cultural context was generated from a variety of sources. Previous cultural resource studies provided invaluable ethnographic and historic background material, including relevant ethnographic reports, oral histories, local histories, newspaper articles, census data, city directories, historical photographs, and historical maps.

The following is a list of individuals and organizations that provided information and resources related to the built environment:

- Washington State DAHP—Dr. Allyson Brooks, SHPO; Mr. Greg Griffith, Deputy SHPO; Mr. Michael Houser, State Architectural Historian:
  - Determinations of NRHP Eligibility at DAHP
  - Historic Resources Inventory files and previous cultural resources studies at DAHP
  - Historic Property Inventory (HPI) files at DAHP's online database, the Washington Information System for Architectural and Archaeological Records Data (WISAARD)
  - NRHP nomination forms at DAHP

- City of Seattle Historic Preservation Division (Department of Neighborhoods)—Ms. Elizabeth Chave, Landmarks Preservation Board; Ms. Karen Gordon, Seattle City Historic Preservation Officer:
  - List of Seattle landmarks
  - Landmark nominations
  - Seattle landmark ordinances
- King County Historic Preservation Program
- Sanborn Fire Insurance Company (maps)
- King County Assessor's Office
- Seattle Municipal Archives—database of photographs
- Seattle Public Utilities Engineering Department (records vault)–city maps, plat books, and historical aerial photos
- Seattle Department of Parks and Recreation—Mr. Terry Dunning
- Historic Seattle
- Friends of Seattle's Olmsted Parks—Mr. Larry Sinnott
- HistoryLink (online encyclopedia of Seattle, King County, and Washington State history)
- University of Washington (UW):
  - Suzzallo Library
  - Burke Museum
  - Special Collections and Manuscripts
  - School of Architecture Library
  - School of Architecture—Professor Jeffrey Ochsner and Professor Grant Hildebrand
- MOHAI—historic photographs database
- Seattle Public Library—Seattle Room
- NOAA Northwest Fisheries Science Center—Mr. John Herkelrath and Mr. John Rheaume
- DOCOMOMO WEWA
- USACE—Seattle District Cultural Resources Staff

As a result of these research efforts, WSDOT identified previously identified historic properties, developed the historic context through which newly recorded resources could be evaluated (described below), and gathered enough information about communities to identify and evaluate properties in the APE for NRHP eligibility.

Development of the Historic Context

The historic context presented in Chapter 4 is a narrative statement that describes a broad pattern of historical development of the communities in the APE. The historic context establishes the significant themes and property types of the neighborhoods located in the APE. These themes include, but are not limited to, transportation development, residential development, maritime activities, social organizations, and scientific or educational institutions.

The context was developed through archival research and background data on western Washington, Seattle, and the communities that intersect or are adjacent to SR 520. The preparation of this historic context involved identifying the concepts, themes, chronological period, and geographical areas; collecting information about the communities in the APE; and identifying trends in settlement and development.

Field Survey and Historic Resource Inventory

WSDOT, in consultation with DAHP, conducted an extensive field survey to identify potential historic properties located in the APE. At minimum, resources were surveyed at the “reconnaissance” level, as defined by DAHP. However, many resources—particularly those within one parcel of the Preferred Alternative’s construction footprint—were conducted at the “intensive” level.

DAHP defines reconnaissance-level surveys as “visual or predictive surveys that identify the general distribution, location, and nature of cultural resources within a given area” (DAHP 2010). The survey generally does not include ownership information; historic use or name of the property; the study unit theme (provided in the HPI forms); the names of the architect, builder, or engineer; an in-depth statement of significance; or a bibliography. For this survey, however, when the significance of a property could not be determined based on the reconnaissance-level survey, more intensive research was conducted on certain properties. For the majority of the properties located within one parcel of the construction footprint, an intensive-level survey was conducted.

The survey involved examining and photographing buildings and structures in the APE that were determined to have been built before 1972. This date was selected to include resources 50 years old at the time of the survey, in addition to any that might become 50 years old during the course of the project construction. The parcel-by-parcel field surveys of properties in the APE were conducted between 2007 and 2011. There were multiple surveys during this period because of APE expansions as a result of consultation with DAHP and other parties, as well as project changes. Previously surveyed resources were resurveyed if the previous survey had not been carried out within the previous 5 years in accordance with DAHP guidelines. The following steps were taken to identify, evaluate, and record cultural resources:

- Construction dates were established using data from the King County Tax Assessor, and properties built before 1972 were identified for the pedestrian field survey.
- Sanborn Fire Insurance Maps (Sanborn Map Company 1893, 1904, 1916, 1930) were consulted to assess the general location and distribution of buildings and structures over time.
- A parcel-by-parcel pedestrian survey of properties located in the APE built before 1972 was conducted by senior architectural historians.
- Each resource was visually evaluated, photographed from the public right-of-way, and noted for its significant visual characteristics. The following information was collected on each historic built environment resource:
  - the precise location,
  - the architectural style (if identifiable),
  - the type and materials of significant features,
  - quantity and types of alterations,
  - the overall physical integrity, and
  - potential for historic district.

An HPI form was prepared for each resource; all HPI forms can be found in Attachment 4 to this Cultural Resources Assessment Discipline Report. The forms were prepared using information on the physical description of each resource collected in the field. A Statement of Significance for each resource was prepared based on historic research of the history of the project area and neighborhoods.

Identification of Historic Properties in the Built Environment

Section 106 requires the identification of historic properties listed or eligible for listing in the NRHP that are located in the APE. Senior historians completed the identification of historic properties by evaluating the surveyed properties in the APE in accordance with NRHP evaluation criteria, and made recommendations for eligibility for listing in the NRHP on each property surveyed. WSDOT, on behalf of FHWA, then made determinations of eligibility. WSDOT submitted those determinations to the SHPO for concurrence and the SHPO concurred on the eligibility findings of the majority of these properties. DAHP correspondence is included in Appendix 2 to this discipline report. Results of the surveys of the built environment resources are presented in Chapter 6 of this report.

Assessment of Project Effects

WSDOT, on behalf of FHWA, evaluated cultural resources located in the APE, and for those that qualified as historic properties under 36 CFR 800, assessed the Preferred Alternative's effects on each property's seven aspects of integrity (i.e., the property's location, design, setting, materials, workmanship, feeling, and association). The assessment resulted in one of four potential findings:

- **Does Not Alter Integrity:** Either no historic properties are present, or there is no effect of any kind, neither harmful or beneficial, on historic properties.
- **Alters Integrity:** The undertaking affects historic properties, but does not diminish the characteristics that qualify the property for listing in the NRHP.
- **Diminishes Integrity:** There is an effect from the undertaking which alters the characteristics that qualify the property for listing in the NRHP in a way that diminishes the integrity of the historic property. This includes diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.
- **Temporarily Diminishes Integrity:** There is an effect from the undertaking, and that effect temporarily (during construction of the

project) alters the characteristics that qualify the property for listing in the NRHP in a way that diminishes the integrity of the historic property. This includes diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Information reported in associated environmental analyses prepared for the SR 520, I-5 to Medina project were also used in this analysis (see Attachment 7 to the Final EIS, which contains the discipline reports prepared for the SDEIS and the discipline reports and the addenda and errata prepared for the Final EIS):

- Noise Discipline Report Addendum and Errata—existing and predicted noise and vibration levels on historic properties
- Visual Quality and Aesthetics Discipline Report Addendum and Errata—assessment of existing visual and aesthetic qualities in areas around historic properties and effects analysis on visual quality in these areas
- Land Use, Economics, and Relocations Discipline Report Addendum and Errata—information on acquisitions, relocations, and changes in land use that may affect historic properties
- Air Quality Discipline Report Addendum and Errata—information on existing and predicted air quality levels that might affect the setting of historic properties
- Transportation Discipline Report—information on existing and predicted traffic conditions that could affect historic properties
- Navigable Waterways Discipline Report Addendum and Errata—information on potential effects on marine-related historic properties
- Recreation Discipline Report Addendum and Errata—information on effects on recreation resources, as those resources may also be historic properties

The built environment analysis includes information from the 2006 Draft EIS (WSDOT 2006a; see Attachment 12 to the Final EIS) and the 2010 SDEIS (WSDOT 2010a; see Attachment 10 to the Final EIS).

3. Literature Search

Archaeological Resources

ICF archaeologists conducted a records search at DAHP through the Web-based WISAARD database. Information regarding previous cultural resources efforts in and within a 0.4-kilometer (0.25-mile) radius of the APE was obtained. This information consisted of, but was not limited to, previous cultural resources survey reports and archaeological site records.

Fourteen cultural resources studies were previously completed within a 0.25-mile radius of the APE after 1995. A listing of these investigations is provided in Exhibit 3-1 including a brief explanation of the study's findings.

Exhibit 3-1. Previous Cultural Resources and Related Geotechnical Investigations

Author and Date	Report Title	Description	Results
Courtois 1998	Sound Transit Central Link Light Rail Draft EIS: Historic and Archaeological Resources Technical Report	Preformed a reconnaissance survey of the project area and recommended monitoring of construction activities in the area.	No sites were found in the APE.
Courtois 1999	Central Link Rail Transit Project: Historic and Prehistoric Archaeological Sites, Historic Resources, Native American Traditional Cultural Properties, Paleontological Sites	Preformed a reconnaissance survey of the project area and recommended monitoring of construction activities in the area,	No sites were found in the APE,
WSDOT 2006b	SR 520 Bridge Replacement and HOV Project Draft EIS: Cultural Resources Discipline Report	Conducted a field survey and excavated three SPs on Foster Island, south of SR 520.	No cultural materials were recovered from the probes. Additional ethnographic study and research were recommended to determine if Foster Island was a TCP.
Blukis Onat et al. 2005	Preliminary Ethnographic and Geoarchaeological Study of the SR 520 Bridge Replacement and HOV Project	Identified potentially archaeologically sensitive areas in the APE.	Recommended limited subsurface testing (SPs) to investigate sensitive areas.

Exhibit 3-1. Previous Cultural Resources and Related Geotechnical Investigations

Author and Date	Report Title	Description	Results
Blukis Onat et al. 2006	Addendum to the Preliminary Ethnographic and Geoarchaeological Study of the SR 520 Bridge Replacement and HOV Project, including the Pacific Interchange and Second Montlake Bridge Option	Amended the previously identified archaeologically sensitive areas to accommodate the updated APE.	Recommended limited subsurface testing (SPs).
Blukis Onat and Kiers 2007	Ethnographic and Geoarchaeological Study of the SR 520 Corridor and Archaeological Field Investigations in the SR 520 Bridge Replacement and HOV Project, including the Pacific Interchange and Second Montlake Bridge Option, King County, Washington	Conducted additional research, including gathering ethnographic documents and geoarchaeological background.	Identified Foster Island as a potential TCP. Recommended additional study to verify.
Blukis Onat et al. 2007	Tribal History of the SR 520 Corridor and Archaeological Field Investigations within the SR 520 Bridge Replacement and HOV Project	Conducted further research and oral history investigations to provide additional tribal history; 33 SPs, one 2x2 excavation block, and backhoe trenches were excavated to characterize and delineate landfill.	Identified Foster Island as a potential TCP. Recommended additional study to verify. Landfill investigations identified historic artifacts and human patella.
Goodman et al. 2008	Foster Island Seattle, Washington Ground-Penetrating Radar Survey July 23–26, 2008	Surveyed Foster Island with GPR to determine depositional history of island and if subsurface archaeological features or internments could be identified with this study method	Determined that this method of analysis was reliable for obtaining both research objectives, but further investigations were needed, covering a broader area, to confirm.
WSDOT 2010a	SR 520: I-5 to Medina Bridge Replacement and HOV Project Supplemental Draft EIS: Cultural Resources Discipline Report	Conducted additional research to more accurately define the historic shoreline and enhance the ethnographic understanding of Foster Island.	FHWA determined that Foster Island should be treated as an NRHP-eligible TCP. Recommended that a formal determination of eligibility is needed, as well as additional cultural resources investigations to determine the site boundaries.

Exhibit 3-1. Previous Cultural Resources and Related Geotechnical Investigations

Author and Date	Report Title	Description	Results
Schneyder et al. 2009	SR 520 Bridge Replacement and HOV Program: Historic Records and Map Research in Support of Cultural Resource Investigations of Foster Island and the Miller Street Landfill	Conducted extensive map research to supplement previous analysis of the Foster Island shoreline.	Produced figures demonstrating the variation and evolution of the Foster Island location and landform over the past 150 years.
WSDOT 2009	SR 520, Medina to SR 202: Eastside Transit and HOV Project Environmental Assessment: Cultural Resources Technical Memorandum	Conducted survey and shovel testing in the Eastside APE.	No sites found within the current APE. Historic road (45KI00945) located in the APE.
Walker Gray and Juell 2009	Cultural Resources Survey, Lake Washington Congestion Management Program, SR 520/I-90 Active Traffic Management Project	Conducted a windshield survey.	Overview. No fieldwork was conducted.
Bartoy 2010	I-90/SR 520 Urban Partnership Survey Agreement, Active Traffic Management System, Determination of No Effects and Request for Concurrence	Conducted a pedestrian survey of several locations along I-90 and SR 520; only two locations surveyed within APE.	No cultural resources identified in APE.
Schneyder et al. 2010	SR 520, I-5 to Medina: Bridge Replacement and HOV Project: NRHP Evaluation Report for the Miller Street Landfill (45KI760)	Research and evaluation of the Miller Street Landfill.	Determined that Miller Street Landfill is not eligible for listing in the NRHP.

TCP = traditional cultural property
SP = shovel probe

A total of 13 previously recorded archaeological resources (sites and isolates) are located within a 1.6-kilometer (1-mile) radius of the APE. Six of these resources are located inside the APE. Basic information regarding these sites and their NRHP status can be found below in Exhibits 3-2 and 3-3.

Exhibit 3-2. Previously Recorded Archaeological Resources within the APE

Site Number	Citation	Site Type	Project Segment	NRHP Evaluation
45KI760	Blukis Onat et al. 2007; Schneyder 2010	Miller Street Landfill	West Approach	Not Eligible
45KI761	Calvit and Bard 2005a	Submerged wooden vessel	Lake Washington	Not Eligible

Exhibit 3-2. Previously Recorded Archaeological Resources within the APE

Site Number	Citation	Site Type	Project Segment	NRHP Evaluation
45KI762	Calvit and Bard 2005b	Submerged barge	Lake Washington	Not Eligible
45KI763	Calvit and Bard 2005c	Submerged shipwreck	Lake Washington	Not Eligible
294.10-1	Elder et al. 2010a	Precontact isolate	West Approach	Not Evaluated
294.10-2	Elder et al. 2010b	Precontact isolate	West Approach	Not Evaluated

Exhibit 3-3. Previously Recorded Archaeological Resources within 1 Mile of the APE

Site Number	Citation	Site Type	NRHP Evaluation
45KI426	Mester 1992a	Submerged World War II Corsair	Potentially eligible
45KI433	Mester 1992b	Submerged coal cars	Potentially eligible
45KI945	Jordan et al. 2009	Historic road – Lake Washington Boulevard	Not evaluated
45KI952	Boggs 2009a	Isolated historic bottle	Not evaluated
45KI955	Boggs 2009b	Historic wood pipeline	Potentially eligible
45KI957	Louderback and Jolivette 2009	Precontact lithic scatter	Not evaluated
45KI980	Major 2010	Submerged tugboat	Potentially eligible

As shown in Exhibit 3-2, of the six resources within the APE, two are precontact and four are from the historic era. ICF discovered two isolated precontact tool fragments during cultural resources investigations on Foster Island (Elder et al. 2010a, 2010b). These isolated finds consisted of a single chert biface fragment and a fine-grained, volcanic, Cascade-style projectile point. These precontact isolates were found 40 meters apart in highly disturbed sediments, making it unlikely that they were in their primary depositional context. As such, each artifact was given a unique isolate number and they were not designated as a new site (Elder et al. 2010a, 2010b). The Miller Street Landfill (45KI760), located within the APE in the West Approach segment, is a site dating between 1912 and the 1930s. BOAS conducted extensive archaeological investigations to characterize the landfill deposits and delineate the site boundaries (Blukis Onat et al. 2007). Site 45KI761 consists of a damaged and degraded wooden vessel thought to be either a schooner or a steamer (Calvit and Bard 2005a). Two wooden barges (45KI762 and 45KI763) also lie at the bottom of Lake Washington (Calvit and Bard 2005b, 2005c). The barge identified as 45KI762 appears to date from the early 1900s; barge 45KI763 does not have an associated date but markings indicate the vessel to be the Forest No. 15 from Aberdeen, Washington.

Seven archaeological resources, as shown in Exhibit 3-3, were located outside, but within 1.6 kilometers (1-mile), of the APE. Of the seven resources, one was precontact and the remaining six were from the historic era. Site 45KI957 is a precontact lithic scatter consisting of two quartzite flakes and a single side-notched chert projectile point (Louderback and Jolivette 2009). These artifacts were found below the surface in disturbed sediments, as evidenced from historic artifacts and modern debris identified within the same context. In 2009, as part of Sound Transit's University Link Light Rail Project, Boggs (2009a, 2009b) recorded a single historic, amber glass bottle that dated between 1920 and 1930 (45KI952) and a segment of wood stave pipe from an abandoned pipeline (45KI955).

An abandoned portion of Lake Washington Boulevard (45KI945) identified within the SR 520, Medina to SR 202 project APE, just outside of the SR 520, I-5 to Medina project's APE, was recorded in 2009. The site consisted of a two-lane asphalt roadway with a single amber glass bottle (Jordan et al. 2009). Site 45KI426 is a single engine World War II era Corsair aircraft (Mester 1992a), which sank as the result of a mid-air collision on July 26, 1950. Eighteen coal cars (45KI433) were cut loose from a sinking tugboat in 1875 and are distributed across an area of nearly 1.5 acres at the bottom of Lake Washington (Mester 1992b). Site 45KI980 has been identified as the wreck of the tugboat *S.L. Dowell*, which was built in Friday Harbor, Washington, in 1899 and wrecked off of Mercer Island in 1922 (Major 2010).

Of the six recorded archaeological resources within the APE, none have been determined eligible for the NRHP. Two precontact isolates were identified within the Foster Island portion of the APE; however, the isolates were clearly located within disturbed sediments and were not in primary context. These isolates were not evaluated for NRHP eligibility, but due to their lack of primary context, they were not recommended as potentially NRHP-eligible. The remaining four resources in the APE (45KI760, 45KI761, 45KI762, and 45KI763) have been determined not eligible for listing in the NRHP.

Of the seven sites located within 1.6 kilometers (1 mile) of the APE, three have not been evaluated for the NRHP, and four are thought to be potentially eligible for listing in the NRHP.

Historic Built Environment

A literature and records search was conducted using WISAARD to identify previously documented historic properties in the APE. WISAARD contains all records and reports on file with DAHP recorded since 1995. Ten cultural resources studies that included built environment resources were previously completed within the search area. A listing of these investigations, which provide information on the built environment results, is provided in Exhibit 3-4.

Exhibit 3-4. **Previous Cultural Resources Studies with Built Environment Resources**

Author and Date	Report Title	Description	Results
Courtois 1998	Sound Transit Central Link Light Rail Draft EIS: Historic and Archaeological Resources Technical Report	Performed reconnaissance survey of the project area.	73 individual historic properties, 2 historic districts, 2 historic district expansions, and 1 multiple property resource were identified.
Courtois 1999	Central Link Rail Transit Project: Historic and Prehistoric Archaeological Sites, Historic Resources, Native American Traditional Cultural Properties, Paleontological Sites	Performed reconnaissance survey of the project area.	74 individual historic properties, 2 historic districts, 2 historic district expansions, and 1 multiple property resource were identified.
WSDOT 2006b	SR 520 Bridge Replacement and HOV Project, Draft EIS: Cultural Resources Discipline Report	Performed intensive survey of the project area.	Numerous historic properties identified in the APE.
Gray 2008	Cultural Resources Survey of SR 520 Urban Partnership Agreement Variable Tolling Project, Evergreen Point Bridge, Seattle, Washington	Conducted a field survey.	Determined Evergreen Point Bridge is NRHP-eligible.
WSDOT 2010a	SR 520: I-5 to Medina Bridge Replacement and HOV Project, SDEIS: Cultural Resources Discipline Report	Performed intensive survey of the project area.	Numerous historic properties identified in the APE.
WSDOT 2009	SR 520, Medina to SR 202: Eastside Transit and HOV Project: Environmental Assessment, Cultural Resources Technical Memorandum	Conducted a built environment survey.	Three built environment NRHP-eligible properties and one WHR-eligible property identified.
Gray and Juell 2009	Cultural Resources Survey, Lake Washington Congestion Management Program, SR 520/I-90 Active Traffic Management Project	Conducted a windshield survey.	No newly identified cultural resources identified in the APE.

Exhibit 3-4. Previous Cultural Resources Studies with Built Environment Resources

Author and Date	Report Title	Description	Results
Bartoy 2010	I-90/SR 520 Urban Partnership Survey Agreement, Active Traffic Management System, Determination of No Effects and Request for Concurrence	Conducted a pedestrian survey of several locations along I-90 and SR 520; only two locations were surveyed in the APE.	No newly identified cultural resources identified in the APE.
WSDOT 2010b	SR 520 Bridge Replacement and HOV Project, SR 520 Pontoon Construction Project: Cultural Resources Discipline Report	Comprehensive assessment of all cultural resources within the project APE.	Three archaeological sites and six significant historic sites were identified within the APE,
Archer 2010	Request for Concurrence: Area of Potential Effects and Finding of No Adverse Effect; SR 520 Evergreen Point Toll Signing Project, King County, WA	Conducted a windshield survey of the project area.	No newly identified historic cultural resources identified in the APE.

A total of 22 historic properties were previously recorded in the APE. These properties occur in each of the project's study areas and at the potential pontoon production sites. The following sections summarize these properties by study area and include information about prior evaluations and NRHP eligibility. The properties in each study area and segment are listed by property identification numbers (ID#). See Attachment 3 to this Cultural Resources Assessment Discipline Report for copies of the forms for previously recorded properties. The geographic segments within the Seattle study area, as described in Section 1 of this report under the *Preferred Alternative* section, were established to organize the cultural resources within the APE in a manageable framework. The geographic segments discussed, and depicted in the exhibits in this document, may differ slightly from the supporting tables and from the segments used in other environmental documents prepared for the SR 520 Program. However, the number of historic properties within the APE is constant among all current analyses for the program.

Seattle Study Area

I 5/Roanoke Segment

The literature review identified six previously recorded historic properties in the I-5/Roanoke segment of the APE (Exhibit 3-5). (These properties are shown on the maps in Exhibits 6-2 a-j.)

Exhibit 3-5. Previously Recorded Historic Properties in the I-5/Roanoke Segment

ID#	Property Name	Street Address/ Location	Construction Date/Period of Significance	Eligibility Status
10	Denny-Fuhrman (Seward) School	2515 Boylston Avenue East	1893, 1905, 1917	Designated Seattle Landmark; Seward School Lunchroom and Gymnasium listed in the WHR
16	L'Amourita Apartment Building	2901 Franklin Avenue East	1909	NRHP-eligible and designated Seattle Landmark
37	Roanoke Park Historic District	Roughly bounded by East Roanoke Street, Harvard Avenue East, East Shelby Street, and 10th Avenue East	1899–1939	NRHP-listed under Criteria A and C; 80 contributing elements out of 101 properties (including individually listed William H. Parsons House); WHR-listed
38	William H. Parsons House	2706 Harvard Avenue East	1903	Individually NRHP-listed under Criteria A and C and contributing element of Roanoke Park Historic District; designated Seattle Landmark
600	Lake Washington Ship Canal Bridge	I-5 Bridge over Lake Washington Ship Canal	1958	NRHP-eligible under Criteria A and C
601	University Bridge	Spans Lake Washington Ship Canal in Portage Bay	1919	NRHP-eligible under Criteria A and C

Portage Bay Segment

The literature review identified no previously recorded historic properties in the Portage Bay segment of the APE.

Montlake Segment

The literature review identified six previously recorded historic properties in the Montlake segment (Exhibit 3-6). (These properties are shown on the maps in Exhibits 6-2 a-j.)

Exhibit 3-6. Previously Recorded Historic Properties in the Montlake Segment

ID#	Property Name	Street Address/ Location	Construction Date/Period of Significance	Eligibility Status
53	Montlake Cut	Lake Washington Ship Canal	1916	NRHP-listed under Criteria A and C as part of Lake Washington Ship Canal multiple property listing; designated Seattle Landmark
54	Montlake Bridge	Over the Lake Washington Ship Canal	1924	NRHP-listed under Criteria A and C (Historic Bridges/Tunnels in Washington State); and designated Seattle Landmark
55	Seattle Yacht Club—Main Station	1807 East Hamlin Street	1919	NRHP-listed under Criterion A, WHR-listed, and designated Seattle Landmark
126	Montlake Community Center	1618 East Calhoun Street	1935	Designated Seattle Landmark; not previously evaluated for NRHP eligibility
203	Canoe House (Naval Military Hangar/ University Shell House)	UW Campus	1918	NRHP-listed under Criterion C
215	Nuclear Reactor Building (More Hall Annex)	UW Campus	1961	NRHP-listed under Criteria A and C

West Approach Segment

The literature review identified two previously recorded historic properties in the West Approach segment, both within the boundaries of the Arboretum. The Seattle Japanese Garden (ID# 200) was built in 1960 and is a designated Seattle Landmark, but has not been evaluated for NRHP eligibility. The Arboretum Aqueduct (also called the Arboretum Sewer Trestle) (ID# 210), which passes over Lake Washington Boulevard in the Arboretum, was built in 1912. It is listed in the NRHP under Criterion C as part of the Historic Bridges and Tunnels in Washington State nomination, is listed in the WHR, and is a designated Seattle Landmark. (These properties are shown on the maps in Exhibits 6-2 a-j.)

Lake Washington Study Area

The literature review identified one previously recorded historic property in the APE in the Lake Washington study area. The Evergreen Point Bridge (ID# 206), built in 1968, was previously determined eligible for listing in the NRHP. Although it has not yet reached

50 years of age, it was considered eligible for listing in the NRHP under Criteria Consideration G for its exceptional importance. It is eligible for listing in the NRHP under Criteria A and C. The SHPO concurred with this eligibility determination in January 2009. (This property is shown on the maps in Exhibits 6-2 a-j.)

Eastside Transition Study Area

The literature review identified one previously recorded historic property in the Eastside transition study area. The James Arntson House (ID# 235) at 2851 Evergreen Point Road is eligible for listing in the NRHP under Criterion C. An additional property, the Helen Pierce House (ID# 232) at 2857 Evergreen Point Road, is not eligible for listing in the NRHP, but could be eligible for listing in the WHR. (These properties are shown on the maps in Exhibits 6-2 a-j.)

Pontoon Production Sites

The literature review identified seven previously recorded historic properties in the potential pontoon production sites (Exhibit 3-7). The Hylebos Bridge at the Port of Tacoma was previously determined not eligible for listing in the NRHP, but is eligible for listing in the WHR. (These properties are shown on the map in Exhibit 6-36.)

Exhibit 3-7. Previously Recorded Historic Properties in the Potential Pontoon Production Sites

ID#	Property Name	Street Address/ Location	Construction Date/Period of Significance	Eligibility Status
702	Fire Station #15	3510 East 11th Street, Tacoma	1928–1929	NRHP-listed under Criteria A and C
703	CTC—Administration Building	1123 Port of Tacoma Road, Tacoma	1956	NRHP-eligible under Criteria A and C as contributor to historic district
704	CTC—Research Building	1123 Port of Tacoma Road, Tacoma	1951	NRHP-eligible under Criteria A and C as contributor to historic district
705	CTC—Laboratory Building	1123 Port of Tacoma Road, Tacoma	1951	NRHP-eligible under Criteria A and C as contributor to historic district
706	CTC—Structural Plant	1123 Port of Tacoma Road, Tacoma	1956	NRHP-eligible under Criteria A and C as contributor to historic district
802	Port of Olympia Office	915 Washington Street, Olympia	1944	NRHP-eligible under Criterion C

Potential Section 6(f) Replacement Sites

The literature review did not result in the identification of previously recorded historic properties at the potential Section 6(f) replacement sites.

4. Environmental and Cultural Setting

Environmental Setting

Geology

The APE is located within the Puget Lowland, a structural and topographic basin that lies between the Cascade Range and Olympic Mountains. The modern topography of the Puget Sound basin is primarily the result of three forces:

- Surface scouring and moraine formation caused by the most recent glacial advance, known as the Vashon stade of the Fraser glaciations, which took place in Puget Sound between 18,750 and 16,950 years ago (Booth 1994; Porter and Swanson 1998)
- Deposition of glacial sediments caused by glacial retreat between 16,950 and 16,400 years ago (Booth and Goldstein 1994; Booth et al. 2009; Porter and Swanson 1998).
- Post-glacial infilling of valleys and recessional meltwater channels (Troost and Booth 2008).

During the Vashon stade, Seattle was covered with glacial ice from 17,400 years ago to around 16,400 years ago. As glacial ice advanced into Puget Sound, glacial melt- and streamwater accumulated against the southern margins of the continental ice sheet, creating a series of meltwater lakes, which drained to the Chehalis River through a network of spillways located around Olympia. As glacial ice began to recede, but still blocked the Strait of Juan de Fuca, these glacial lakes enlarged. One such lake, Glacial Lake Russell, enlarged northward as the glaciers retreated, and combined with other lakes as it expanded. At its maximum extent, Glacial Lake Russell covered much of the lowland surface between present-day Olympia and Whidbey Island, with relict shorelines extending as much as 330 feet above modern sea level in the Seattle area (Troost and Booth 2008).

As glacial ice continued to retreat, a second lower elevation spillway, the Chimacum valley, was exposed. The exposure of this spillway resulted in an abrupt lowering of water levels to approximately 100 feet above modern sea level, creating relict shorelines around the Seattle area (Haugerud 2006, as cited in Troost and Booth 2008).

Once glacial ice receded north of the Olympic Peninsula, meltwater began to drain into the Strait of Juan de Fuca, and mixed with rapidly incurring marine water. Marine water backfilled the lowland areas previously occupied by proglacial lakes, including the location of present-day Lake Washington (Diether et al. 1995).

Lake Washington remained inundated with marine water until around 16,000 years ago, when the Cedar River delta formed an outlet that was above sea level at the time (Gould and Budinger 1958). At around 3,500 years ago, a rapidly aggrading Black River floodplain isolated Lake Washington from Puget Sound. After Lake Washington was cut off from Puget Sound, lake levels changed independent of the tides, rising to around 30 feet above sea level at their peak prior to 1916. With the construction of the Lake Washington Ship Canal in 1916, lake levels were lowered by around 9 feet (Hodges 2010). Exhibit 4-1 shows major drainages and water bodies in the Seattle area.

The APE spans several landforms formed during the Pleistocene epoch and modified during the historic and modern eras. The following discussion outlines the variety, age, and distribution of landforms across the APE. This information was obtained from two geologic maps, overlaid with the limits of construction and LiDAR imagery. In developing these maps, boundaries for geologic units were defined from previous field mapping of outcrops and excavations, subsurface data, topographic and geomorphic analysis, and in the case of Booth et al. (2009), preexisting geologic maps of the vicinity. As a result, some of the boundaries for geologic units are inferred, and have not been subject to ground-truthing.

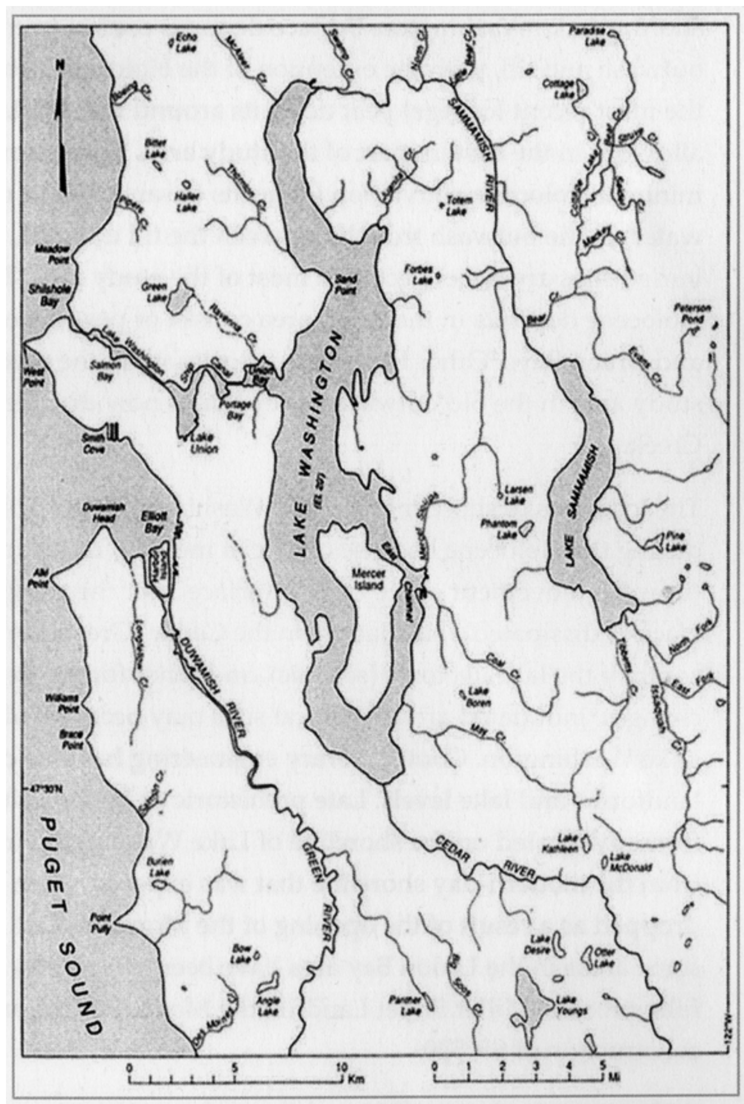

Exhibit 4-1. Map Showing Major Drainages and Water Bodies of the Seattle Area *(Galster and Laprade 1991:245).*

In mapping the surface expression of geologic units in North Seattle, Booth et al. (2009) provided geologic data for the ground surface of the APE on the west side of Lake Washington. Eight geologic units are identified in the APE on the west side of Lake Washington. Pleistocene-aged deposits are widely distributed across the APE ground surface and tend to be located above the historic and modern elevations of Lake Washington and Lake Union. Till (Qt), for example, is the most widespread geologic unit in the western portion of the APE, and is most commonly encountered on upland plains. Holocene-aged deposits are located near the modern shoreline of Lake Washington, consist of peat (Qp) and silt/clay (Ql) deposits, and likely represent areas that were inundated by Lake Washington prior to the lowering of the lake in 1916.

Mapping of the surface expression of geologic units on the east side of Lake Washington was conducted by Waldron et al. (1962); no subsequent geologic maps have been completed for this area since 1962. Using this map, three geologic units are identified in the APE on the east side of Lake Washington.

Pleistocene-aged deposits are widely distributed across the ground surface of the eastern portion of the APE (located on the east side of Lake Washington). Like the west side of Lake Washington, till (Qt) is the most widespread geologic unit in this portion of the APE. Holocene-aged sediments are located in a small segment of land in the APE, adjacent to an unnamed stream that drains into Fairweather Bay north of the APE.

Flora and Fauna

The APE is located in the Puget Sound area subtype of the western hemlock (*Tsuga heterophylla*) vegetation zone. Softwoods such as Douglas fir (*Pseudotsuga menzesii*), western hemlock, and western red cedar (*Thuja plicata*) are the dominant tree species in the region, while hardwoods such as red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*) are generally subordinate and found near water courses or riparian habitats. Garry oak (*Quercus garryana*) groves are found in lower elevations. In some areas, stands of pines (*Pinus* spp.) are major forest constituents, along with Douglas fir (Franklin and Dyrness 1988). Understory shrubs with potential food and resource value in the western hemlock zone include, but are not limited to, swordfern (*Polystichum muritum*), bracken fern (*Pteridium aquilinum*), Oregon grape (*Mahonia aquifolium*), vine maple (*Acer circinatum*), blackberry (*Rubus* spp.), ocean spray (*Holodiscus discolor*), salal (*Gaultheria shallon*), blueberries and huckleberries (*Vaccinium* spp.), and red elderberry (*Sambucus racemosa*). Wapato (*Sagittaria latifolia*), another traditionally important plant resource, would have been available in inundated wetland areas along lake and stream margins.

Terrestrial faunal resources in the region historically include, but are not limited to, mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), cougar (*Puma concolor*), wolf (*Canis lupus*), coyote (*Canis latrans*), black bear (*Ursus americanus*), squirrels (*Scirius* sp.), muskrat (*Ondatra* sp.), and raccoon (*Procyon lotor*) (Dalquest 1948). Ducks and geese (*Anas* spp.) are seasonally abundant in the area (Kruckeberg 1995).

Cultural Setting

Precontact Context

Precontact cultural chronologies of the Pacific Northwest and the Puget Sound area have been developed by numerous archaeologists (including, but not limited to, Kidd 1964; Greengo and Houston 1970; Nelson 1990; Matson and Coupland 1995; Ames and Maschner 1999; Blukis Onat et al. 2001). The cultural chronology summarized in this section divides precontact cultural sequences into multiple phases or periods, which include the time from about 12,500 years ago to 225 years ago (approximately when Euroamerican contact began). Phases or periods are usually defined by patterns in land use, subsistence, and tool types, and delineated by changes in these patterns. Local chronologies tend to follow similar broad patterns but rarely have congruent phase or period delineations (Exhibit 4-2). Cultural chronologies provide a useful framework for analysis, but do not necessarily reflect tribal views of history, cultural boundaries, affiliations, or time.

This document uses the cultural chronology developed by Ames and Maschner (1999) for the Pacific Northwest coast to provide the necessary temporal structure for discussion of Pacific Northwest and Puget Sound archaeology. This chronology was developed for the Pacific Northwest region—of which Puget Sound is a part—and incorporates data from Canada and Alaska.

Exhibit 4-2. Northwest Coast Phases

<table>
<tr><th>Years Before Present</th><th>Northwest Coast Chronology Ames and Maschner 1999</th><th>Gulf of Georgia Matson and Coupland 1995</th><th>San Juan Islands King 1950</th><th>Western Washington Greengo and Houston 1964</th><th>Cascade Region of Puget Sound Blukis Onat 2001</th></tr>
<tr><td>500</td><td rowspan="3">Late Pacific</td><td rowspan="2">Gulf of Georgia</td><td rowspan="3">Late</td><td rowspan="6">Late Period</td><td rowspan="11"></td></tr>
<tr><td>1000</td></tr>
<tr><td>1500</td><td rowspan="3">Marpole</td></tr>
<tr><td>2000</td><td rowspan="4">Middle Pacific</td><td rowspan="2">Maritime</td></tr>
<tr><td>2500</td></tr>
<tr><td>3000</td><td rowspan="2">Locarno Beach</td><td rowspan="4">Developmental</td></tr>
<tr><td>3500</td><td rowspan="4">Middle Period</td></tr>
<tr><td>4000</td><td rowspan="5">Early Pacific</td><td rowspan="2">St. Mungo</td></tr>
<tr><td>4500</td></tr>
<tr><td>5000</td><td rowspan="12">Old Cordilleran</td><td rowspan="9">Island</td></tr>
<tr><td>5500</td><td rowspan="6">Early Period</td></tr>
<tr><td>6000</td><td rowspan="7">Tolt</td></tr>
<tr><td>6500</td><td rowspan="13">Archaic</td></tr>
<tr><td>7000</td></tr>
<tr><td>7500</td></tr>
<tr><td>8000</td></tr>
<tr><td>8500</td><td rowspan="15"></td></tr>
<tr><td>9000</td></tr>
<tr><td>9500</td><td rowspan="13"></td><td rowspan="13"></td></tr>
<tr><td>10,000</td></tr>
<tr><td>10,500</td></tr>
<tr><td>11,000</td><td rowspan="10"></td></tr>
<tr><td>11,500</td></tr>
<tr><td>12,000</td></tr>
<tr><td>12,500</td></tr>
<tr><td>13,000</td><td rowspan="6">Paleo-Indian</td></tr>
<tr><td>13,500</td></tr>
<tr><td>14,000</td></tr>
<tr><td>14,500</td></tr>
<tr><td>15,000 +</td></tr>
</table>

Puget Sound is located near the southern extent of this cultural region but follows the general trends of this chronology. The sequence includes five periods, provided below:

- Paleo-Indian (prior to 12,500 years ago)
- Archaic (12,500 years ago to 6,400 years ago)
- Early Pacific (6,400 years ago to 3,800 years ago)
- Middle Pacific (3,800 years ago to 1,800/1,500 years ago)
- Late Pacific (1,800/1,500 years ago to around 225 years ago)

The following section summarizes Puget Sound prehistory, sorted by the cultural sequence periods provided by Ames and Maschner (1999).

Paleo-Indian Period (prior to 12,500 years ago)

Few identified archaeological sites in North America undisputedly date earlier than 14,500 years ago, and none are located within the Puget Sound area (Meltzer 2003). The Clovis culture represents the first undisputed consensus evidence for human occupation on the continent, although an increasing amount of research in support of earlier human occupations (Erlandson et al. 2007; Dillehay et al. 2008; Thomas et al. 2008) continues to challenge this view. This culture, dated between 12,800 and 12,500 years ago in other regions, is identified by characteristically large-fluted stone bifaces and bone technology. Clovis assemblages are characterized by extensive bone and stone technology and, on the west coast of North America, a wide but sparse distribution of sites (Ames and Maschner 1999). Based on these data, it is hypothesized that the Clovis people were highly mobile terrestrial mammal hunters (Bonnichsen and Turnmire 1991; Waguespack and Surovell 2003).

Although there are no confirmed Clovis site assemblages in the Puget Sound area, at least seven isolated Clovis style points have been collected. Isolated Clovis points have been found on the southern shore of Penn Cove on Whidbey Island (45IS112, Wessen 1988), east of Port Orchard on southeast Kitsap Peninsula (45KP139, Stein et al. 2004), southeast of Seattle in Hamilton Bog (45KI215, Avey 1991), and have been identified in private collections in the Chehalis River Valley south of Olympia (Avey 1991), west of Olympia in the Black Hills (Avey 1991), on Anderson Island just west of Steilacoom (Avey 1991), and near Waughop Lake in Pierce County (Avey 1991). These Clovis isolates are typically part of private collections, lacking precise provenience information. However, even without precise provenience, their distribution indicates widespread land use by the Clovis culture within Puget Sound.

Recently, Hodges et al. (2009) reported the presence of an archaeological site consisting of two flakes at Bear Creek in Redmond, Washington (45KI839), which dated between 8,730 and 10,180 years ago. Subsequent data recovery excavations revealed the presence of an extensive artifact assemblage that included projectile points, bifaces, expedient tools, and debitage. Two projectile point fragments exhibited some diagnostic attributes associated with both Clovis and later lithic technologies. Many of the artifacts (including the two point fragments) were recovered from sediments that were located below peats dated to between 8,420 and 9,840 years ago. A radiocarbon date of 12,820 years ago from detrital charcoal within sediments below the peat layer was physically associated with—but perhaps not directly related to—these artifacts (Kopperl et al. 2010). Regardless, the site contains unambiguous archaeological materials from a well-defined stratigraphic context and represents the oldest such assemblage in Washington.

The Manis mastadon site (45CA218) is one possible Paleo-Indian period site in western Washington. This site is located on the Olympic Peninsula near Sequim and contains the 12,800-year-old remains of a Mastodon (*Mammut americanum*) with a possible bone point lodged in one of the ribs. The site investigators concluded that the possible point was likely human-manufactured (Gustafson et al. 1979). The cultural origin of this site is still subject to debate, however. If it does represent human activity, it would represent a site contemporaneous with Clovis-era sites.

Site 45SJ454 located on Orcas Island may contain evidence for human occupation. The site includes the remains of a now-extinct bison species (*Bison antiquus*), dated from 13,740 to 13,460 years ago (Wilson et al. 2009). The bison remains exhibit modifications (fractures, cut marks, abrasion, polish), which are thought to indicate human butchering (Kenady et al. 2007). If substantiated, this site may represent a pre-Clovis occupation of western Washington.

Firmly established Paleo-Indian sites and artifacts are geographically widespread and rare in the greater Puget Sound region. Controversy surrounding sites such as Manis and 45SJ454 indicate investigators' interest in discovering sites from this era and spur new research (Wilson et al. 2009). Given that most of the previously identified Paleo-

Indian period archaeological sites in Puget Sound have been discovered in association with peat deposits on till plains, isolates and sites associated with Paleo-Indian occupations are likely to be found on these landforms.

Archaic Period (12,500 to 6,400 years ago)

Although less common than Pacific-period sites discussed below, numerous Archaic-period archaeological sites can be found throughout the Pacific Northwest. According to Ames and Maschner (1999), Archaic-period sites are characterized by a pattern of generalized resource use (terrestrial and aquatic resources), cobble and cobble flake tools, the emergence of microblade technology in some areas, leaf-shaped bifaces, and a wide spatial distribution in multiple environments.

Archaic-period sites situated in littoral zones are uncommon on the southern Pacific Northwest coast. It is likely that most littoral archaic sites have been submerged and/or deeply buried as a result of rapid eustatic sea-level rise since the end of the Pleistocene epoch (Ames and Maschner 1999) and valleys infilling with sediment since the early Holocene (Troost and Booth 2008). However, the Glenrose Cannery site located just north of Puget Sound on the Fraser River contains Archaic-period occupations situated ideally for littoral exploitation. The Archaic-period component (a discrete, culturally homogenous stratigraphic unit) of the Glenrose Cannery site was used between 9,000 and 6,300 years ago, based on radiocarbon dating of hearth features (Matson and Coupland 1995). This component contains large leaf-shaped bifaces, cobble and cobble flake tools, and antler wedges, but lacks microblades. In addition to tools, the component contains the remains of terrestrial resources (deer and elk) and a diverse array of aquatic resources from numerous marine environments (Matson and Coupland 1995). No littoral archaeological sites attributed to the Archaic period have been identified in Puget Sound.

Throughout Puget Sound, sites with heavily weathered basalt flakes, cores, and lanceolate or Cascade-style points are commonly assigned to the Archaic period. These “Olcott complex sites” are named for a discrete artifact assemblage that embodied the attributes of Early period archaeological sites, both of which are defined by Kidd (1964). Later, Nelson (1976) used the term to define a portion of a precontact cultural sequence that he developed for Puget Sound, giving "Olcott" a definition based on both age and assemblage composition. Subsequent use of the term has been inconsistent and has led to some confusion (Dancey 1969; Stilson and Chatters 1981; Morgan 1999). Based on well-dated stylistic comparisons from the Glenrose Cannery site, Nelson (1990) suggests that Olcott complex sites are comparable in age and date between 10,000 and 6,000 years ago. However, several investigators have noted that leaf-shaped points are found in a variety of contexts that range from 9,950 to 2,260 years in age (Blukis Onat et al. 2001; Greengo and Houston 1970; Shong et al. 2007). By their very definition, Olcott sites lack faunal remains and datable features and are typically unstratified, which makes their temporal assignment tenuous. Investigators have variously attributed this lack of materials to acidic soils and bioturbation (Nelson 1990). The fact remains that these sites, often attributed to the Archaic period, are enigmatic because of their lack of associated dates.

Several riverine and upland Archaic-period sites are located in the southern Pacific Northwest. Of these, few contain faunal materials; however, some exceptions exist. The Roadcut Site (35WS4, 35WS8) near the Dalles, Oregon, on the Columbia River contained up to 250,000 salmon remains that date between 9,500 and 7,600 years ago (Cressman 1960; Butler 1993). This site represents early and heavy salmon exploitation on a scale rarely seen elsewhere on the southern Northwest Coast and indicates that the region's inhabitants exploited riverine resources much earlier than once thought. Another archaeological site (45LE223) located south of Mount Rainier contained stratified archaeological deposits (Daugherty et al. 1987). These deposits included a hearth feature, hundreds of flake tools, and deer bones (*Odocoileus* spp.). A single basalt point was recovered from the uppermost component of the Manis site dated to just before 6,700 years ago, but contained no faunal remains (Gustafson 1985).

Site 45KI464 located on the Tolt River dates from 7,700 to 4,100 years ago and includes an Olcott component (Blukis Onat 2001). The site is not well-stratified and includes artifacts typically associated with the Archaic period (leaf-shaped points, large flake and cobble artifacts, and microblades), as well as corner-notched and shouldered points that may reflect later more ephemeral, task-specific use of the site circa 3,000 years ago.

In summary, Archaic-period archaeological sites in Puget Sound tend to lack stratified archaeological deposits as well as faunal remains. Analysis of the spatial distribution of sites and variety of artifact types, combined with inferred function from similar assemblages outside of the region, indicate that the people from this period inhabited upland areas near rivers and exploited terrestrial and riverine resources. The absence of littoral Archaic sites in Puget Sound is more likely a function of Holocene sea level rise and drainage infilling than a pattern in early Holocene human settlement and subsistence strategies.

Early Pacific Period (6,400 to 3,800 years ago)

During the Early Pacific period, sea levels began to stabilize. As a result of this stabilization, many of the area's river outlets began to develop habitats similar to modern estuaries. This estuary formation and subsequent salmon colonization has been cited as the driving force behind socioeconomic development within the Pacific Northwest (Fladmark 1975). Large shell middens appear at this time, although earlier presence of such shell middens is probably masked by fluctuations in sea level. Artifact assemblages are dominated by bone tools, and may in part be a reflection of the better preservation conditions provided by shell middens (Linse 1992). Increased frequency of groundstone tools at sites from this time period indicates an increased time investment in the creation of technology.

West Point (45KI428 and 45KI429) cultural component 1 is dated from 4,250 to 3,500 years ago (Larson and Lewarch 1995). A suite of 68 radiocarbon dates from this site indicates it was occupied from approximately 4,200 to 200 years ago with a nearly 1,000-year hiatus in use circa 2,350 to 1,500 years ago. The site’s location in a littoral setting and the high diversity of both terrestrial and marine fauna within the deposits indicate a well-adapted and broad spectrum subsistence regime, as indicated in Ames and Maschner’s (1999) early period sketch. There is little evidence of food storage, and subsistence appears to be geared toward resources within the intertidal zone. The appearance of a single T-shaped labret is indicative of ethnographically observed expression of social inequality in the region (Ames 1994). Other finely crafted decorative objects such as gaming pieces, a blanket pin, and a “bracelet” fragment demonstrate the development of art and may indicate some form of social inequality (Ames 2007).

Site 45PI72 is a small shell midden on the Nisqually delta that dates to approximately 5,200 years ago (Wessen 1988). This is the oldest shell midden on Puget Sound and, while some issues are apparent with the dating sequence, the site as a whole indicates generalized exploitation of both littoral and terrestrial fauna. There is no groundstone from this site and chipped stone dominates the artifact assemblage, which is principally composed of non-local materials and cryptocrystalline silicates, unlike West Point (see above).

Early occupations at the Sequim bypass sites (45CA426 and 45CA433) have been interpreted as Olcott, yet the earliest dates from these sites fall squarely within the Early Pacific period (Morgan 1999). The artifact assemblages from these upland sites are overwhelmingly dominated by chipped stone artifacts made of locally available dacite. Cobble tools from the site indicate animal and perhaps wood processing were the primary activities of the site's occupants. Subsistence-related data are generally lacking from this period, but terrestrial game almost assuredly played a large role in the occupants' foodways given the high frequency of projectile points recovered. A large number of microblades were also recovered from this occupation. Stone tools from these sites (leaf-shaped points, microblades, and cobble tools) are more similar to Archaic-period occupations, but may be more indicative of a seasonally occupied hunting camp that was used intermittently throughout the middle Holocene.

Materials recovered from West Point component 1 and 45PI72 are in line with general trends as discussed by Ames and Maschner (1999) for this period—both indicate generalized subsistence associated with increased access to littoral resources. The upland location of 45CA426 and 45CA433 may suggest subsistence was less oriented toward exploitation of littoral resources, although the Straits of Georgia lay nearby. Finely crafted artifacts from West Point are not observed within the 45PI72, 45CA426, or 45CA433 assemblages; however, each site has a high occurrence of chipped stone materials which are locally derived at West Point and the Sequim sites, but are likely non-local at 45PI72.

Middle Pacific Period (3,800 to 1,800/1,500 years ago)

The Middle Pacific period is characterized by a cultural florescence throughout the Pacific Northwest (Ames and Maschner 1999). The development of art similar to ethnographically documented styles and early permanent social inequality—two of the hallmarks of Pacific Northwest cultures—took place during this time. Technological innovation and intensification in the form of increasingly complex composite food-procurement technology (e.g., toggling harpoons, fish weirs) and greater numbers of groundstone artifacts may be the result of continued environmental stability. Decreased mobility at this time is indicated by the development of large wooden plank houses, sometimes together in villages, which may have contributed to the development of social inequality across the region (Schalk 1977; Ames 1994). This period is also characterized by increased warfare and interpersonal violence, as evidenced by physical trauma indicators observed in burials from this time (Ames and Maschner 1999).

Cultural components 2 and 3 at West Point (45KI428 and 45KI429) are dated to the Middle Pacific period (Larson and Lewarch 1995). Year-round occupation with a broad-spectrum diet continued at the site until approximately 2,700 years ago when sea-level rise appears to have greatly affected site function, limiting both site use during the year and the number of activities performed. The artifact assemblages from these components are not indicative of the regional trend toward technological intensification. Both the modified bone and groundstone assemblages are diverse, but present a picture of more utilitarian tool use and production than might be expected from the Pacific period chronology (Ames and Maschner 1999). A similar trend is noted in the chipped stone assemblage, which appears to be derived primarily from on-site cobbles. A single labret recovered from component 2 suggests continued social inequality at this time, while the presence of beads and finely crafted pendants, bracelets, and blanket pins provide early evidence for art and may also indicate social inequality. An increase in the frequency of clams and salmon cranial elements may be indicative of increased storage activities during component 2, since there is ethnographic evidence for processing of both resources for storage. This increase in the frequency of clams and salmon elements is not continued in component 3. Late to Middle period use of the West Point site (component 3) is indicative of food procurement and land use activities associated with the decreased mobility observed elsewhere during this time. Other sites in the region contemporaneous with component 3 at West Point afford a view of littoral-situated "village life" during this time.

Inundated or “wet” archaeological sites provide a unique opportunity to recover and analyze artifacts that would have otherwise perished but for the anaerobic conditions that preserve them. One such site, the Biederbost site (45SN100), was occupied approximately 2,000 years ago and includes several perishable artifacts (Nelson 1976; Miss 1991). Excavations at this waterlogged site yielded numerous baskets, bone, and wood and bark items, as well as ground stone implements like adzes that were probably ubiquitous at similar long-term occupation sites. Numerous net weights and evidence of fish weirs from this site indicate exploitation of fish.

Non-littoral sites with datable materials are more common during the Middle Pacific period than in previous periods. Site 45KI11 is situated near the northeastern edge of Lake Washington, along what used to be the Sammamish River (Shong et al. 2007). Two radiocarbon dates from this site indicate that it dates to approximately 2,700 years ago. However, patinated lithic materials, commonly associated with the Olcott complex, and a single obsidian microblade were recovered during excavations. Excavations at Marymoor (45KI9) yielded similar materials dated to approximately this period as well (Greengo and Houston 1970). Highly fragmented and calcined faunal remains and a generally expedient lithic assemblage suggest the site was used as a processing location. Sites such as 45KI11 and 45KI9, which exhibit technologies attributed to earlier periods, like microblades, suggest the use of these tool types may be temporally less discrete than is suggested by Ames and Maschner (1999).

Late Pacific Period (1,800/1,500 to 225 years ago)

The Late Pacific period is characterized by continued environmental stability and what researchers have suggested is cultural stasis, with generally consistent lifeways throughout the approximately 1,600 years of this period (Ames and Maschner 1999). It is probable that cultural practices observed archaeologically during this period are an early expression of ethnographically observed lifeways. However, the presumption of pre- and postcontact cultural continuity across western North America has been challenged (Lightfoot 1995; Martindale 2009). Analysis of faunal materials from numerous coastal and riverine sites in the south-central Pacific Northwest indicate that salmon remained an important, consistently exploited, resource in the region (Butler and Campbell 2004). There is a sharp increase in inferred warfare on a regional scale that is coupled with a peak regional population circa 1,000 years ago (Ames and Maschner 1999). Burial customs become highly variable during this period as well.

West Point (45KI428 and 45KI429) components 4 and 5 date to 1,450 to 700 years ago and 700 to 200 years ago, respectively, and appear to represent limited use of the site during the spring and summer (Larson and Lewarch 1995). The few modified bone and antler tools from this site indicate a continuance of woodworking and fishing activities at the site; this is perhaps a reflection of subsistence and land use similar to observed ethnographic patterns. Additionally, Larson and Lewarch (1995) note that the large numbers of clams recovered from these components may be an early expression of historic clam-drying practices along Elliot Bay.

Riverine sites in the southern Puget Sound occupied within the last 1,500 years appear to closely reflect the ethnographically documented lifeways in the region. *Tualdad Altu* (45KI59) or "King Salmon's House," located in Renton, was a village that contained several nearly 60-foot-long houses, which were apparently occupied year-round, starting 1,500 years ago and ending just a few decades later (Chatters 1987). The site takes its name from a nearby Duwamish fishing location; its location on the Black River floodplain allowed occupants access to Chinook (*O. tshawytscha*) and steelhead (*O. mykiss*), which in typical Northwest Coast fashion they dried and preserved for winter consumption. The modified bone and antler assemblage from the site is much more elaborate than that from West Point (45KI428 and 45KI429) and includes multi-valve harpoon points, unilaterally barbed points, and zoomorphic effigies. Evidence for social differentiation at the site is observed in intra-site spatial distributions of faunal remains and artifacts. Other riverine sites in the general area suggest a similarly heavy use of salmon. *Sbabadid* (45KI51), also located on the Black River and occupied close to the same time as 45KI501, yielded evidence of heavy salmon use, but also many items of personal adornment and evidence of long-term occupation and social differentiation (Larson and Lewarch 1995).

Other sites in the Puget Sound region attest to the importance of salmon. The Renton High School site (45KI501) and the Allentown and White Lake sites (45KI438 and 45KI438A) were used within the last approximately 500 years and are ideally located for salmon exploitation and processing. These sites are dominated by salmon remains and reflect seasonally occupied fishing camps. These types of sites would have been necessary for the logistically organized inhabitants of the area and likely provided a great deal of the foodstuffs for the population, which peaked in the region during this late period (Chatters 1987).

Ethnographic Context

The land within and adjacent to the SR 520 corridor was originally a long sequence of bays, streams, and lakes inhabited by a group of

Duwamish people known to European pioneers as the Lakes people (Miller and Blukis Onat 2004). Other groups, who inhabited the broader Seattle area and also used these vital transportation corridors that linked Lake Washington to Puget Sound, include descendants of the Duwamish people who are now members of several federally recognized tribes, including the Muckleshoot Indian Tribe, Snoqualmie Tribe, Suquamish Tribe, and Tulalip Tribes, as well as the non-federally recognized Duwamish Tribe (see the 2009 *SR 520: I-5 to Medina Bridge Replacement and HOV Project Cultural Resources Discipline Report* in Attachment 7 to the Final EIS).

Although the assignment of ethnographically documented places to specific physical locations can be ambiguous, several settlements, both permanent and temporary, were located within the APE. Here, as well as the broader lake areas, the Lakes people cultivated and harvested the aquatic resources from the various basins and drainages. The marshes and adjoining woodlands were sources of abundant freshwater plants, freshwater animals, anadromous fish, terrestrial mammals, plants, aquatic birds, and migratory birds. Evidence of the size and time span of the occupation is seen in the number of named places that have been previously recorded (Blukis Onat and Kiers 2007). Waterman (1922) has identified eight named places that fall within the project corridor. These recorded place names included several transportation routes, collection areas, and settlements (Waterman 1922).

Historic Setting

The first European to enter Puget Sound was Captain George Vancouver, an officer in the British Royal Navy. In command of the ship *Discovery*, Vancouver embarked on an expedition to explore the Pacific region in 1791 with diplomatic, commercial, and scientific goals. Naming the body of water after his lieutenant, Vancouver explored Puget Sound in 1792 and named many other geographic features along the way (Bagley 1916). After Vancouver, the next to explore the area was Charles Wilkes in 1841. Wilkes, an American, surveyed the North American Pacific coast and is credited with naming Elliott Bay after his midshipman (Thomas 2004).

Within a few years, the fledging United States secured its claim on the Oregon Territory, encompassing the areas today known as the states of Oregon and Washington. Under the Oregon Treaty of 1846, settlement throughout the Pacific Northwest began in earnest, as Americans were attracted to the green, expansive valleys (Hayes 1999). Immigration accelerated with the Donation Land Claim Act of 1850 and the Homestead Act of 1862, both of which lured settlers to the area with the promise of free land (McCarthy 2009). In the fall of 1851, a group of Midwestern settlers, led by Arthur Denny, arrived at what is now Alki Beach in West Seattle. Shortly thereafter, they moved eastward across Elliott Bay to a place called *Duwamps* or the Little Crossing-Over Place. Much preferring this second location to the windswept beach, the Denny party settled and renamed the community after the local Native American leader, Chief Seattle (Coman and Gibbs 1949; Thrush 2007).

Despite Denny's friendship with and respect for Chief Seattle, peaceful coexistence with the native peoples of Puget Sound was short-lived. After the establishment of the Washington Territory in 1853, the new territorial governor began drafting agreements that required the removal of the area's Native American populations to make the land available for further Euroamerican settlement. Enacted in three councils called the Medicine Creek Treaty (southern Puget Sound), the Point Elliot Treaty (northern and eastern Puget Sound, including Seattle), and the Point No Point Treaty (Hood Canal to the Strait of San Juan de Fuca), these agreements called for lands to be handed over to the state in exchange for rights to traditional gathering areas, money, and the relocation of native peoples to designated reservations (Buchanan 1859; Buerge 1989; Gates 1955; Klingle 2007; Pierce 1855; Slauson 2006).

With the signing of the treaties, an entirely new social system was devised for native peoples. Under these agreements, native peoples were to relocate to designated reservations that were placed close enough to industry so that entrepreneurs could still use natives for labor. Reservations were envisioned as a vehicle for Native Americans' assimilation into the Euroamerican society. However, in the absence of traditional social systems and subsistence, they replaced the natives' seasonally based lifestyle, centered on hunting and gathering, with a different roaming lifestyle based on seasonal wage labor to feed their families. As a result, Seattleites' frustration continued with Native Americans' perceived lack of stability. On the other hand, natives were not content with the reservation system either (Klingle 2007).

Many Native Americans living in Seattle refused to relocate to reservations. One possible reason for this unwillingness is that they would likely have to share the reservations with tribal rivals and were waiting in vain to be given a reservation of their own. On the streets of Seattle, native people begged for food and assistance, which they believed they were due from the city, a practice which white residents despised (Klingle 2007). In 1855, native frustration over treaty agreements forcing them to leave their homelands to live on the alien soil of reservations exploded in the Yakima Indian War. Several regional tribes, including the Yakama and Wenatchee, united together and crossed the mountains. Warriors raided settlements along their route and even launched an attack on the city of Seattle itself (Buerge 1989). As Seattleites huddled under the protective defenses of the U.S. Navy sloop *Decatur's* cannon fire, their original goal of Native American assimilation faded (Klingle 2007). In 1865, Seattle passed an ordinance restricting Indian encampments to only the most outlying regions of the area, often next to muddy tideflats (Klingle 2007).

After the expulsion of native peoples, Seattle entered a decade of economic depression, but gradually reemerged as the land of opportunity due to its ample timber and coal supplies that brought new settlers to the area (Klingle 2007). As Seattle's population grew, the city began to face demanding challenges wrought by its topography, transportation needs, and periodic floods. To help alleviate these issues, Seattle embarked on a series of land alterations.

The first European to explore today's Lake Washington was Colonel Isaac N. Ebey. In 1850, Ebey ventured up the Duwamish River by canoe and explored the lake for several days, noting the thick forest and vegetation clinging to the shoreline. Ebey named the body of water Geneva, but it was also invariably called Dawamish or Duwamish on early government maps. In 1854, Thomas Mercer, an early pioneer of Seattle who later went on to become a county commissioner and judge, suggested the name Lake Washington (Bagley 1916; Rochester 1993).

Lake Washington's early image was not very attractive. Described by pioneers as "a sluggish body of water lined with sawmills and fit mostly for storing logs" (McDonald 1955a), Lake Washington was a shallow, flood-prone basin. Mercer first proposed the concept of a channel connecting Lake Washington to the Puget Sound in 1854 (McDonald 1955a). In the 1860s, Harvey Pike, who owned land along the portage route, was the first to attempt to dig a channel. Using only a pick, shovel, and wheel barrow, Pike believed that the lake would effectively dig the canal for him once a furrow was opened. However, Pike found the compact, dense soils resilient and his efforts never got beyond a small ditch (Droker 1977; Smith 2004).

In 1871, planners began to more clearly envision a larger canal as a solution to the lake's inundations. Government engineers slated Lake Washington as a potential freshwater moorage in an effort to provide further justification of the canal's expense (McDonald 1955a). The potential of the canal was not fully realized until increasing numbers of natural resources, including timber and coal, were harvested from the areas surrounding Lake Washington, requiring a transportation route to the Puget Sound in the 1880s.

Aiming to help with the flooding concerns and to provide a navigable route for transport of natural resources and farm produce, a shallow canal was first excavated in 1885 (Chrzastowski 1983). The shallow, 16-foot-wide excavation was intended to meet the need of the bustling timber and sawmill operations to pass logs between Union Bay on Lake Washington and Portage Bay on Lake Union. Known locally as the Portage Cut, this narrow canal took advantage of the natural difference in the water levels, which produced a current for transporting logs and small boats through the chute from the higher elevation of Lake Washington to Portage Bay. The effects of this shallow canal on water levels in Lake Washington are not known but were probably minor, perhaps approximately 2 to 3 feet. Exhibit 4-3 shows the location of the Portage Cut. Although a significant step forward, the Portage Cut was limited in its transportation capabilities and provided no flood protection, so it was not long before a more inclusive solution was sought.

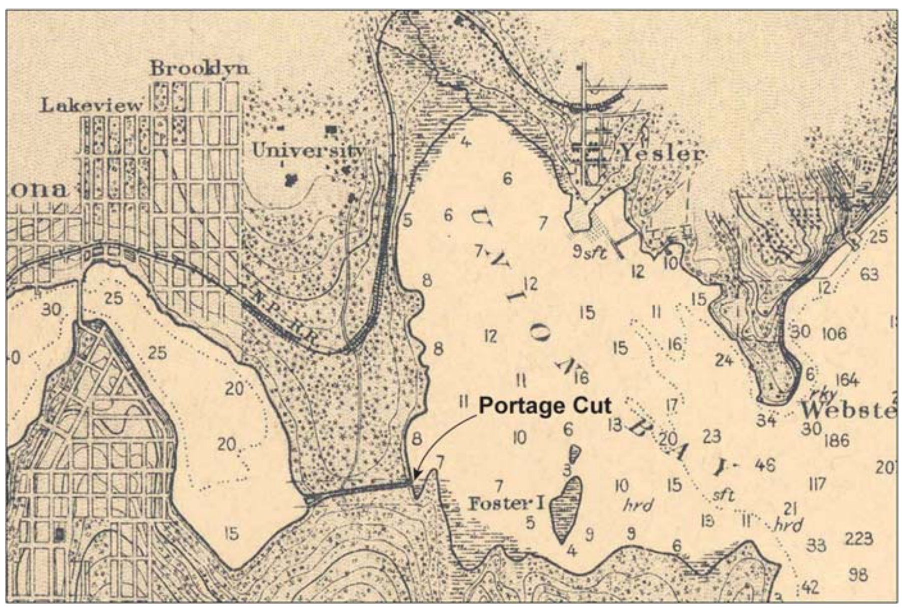

Exhibit 4-3. 1905 Geodetic Survey Map Showing Location of the 1885 Portage Cut and Lake Depth in Feet

(Coast and Geodetic Survey 1905; University of Washington Libraries Map Collection)

The city and population of Seattle grew with increased economic opportunities, stability, and transportation. By 1890, Seattle had become the second largest city on the west coast (Abbott 2008). A few years later, Seattle hosted the Alaska-Yukon-Pacific Exposition, an international showcase of the city's achievements and economic potential (Diller 1915). By 1910, only 60 years after its founding, Seattle's population topped 230,000 (Giles 1914).

In 1906, Hiram Chittenden became the new head engineer for the USACE, Seattle District. Arriving in the Pacific Northwest after completing his assignments to control flooding along the Ohio River and California's Central Valley, Chittenden immediately began to push for a solution to the flooding problems of Lake Washington (Klingle 2007). In 1911, construction began on a navigable ship canal between Lake Union and Lake Washington. The Montlake Cut is the water passage between the two lakes that was completed in 1916. To construct the canal, USACE dredged a straight channel between Lake Washington and the eastern edge of Union Bay. Dredging also continued in Union Bay after completion of the Montlake Cut, largely in soft mud and sand. Some of this dredged material was used to fill shallow water or marshes in lands surrounding the canal (Plummer 1991). Dredged material was also deposited in shallow water about 75 feet beyond the channel lines. Some of this dredged material was likely placed in shallow water north of the Arboretum or in the marshes that emerged in 1916 around Foster Island.

When the last barriers of soil and rock were removed between August and October 1916, Lake Washington was lowered 10 feet (3 meters) to the level of Lake Union (Galster and Laprade 1991). The lowering of Lake Washington eliminated the lake's outlet to the Black River, and the Cedar River was diverted into Lake Washington. A significant effect of the Montlake Cut was the lowering of the elevation of Lake Washington. It resulted in the exposure of wave-cut terraces where bathymetry was steeper, and wetlands where it was shallower. Marshes developed in the southern portion of Union Bay, and Foster Island significantly increased in size.

The lowering of Lake Washington exposed new waterfront property around the entire perimeter of the lake, creating expansive marshes in some cases (Eastside Heritage Center 2006; Klingle 2007). On the south side of Union Bay around Foster Island, several such marshes were created, and by the 1930s, at least two landfills were located in this area (UW 1935). One of them, the Miller Street Landfill, grew to envelop portions of the new marshland (Carroll 1935; UW 1935). The landfill serviced approximately 25 percent of the city and, in 1917, 10,000 cubic yards of material were deposited within its boundaries (Anderson Map Company 1911; Murray 1917; Seattle Engineering Department 1910, 1920). By 1934, the Miller Street Landfill measured approximately 1,000 feet north-south and 1,125 feet east-west (Department of Health and Sanitation 1934). The landfill was closed in 1936 (BOLA and Kiest 2003; City Comptroller 1936; Seavotto 1931; Winkenwerder 1936).

Significant cutting and filling also occurred during the original construction of SR 520. Major areas of cutting for SR 520 construction in Seattle occurred on North Capitol Hill, on the Roanoke Park plateau, and throughout the Montlake neighborhood. Major excavation also occurred along the route of the old portage canal. The old portage canal has mostly been filled, except for a segment still visible near the NOAA Northwest Fisheries Science Center and MOHAI. The Arboretum lost approximately 60 acres of lagoon area to the original SR 520 project in the 1960s. Parts of the marshes surrounding Foster Island were dredged prior to construction of the bridge footings to allow access for a pile driver. At least some of the dredged peat was cast to the side adjacent to the dredged areas. Dredging operations also removed some of the garbage fill material and underlying peat from the Miller Street Landfill site. Dredging extended up to the western and eastern edges of Foster Island. Exhibit 4-4 shows construction of SR 520 across Foster Island during the 1960s.

Exhibit 4-4. Aerial View West of SR 520 Construction across Foster Island, in Foreground (Seattle Post-Intelligencer Collection, Museum of History and Industry Negative No. 1986.5.7596).

Early Settlement and Neighborhood Development

As Seattle evolved and grew, neighborhoods were built and communities developed reflecting the area’s diverse population and progress. An important spectrum of Seattle history is captured in the development, evolution, and challenges faced by the areas studied for this project.

Eastlake

In the late 1800s, the area around Lake Union emerged as one of Seattle's early industrial centers. A few scattered settlers and speculators developed the land around the lake during the 1870s, sparked by progress in the burgeoning coal industry. Prior to this time, vast quantities of high-quality coal were discovered near Newcastle, but a lack of transportation infrastructure made it too costly to mine and export from Seattle. This condition changed with the completion of the Seattle Coal and Transportation Company's transport system in 1871, which consisted of coal cars moved by both railroads and barges to Seattle's wharves. Almost overnight, a small city sprung up at an important junction in the system on the south end of the lake, located near current Westlake Avenue and Roy Street (Bagley 1916; Droker 1977; Goodyear 1887). Still, the system was unwieldy and expensive, requiring that coal be transferred many times between railroads and barges before it reached its final destination in Elliott Bay (Droker 1977; Goodyear 1887).

Industrial development in Seattle and around Lake Union continued to increase in the 1880s with the completion of the transcontinental railroad in 1883. The railroad fostered new investment in the city's infrastructure and intensive extraction of Seattle coal and timber resources. During this time, railroads, electric street cars, and boat launches made all of Lake Union accessible for the first time (Droker 1977). David Denny, one of Seattle's early founders, established the first electric street car company to provide service to the area now known as the Eastlake neighborhood, bounded by Lake Union to the west and north, on the east by the present-day I-5 freeway, and on the south by Mercer Street. Operated by the Rainier Power and Railway Company, the tracks extended north along Lake Union's eastern shore and across the lake on a wooden trestle, roughly where I-5 now crosses (Droker 1977).

By the 1890s, all of the land along Lake Union's shores was platted, and in 1891, the Eastlake neighborhood was annexed into the city of Seattle (Droker 1977). Starting in 1897, businesses in the area helped supply miners with everything they required for the journey to the goldfields during the Klondike Gold Rush. However, the timber industry still remained Eastlake's primary enterprise. Many sawmills, furniture manufacturers, box and barrel makers, and board and paper processors were established on Lake Union during this period (Droker 1977).

In 1911, construction began on the Lake Washington Ship Canal to connect Lake Union with Puget Sound, increasing Lake Union's prominence as an industrial center and bringing even more workers into the Eastlake neighborhood. Completion of the Montlake Cut in 1916 and the Salmon Bay locks in 1917 enabled uninhibited ship movements from Lake Washington to Puget Sound through Lake Union. This greater accessibility attracted even more industry to the Eastlake area. Soon thereafter, electricity plants, ship dry docks, and plane manufacturers appeared (Dorpat 1987; Droker 1977).

The heavy industrial development in the Lake Union area led to a high demand for labor. In response, residential growth in the Eastlake neighborhood expanded alongside the industry. Although many large, single-family homes were built in the northern sections of Eastlake, other areas consisted of primarily apartment homes and multifamily dwellings (Morrow 1994). When these housing sources filled up, Lake Union workers began to use houseboats for temporary shelter (Droker 1977). By the 1920s, apartment buildings were the primary form of housing in the area (Morrow 1994). As the number of vacant lots dwindled, older single-family dwellings were eventually subdivided into multifamily residences or torn down for the construction of new apartment buildings (Pryne 1992).

In the 1960s, the Eastlake neighborhood was disrupted by the construction of I-5. Completed in 1962, the highway route cut off Eastlake from the Roanoke and Capitol Hill neighborhoods to the east, effectively defining and partially isolating the community (Morrow 1994). Nevertheless, Eastlake's position close to downtown Seattle helped the neighborhood maintain a residential population. In the late twentieth century, industry around Lake Union declined and many of the former industrial developments were replaced or renovated to support marinas, upscale restaurants, and other business activities (Dorpat 1987).

Roanoke Park

The neighborhood that is now called Roanoke Park was originally platted under the partnership of David Denny and Henry Fuhrman in 1890 (DAHP 1998; O'Connor et al. 2009). Denny was one of Seattle's earliest settlers and Fuhrman, a native of Germany, was a successful businessman who had made his way across the United States until he settled with his family in Seattle in 1890. Together, Denny and Fuhrman platted 160 acres along Lake Union (Crowley 1998; Lewis Publishing Company 1903).

The Roanoke Park neighborhood is bounded by East Shelby Street to the north, Harvard Avenue East to the west, East Roanoke Street to the south, and Tenth Avenue East to the east. The community is perched on a relatively flat plateau with precipitous drops on three sides and a steep upward slope to the south toward Capitol Hill. As a result, the neighborhood stands separate from the surrounding residential areas (DAHP 1998; O'Connor et al. 2009).

The first development in the area was an electric line built by Denny in 1891. A branch from the Eastlake line, the trolley line ran up Broadway, terminating at East Lynn Street (DAHP 1998). Shortly thereafter, in 1899, the first home was constructed in Roanoke Park. It was not until after the turn of the century that the area saw more significant development (O'Connor et al. 2009).

By 1910, two local improvements spurred the development of the Roanoke Park neighborhood: an electric trolley extension and the creation of Roanoke Park. In 1908, the trolley line was extended through the neighborhood and out to the north, connecting again with the Eastlake line and a line continuing northward toward the UW campus (DAHP 1998). Around this same time, Roanoke Park was established. The park was built on a lot once owned by corrupt City Treasurer Adolf Krug; it was seized and transferred to the City of Seattle in 1900. In turn, the City turned the parcel over to the Seattle Parks Department's jurisdiction in 1908. The 1903 Olmsted plan, a comprehensive plan outlining the future vision for all of Seattle's public parks, had envisioned Roanoke Park becoming the north end of Interlaken Park. Interlaken Park, located to the southeast in the Capitol Hill neighborhood, was to be connected to Roanoke's large, semi-circular area of walkways, entrance gates, shelters, and a Portage Bay overlook. This vision changed abruptly in 1910, when instead of a promenade of walkways and shelters, the Seattle Parks Department built only a few walks among broad lawns with flowers and shrubbery (Sherwood 1974c).

Attracted by the transportation options and elegant park, many homes were soon built in the Roanoke Park neighborhood. Often designed by notable local architects, the homes reflected a diverse collection of early twentieth century architecture. Roanoke Park emerged as an early street-car suburb of Seattle, attractive for its public spaces and transportation links to downtown. Roanoke's successful development is also likely due in part to the fact that the neighborhood overlooked the 1909 Alaska-Yukon-Pacific Exposition, where Seattle proclaimed its achievements and demonstrated its potential to the world (Diller 1915; O'Connor et al. 2009).

In the 1960s, the setting of the Roanoke Park neighborhood was altered by construction of I-5 on the western edge of the district and then SR 520 just south of the district. Development in the 1960s and beyond continued to influence the neighborhood, including the construction of St. Patrick's Church in 1961. Despite these changes, the community experienced a period of rejuvenation after the 1970s.

Capitol Hill

The Capitol Hill neighborhood, located on a long ridge overlooking downtown, was named by the neighborhood's primary developer, James Moore, in 1901. Prior to this, the area had been known as Broadway Hill and was positioned around a wagon road cut through the forest to a cemetery at its peak, later named Lake View Cemetery (Williams 2001). Today, Capitol Hill is bounded by Fuhrman Avenue East on the north, I-5 on the west, East Pike Street on the south, and 24th Avenue East on the east.

Moore was a very successful developer and he marketed the exclusive character of the area to attract Seattle's elite to the neighborhood. By 1913, enough mansions lined 14th Avenue North to earn it the nickname "Millionaire's Row" (Williams 2001). Each estate was individually designed, primarily by well-known architects, in lavish grandeur and in a wide range of architectural styles, including Tudor Revival, Georgian Revival, Classic Revival, Queen Anne, English Cottage, Classic Box, and Craftsman (Williams 2001).

As transportation improved, the Capitol Hill neighborhood became accessible to Seattle residents and as a result, grew rapidly. The character of the neighborhood began to change from only grand single-family houses, to eventually include multifamily structures. Housing types were placed adjacent to one another, sometimes with grand houses next to new apartment dwellings. These apartments featured upscale designs and quality construction in an effort to attract the growing middle class, discourage poor tenants, and overcome the prejudice of surrounding mansion dwellers (Williams 2001).

A high percentage of Capitol Hill's residents during this period were Catholics. Served by numerous institutions, including the Holy Names Academy (1907) at 22nd Avenue and Aloha Street, St. Joseph's Church (1907) and School (1908) on 18th Avenue, and Saint Nicholas School (1910) on Broadway Avenue North, these families established an intimate community (Williams 2001). In the early part of the nineteenth century, the area north of St. Joseph's was one of the most heavily Catholic neighborhoods north of San Francisco and west of St. Paul, Minnesota (*Seattle Post-Intelligencer* 2010).

On Broadway Avenue, between Pike and Roy Streets, Capitol Hill's busiest cultural and commercial district developed. Here the Broadway High School—Seattle's first building constructed specifically to be a high school—opened on the corner of Broadway and East Pine Street in 1902 (Williams 2001). Between East Republican Street and East Harrison Street, a block-long Broadway Market was completed in 1928. With a collection of independently owned small shops, the Broadway Market was a progenitor of the modern-day supermarket, soon copied by the Safeway Corporation and other large companies. Within its 25,000 square feet, the market offered a wide variety of shopping opportunities, including dairy products, bakeries, meat markets, hair salons, flower shops, delicatessens, and a pharmacy. In later years, the composition of stores along Broadway Avenue changed (Williams 2001). To address increasing housing and retail needs, it was developed into a medium-density community.

Portage Bay

The neighborhood of Portage Bay extends along the western shore of Lake Union's eastern arm. This portion of the lake was named "Portage Bay" by the Seattle Port Commission in 1913 to prevent confusion with the more popularly known main portion of the lake. The Portage Bay neighborhood developed along the edge of this bay, occupying the lower topography of today's Fuhrman Avenue East and Boyer Avenue East (originally platted 12th Avenue East), east of I-5.

Like Roanoke Park, the area north of East Shelby Street was originally platted in the early 1890s under the partnership of David Denny and Henry Fuhrman (Baist 1905; Lewis Publishing Company 1903). The land located south of East Shelby Street, along Boyer Avenue East, west to 11th Avenue East and south to East Edgar Street, was first platted by Cheshiahud, a local Native American resident, also known as Lake Union John. The platted land, known as John's Addition, was originally homesteaded by Cheshiahud, who lived on 5 acres of Lake Union shoreline until shortly after his wife's death in 1906. Thereafter, Cheshiahud joined the flight of many other Native Americans from the Seattle area, primarily caused by the disruptions that increasing settlement by non-natives had on traditional subsistence patterns, village locations, and social networks. Cheshiahud sold his land, making him one of the richest Native Americans in Puget Sound, and moved to the Port Madison Reservation (Kroll Map Co. 1920, 1924; Thrush 2007).

Although houses were built as early as 1900, this neighborhood's principal period of development occurred in the 1920s, with a second period of development in the 1950s. Relatively isolated on the far side of Capitol Hill, the Portage Bay neighborhood developed later than the neighboring, higher elevation areas. In 1912, only about 15 homes had been built in the Portage Bay neighborhood, accounting for approximately 8 percent of the available lots. In comparison, lots in neighboring areas were already approximately 75 percent occupied. The Portage Bay neighborhood's undeveloped character, however, quickly changed as infrastructure improvements increased the appeal of the area (King County Department of Assessments 2010).

The Portage Bay neighborhood experienced significant improvements and investments in infrastructure in the early 1900s. In 1905, only one, 6-inch water main existed in the area, running down East Hamlin Street (Baist 1905). By 1912, water mains had been installed for all streets, and sewers were in place for all streets except one (Baist 1912). Most roads were paved by 1920 except for a few small segments (Kroll Map Co. 1920). By 1924, residents began to flock to the area and the fledgling Portage Bay neighborhood lots were approximately 70 percent occupied with new homes (Kroll Map Co. 1924).

Through the 1930s and 1940s, residential development slowed in the Portage Bay neighborhood. Its empty lots, covering approximately 30 percent of the total, remained vacant well into the late 1930s. This drop in development is likely due to the impacts of the Great Depression followed by World War II, which drew attention and resources away from domestic building and construction (Gilbert 1989; Marsh 2005).

Shortly after the close of the war, a new wave of development began in the Portage Bay neighborhood. In the 1950s, many large, more modern residences were built in the neighborhood. These new homes were primarily placed on empty lots that remained open from the first years of development. However, it is likely that older homes were also demolished and replaced by newer construction. The Portage Bay neighborhood has maintained its status as a quiet, primarily single-family residential area since the 1950s (Hooper 1947; Kraus 1985).

One important civic improvement in the Portage Bay area was made during the Great Depression. In 1929, local property owners petitioned the Seattle Board of Park Commissioners (Seattle Parks Board) to establish a playfield in the vicinity of the Montlake neighborhood to entertain the increasing youth population in the growing community. In response, the Seattle Parks Board and City Council selected a site on the southeastern corner of Portage Bay and began work in 1931. Dedicated in 1935, the Montlake Playfield included a recreation center, playfield, and archery range (Sherwood 1974a).

On the western side of the Montlake neighborhood, the Montlake Playfield area lies along the southern shore of contemporary Portage Bay. Filling in the 1930s created some of the original playfield area, and the playfield was again filled and expanded northward beginning in 1960. Fill-spreading continued until the late 1960s, as material was brought into the park from projects around the Seattle area, including the original SR 520 project. During the 1960s and 1970s, a series of improvements were made to the Montlake Playfield. Located on low topography, the playfield was plagued by swampy and marsh-like conditions, making it susceptible to vermin and mosquito infestations. In the 1960s, the Seattle Parks Department continued filling in the playfields. With the construction of I-5, additional fill from excavations was placed in the area, often haphazardly and intended for later spreading. This unsorted material put uneven pressure on the viscous peat below, estimated to be 20 feet deep, and portions of the playfield buckled and heaved (Sherwood 1974a). In 1966, more sand and gravels from the Ravenna Sewer Tunnel excavations were dumped in the park. Finally, in 1968 a bond measure passed that provided the funding necessary to begin restoration of the playfields. As part of the restoration, 30 lots to the west were added to the park. In 1975 and 1976, a baseball field, soccer and football field, track, and new recreation center were added to the Montlake Playfield's facilities (Gould 2000; Sherwood 1974a).

Montlake

The community now known as Montlake, extending from the Arboretum on the east, to Portage Bay on the west, to the Montlake Cut on the north, and to Interlaken Park and Interlaken Boulevard to the south, was first conceived by Harvey L. Pike. Lacking the funds to buy the property outright, Pike obtained the land in 1861 in exchange for his future labor to clear the land (Smith 2004). In the years following, Pike slowly began to improve the land, clearing it and unsuccessfully attempting to dig a canal. In 1869, Pike hired draftsman S.C. Harris to draft plans for what he called Union City. This plan, which was formalized on December 6, 1870, included a standard street grid configuration between East Miller Street and East Edgar Street with a large swath in the middle reserved for the envisioned canal between Lake Washington and Lake Union. The second addition, which Pike submitted in 1875, covered much of the land that makes up Montlake today, stretching to the south of his 1870 plat and today’s SR 520. Despite his enthusiastic start, Pike sold his land and moved out of Seattle before his dream of Union City could be realized (Smith 2004).

After Pike’s departure, the lands he originally platted changed hands many times. In 1909, they were again owned by one man, James M. Corner. Corner, in turn, hired Calvin and William Hagan to administer the architectural and real estate tasks needed to develop the land. The Hagan brothers replatted the area, changed the proposed street names, and renamed the community the Montlake Park Addition (Sherwood 1974a; Smith 2004). Over the following years, the Hagans planned and oversaw the installation of paved streets and utilities including water, sewer, gas, and electric, as well as the sale of the lots (Sherwood 1974a; Smith 2004).

In 1909, the same year that Montlake was platted, the Alaska-Yukon-Pacific Exposition, located just to the north at present day UW, brought marked transportation improvements to the area. Trolley car lines and a new road from Seattle along Interlaken Boulevard to Lake Washington made Montlake a convenient suburb of Seattle. Several years after the Exposition, the Montlake Cut connecting Lake Washington with Lake Union became a reality, resulting in the north end of the neighborhood becoming waterfront property (Sherwood 1974a).

The neighborhood south of SR 520, originally known as Interlaken, was developed separately from, though basically concurrently with, the northern part of the neighborhood. John Boyer of the Interlaken Land

Company filed his plat in December 1905. Bordered on the west by Interlaken Park and on the east by Washington Park, the plat featured 20 irregularly shaped blocks located on either side of 24th Avenue East to the north of East Galer Street. Boyer imposed restrictive covenants requiring that houses constructed east of 24th Avenue could cost not less than $3,000, and those west of 24th not less than $5,000, ensuring above-average construction values (Gould 2000; Smith 2010).

As the neighborhood lots were gradually filled in through the years, homes in Montlake developed into an eclectic, varied group. In some areas, developers attempted to bring uniformity to the area, reflected by clusters of a particular architectural style. However, most homes in Montlake were not designed by notable architects, but rather chosen from a pattern book. From mansions to small bungalows, Montlake houses include Tudor Revival, Craftsman, and Ranch styles, among others (Smith 2004).

One major change to the area in the second half of the twentieth century was the construction of SR 520. Finished in 1962, this freeway assumed the canal route outlined by Pike, as the actual canal was built farther to the north.

Madison Park

In 1864, Judge John J. McGilvra acquired 420 acres of land on the western shore of Lake Washington, including Foster Island. A New Yorker who had practiced law with Abraham Lincoln in Chicago, he was appointed as the U.S. Attorney for the Washington Territory when Lincoln became president. McGilvra and his wife, Elizabeth, built their home on the mainland to the southeast of Foster Island, in an area now known as Madison Park, and cut a trail from downtown Seattle through the wilderness to their front steps. In a short time, McGilvra's dock became a busy private landing as residents around Lake Washington traveled to Seattle for business by rowing or sailing across the lake and then continuing on using his established trail (Hines 1893; Grant 1891; Thomas 2004).

The McGilvras were the only residents in the area until the 1880s (Thomas 2004). They eventually began developing their property as a lakefront resort and entertainment center. To make it easier to reach the development, McGilvra negotiated an extension of the Madison Street Cable Railway from Capitol Hill to the waterfront. In exchange, McGilvra gave the company 21 acres of lakefront property and $50,000 to develop the area into picnic grounds (Thomas 2004).

McGilvra named his road from the city, as well as the waterfront park, in honor of the fourth president, James Madison (Sherwood 1974b).

By 1889, a new dock and ferry slip were completed at Madison Park and cable car service began along the new route. McGilvra's investments were successful and in 1890, he constructed a five turreted "Music Palace," capable of seating 500 people, as well as a baseball grandstand that could entertain as many as 1,200 fans (Sherwood 1974b; Thomas 2004). During this period, McGilvra began leasing small plots of his land and only allowed small summer cottages or tent houses to be built on them. It was not long before other Lake Washington residents wanted better access to Madison Park. In 1900, public ferry service was established between Kirkland and Madison Park with double-ended boats spacious enough for wagons and horses (Thomas 2004).

With the opening of the Montlake Cut in 1916, the water level dropped and overnight, many of the waterfront attractions were left high and dry. In the 1920s, the McGilvra estate released their property, resulting in the sale of the small lots, lifting their construction limitations, and transferring the management of the Madison Park to the Seattle Parks Department (Sherwood 1974b). As a result, Madison Park's characteristic streets of small cottages began to change. As families in the community sought to live in the area year-round, many of these small houses were remodeled or demolished altogether and replaced with much larger houses (Thomas 2004).

In 1940, the Lacey V. Murrow Bridge was built to the south from Seattle to Mercer Island. This development caused a decrease in ferry traffic and within 10 years, the Madison Park-Kirkland Ferry ceased operations. As a result, the number of Madison Park visitors began to decrease and the area developed into a quiet waterfront community with a small shopping district (Thomas 2004).

Washington Park Arboretum

The mainland area currently occupied by the Arboretum was purchased in 1864 by Jackson Pope and Frederic Talbot. Pope and Talbot owned a lumber and cattle empire in California and were looking to expand to the Pacific Northwest. Initially, the men bought an 80-acre tract from the government for $100. Later, they increased their holdings to more than 200 acres. In 1874, Pope and Talbot's timber interests in the Pacific Northwest were organized as the Puget Mill

Company, a subsidiary of the San Francisco–based Pope & Talbot Company (Bagley 1916; Kroll Map Co. 1920; Thomas 2004).

Starting in 1896, the Puget Mill Company began logging from 33rd and 37th Avenue North and from Union Bay south to East Valley Street. Envisioning a future for their land beyond timber but short on cash, the Puget Mill Company struck a deal with the City of Seattle to pave the way for real estate development on some of their acreage. The city agreed to construct a $35,000 water main to some parcels of the Puget Mill Company's land, and in return, the Puget Mill Company deeded 62 acres to the city (Thomas 2004). These 62 acres became the early beginnings of Washington Park (Bagley 1916).

A Board of Park Commissioners was established by ordinance in 1887 to oversee the development of a comprehensive Seattle park system. The city recognized the value of the spectacular Pacific Northwest natural landscape and the board was tasked with organizing a plan to celebrate, showcase, and protect the landscape, while providing access and opportunities for all citizens to experience and enjoy the natural environment (Friends of Seattle's Olmsted Parks 2009). The *Seattle Post-Intelligencer* began to publish editorial features in 1902 supporting and encouraging the ambitious goals of the new Board of Park Commissioners. The articles featured civic leaders calling for creation and full funding of more parks and boulevards. Professor Edmond Meany, a local leader, told the paper "the Queen City's great need is more beauty in streets, parks, public places and houses. Let us show the world that in the midst of our popular growth, we can produce the nation's most beautiful city." To that end, in 1903, the city hired the Olmsted Brothers' landscape architecture firm. John Charles Olmsted and Frederick Law Olmsted, Jr. came to Seattle to prepare a plan for a citywide park and boulevard system. This system was envisioned as a chain of parks and parkways linking existing parks, such as Washington Park, creating new parks, and stitching them together with park boulevards (Friends of Seattle's Olmsted Parks 2009, Takami and Keith 2003).

Begun in 1903, Washington Park was one of Seattle's first parks. More acreage was added in following years and, by 1916, the city owned a total of 165 acres (Bagley 1916). The city's last acquisitions of land for Washington Park took place with the 1917 purchase of Foster Island from the McGilvra Estate, and then several irregular-shaped lots comprising the southwest corner of the park in 1920 and 1921 (Easton 1989; City of Seattle 2008).

The Olmsteds, popular and revolutionary landscape designers, presented their first plan for Seattle's park system on October 19, 1903, to the Seattle City Council (Bagley 1916). The Olmsted plan created a greenbelt of 37 parks and boulevards stretching from Woodland Park, through what is now the university campus and along Lake Washington Boulevard, south to Seward Park (BOLA and Kiest 2003; Ott 2010; Takami and Keith 2003). The Olmsted philosophy focused not only on the physical beauty of the landscape, natural resources, and vistas, but also on the vital relationship between parks and people. Most of the parks and connecting boulevards designed by the Olmsted Brothers in Seattle were built by 1908. The Seattle system is one of the most fully realized and best preserved Olmsted park and boulevard systems in the United States (BOLA and Kiest 2003; Takami and Keith 2003).

For the early part of the twentieth century, the Olmsteds' Seattle-wide plan was generally followed for Washington Park. However, their vision of the park as an open, public space changed beginning in the mid-1930s. Since the 1920s, the UW had been looking for a suitable place to create a botanical garden. In 1934, the Seattle Parks Board answered the university's plea by signing an agreement to let it build an arboretum in Washington Park. Two years later, the UW Arboretum Foundation was formed and, together with the Seattle Garden Club, brought the Olmsted team back to Seattle to landscape the grounds (Klingle 2007). The firm drafted the plan for the new Arboretum, a "veritable jewel" of Seattle, in March 1936 (Boren 1936). J. Frederick Dawson, the chief designer, worked closely with the Seattle Parks and Recreation Department's staff landscape architect, Frederick Leissler. Between 1937 and 1942, Works Progress Administration (WPA) laborers completed much of the basic infrastructure, still present today, that was outlined in this 1936 plan (Institute of Forest Products et al. 1969; UW no date [n.d.]).

The undeveloped property north of SR 520 behind the houses facing East Hamlin Street is what remains of the "Canal Reserve Land," the location of the original log canal between Lake Union and Lake Washington. This portion of land was not included in the Olmsted plans for the park, but was one of the first areas formally planted. Frederick W. Leissler, Jr., who was appointed assistant director of the Arboretum in 1936, directed WPA crews in planting Yoshino cherry trees and incense cedars on the canal land during the winter of 1935 and 1936. The trees remained until the construction of SR 520 in 1961.

At that time, some of the cherry trees were relocated to the UW (BOLA and Kiest 2003). While various specimen trees remain, most of the surrounding land and plantings have been removed, and the introduction of SR 520 severely compromised this early landscape.

The area around Foster Island and along the shoreline was included in both the 1904 and 1936 Olmsted plans. Envisioned as a series of lagoons, this area was initially an extensive marshland that had developed after the lowering of Lake Washington (Boren 1936). By the 1930s, at least two landfills, one of which was the Miller Street Landfill, were also located here (UW 1935). Prior to the late 1960s, landfills were typically located within mainly steep ravines, low-lying swampy areas, former borrow pits, and tidal areas as a way to efficiently reclaim the land and beautify the city (Department of Health and Sanitation 1915; Phelps 1978). To develop the lagoons outlined in the Olmsted plan, dredge spoils were used to both raise the marshland adjacent to the lagoons and likely address these unsightly refuse deposits by covering the exposed trash (CH2M HILL 2009). Extensive dredging took place to excavate four lagoons (UW n.d.).

In 1939, plantings of 16 species of bamboo and 3,500 Japanese irises were added to the existing flowering cherry trees and Eastern dogwoods installed by WPA crews just a few years earlier (Arboretum Foundation 1940). Although various specimen trees remain, the introduction of SR 520 significantly changed this early landscape. Most of the original plantings are now gone and, as a result of significant cutting and filling, the Arboretum lost approximately 54 acres of lagoon from SR 520 construction (Institute of Forest Products et al. 1969; UW 1967). The Arboretum contains one NRHP-listed resource, the Arboretum Aqueduct, which contains sewer lines and a pedestrian bridge, and crosses Lake Washington Boulevard near East Lynn Street.

Lake Washington Boulevard

Lake Washington Boulevard, passing through or by fourteen parks, is the main link in Seattle’s Olmsted legacy of citywide park boulevards. The boulevard was planned to reach from Washington Park in the north continuously to Seward Park, which encompasses the Bailey Peninsula, in the south. It was the first of the park boulevards to be built following the Olmsted plan (Friends of Seattle Olmsted Parks 2009).

In 1907, the Parks Department extended Lake Washington Boulevard from Washington Park to the south entrance of the Alaska-Yukon-

Pacific Exposition. This extension was called University Boulevard, in hopes of extending the boulevard system to the north, which never came to fruition. The extension was later folded into Lake Washington Boulevard, but today what was University Boulevard is now Montlake Boulevard (History Link 2010).

According to the National Association for Olmsted Parks, the Olmsted philosophy defined the "parkway" as “a wide urban greenway carrying several different modes of transportation (most important a smooth-surfaced drive reserved for private carriages) which connected parks and extended the benefits of public greenspace throughout the city” (Beveridge 2011).

The roadway through Washington Park was the first new road built from the Olmsted Brothers’ plan, originally called Washington Park Boulevard. It was completed within a year of the Olmsted Report to the Board of Park Commissioners. The plan called for three roadways in the park. Of these, “the pleasure drive would be carried through the length of the park within its borders, but in such a way as not to unduly cut up the level or gently sloping land” (BOLA and Kiest 2003). Lake Washington Boulevard winds through the length of the Arboretum west of center and serves as the primary access to the park. It was designed by John C. Olmsted and constructed under the Parks Superintendent at the time, J.W. Thompson. The first 2,120 feet of the road, starting at East Madison Street, was completed in 1904. The rest of the roadway through the park was completed by 1906. The landscape design for the boulevard developed through 1907 (BOLA and Kiest 2003, DAHP 1969).

Evergreen Point Bridge

The Lacey V. Murrow Bridge, built in 1940, was first floating bridge span across Lake Washington. The second floating bridge across Lake Washington was the Evergreen Point Bridge, which was built 4 miles north of the Lacey V. Murrow Bridge. Construction began in 1960 and in August of 1963, the Evergreen Point Bridge was ceremoniously opened (Reynolds 1988). At the time, the Evergreen Point Bridge was the largest floating span in the world at 1.4 miles long. Exemplifying an engineering feat of outstanding proportions, the Evergreen Point Bridge was considered by some to be a “modern wonder of the world” (*Seattle Times* 1966). In 1988, the bridge was officially renamed the Governor Albert D. Rosellini Bridge—Evergreen Point after the former governor under whose administration the bridge was originally built.

Medina

Along the shores of Lake Washington, the thick, tall trees first drew lumbermen to the area that is today known as Medina, which stretches from Evergreen Point south to Meydenbauer Bay, west of Clyde Hill. During the 1880s, men worked to fell the great forests. Isaac Bechtel, an Ontario, Canada native, was responsible for logging most of Medina, Bellevue, and Mercer Island during this time (McDonald 1955b).

Much of the land along the shoreline was soon clear of timber, and berry farms and orchards were developed in the new open spaces (McDonald 1965). Drawn by the rural charm and excellent views, Seattle businessman Thomas Dabney became Medina's first permanent settler in 1886. In 1891, Dabney built a dock at Dabney's Landing, located near present-day Medina City Hall, attracting other residents to the area. The following year, the new community named its town Medina Heights after the second holiest Muslim city. Mrs. Samuel Belote, a local resident, picked out the name from geography books and chose it over Dabney's flowery title of "Flordeline" (Cornwall 2002; McDonald 1955b, 1965; Rochester 1993).

During the early 1900s, more lakeshore estates emerged in Medina Heights. This trend began in 1905 when Edward Webster, the secretary and general manager of Seattle's Independent Telephone Company, erected a home called "The Gables." Several similar houses followed and on February 18, 1914, Medina Heights was officially platted with large waterfront tracts. In the following years, the area was promoted as an exclusive residential area, located away from the bustle of city life but close enough to enable the trip to be made quickly (McDonald 1965; Rochester 1993). A 1913 newspaper advertisement claimed that Leschi Park, located on the west side of Lake Washington, could be reached by ferry from Medina within 10 minutes and the Smith Tower, a symbol for Seattle commercialism, could be reached within 25 minutes (Cornwall 2002).

In 1919, Medina's first marketing campaign characterized the area as "the heart of the charmed land" (Rochester 1993). Large, impressive houses built by Seattle's elite lined the shores of Lake Washington. Despite their elegance, many residences were intended as part-time summer homes and only occupied part of the year. When a golf club was organized and yachts were moored in front of the large estates, the area's abundant and lavish wealth earned it the nickname the Gold Coast (Corsaletti 1982; McDonald 1965).

In 1940, the Lacey V. Murrow Bridge was completed to the south, between Mercer Island and Seattle, opening the east side of Lake Washington to greater development (Cornwall 2002). Although much of this new development took place in Bellevue to the southeast, Medina Heights grew concerned that its large-lot residences, lack of commercial areas, and personalized public services would be threatened. As a result, on July 26, 1955, Medina Heights incorporated as Medina. The city implemented strict zoning regulations and was zoned completely residential with businesses only able to operate in existing stores with the exterior shell maintained as it was originally built (McDonald 1965; Woodward 1971).

Hunts Point

In 1871, Marshall Blinn acquired what is today known as Hunts Point, a finger of land stretching into Lake Washington just north of Medina and east of Clyde Hill (McDonald 1955b). Blinn, a master millwright, came to Seattle in 1854 and soon emerged as a successful lumbering and shipping magnate. Together with several partners, Blinn founded Seabeck, Washington, a lumbering town located about 20 miles west of Seattle and described in 1885 as "the liveliest place on Puget Sound" (*Seattle Times* 1958). After he left Seabeck, Blinn was involved in several other, less successful ventures in the Seattle area, including a run for Congress, a stock ranch east of the mountains, and an effort to ship ice into the city (Conover 1960; *Seattle Times* 1958). After Blinn's death in 1888, Leigh S.J. Hunt bought the property (McDonald 1955b).

Hunt, a high school principal from Iowa, came to Seattle in the 1880s. Joining up first with Jacob Furth, the head of the Seattle National Bank, Hunt soon became involved in real estate, mines, street railways, and banks. He was an optimistic man and people gravitated to him. In 1886, Hunt bought the *Seattle Post-Intelligencer* and, with no prior newspaper experience, brought his dynamic force to the newspaper. Shortly thereafter, Hunt bought land along the eastern shore of Lake Washington, including the areas today known as Hunts Point and Yarrow Point (Bagley 1916; Conover 1948; Cornwall 2002). In 1888, Hunt built a large, 14-room mansion on the shore of the lake, complete with lawns, barns, gardens, the Yarrow Point fountain, and a park with deer (Knauss 2003; *Seattle Times* 1937). Hunt named his estate "Yarrow" after a poem by William Wordsworth describing a glorious estate. Thereafter, the finger of land was known as Yarrow Point (Cornwall 2002).

Hunt's interest in Hunts Point, his namesake finger of land, appears to have been limited. At one point, Hunt logged portions of the area to pursue a better view from his mansion on Yarrow Point (Cornwall 2002). Later, he deeded portions of the point to Jacob Firth and Bailey Gatzert (McDonald 1955b, 1965).

In 1892, Francis Boddy purchased Hunts Point (McDonald 1955b). Boddy, a pioneer landscape architect and gardener from England, designed and supervised the construction of many Seattle outdoor spaces including Kinnear Park, Leschi Park, and the Central Seattle Public Library grounds, as well as the grounds of prominent Seattleites including Henry Yesler, Judge Thomas Burke, and Frank Waterhouse. Prior to coming to Seattle in 1889, Boddy worked on the Westlake Park in downtown Los Angeles, California (*Seattle Times* 1941). On Hunts Point, Boddy began a dairy and greenhouse business, building a sawmill to supply himself with lumber and selling some of the excess (McDonald 1955b).

Although still maintaining a rural character spotted with orchards and gardens, after the turn of the century, Hunts Point saw more residential development (Eastside Heritage Center 2006). In 1904, James Brewster purchased the tip of Hunts Point, and within 2 years, built a large house. William Meydenbauer, for whom Meydenbauer Bay is named, built a vacation cottage on Hunts Point in 1906 (McDonald 1955b). The area soon became known for its elite residences. Interest in developing Hunts Point increased with the completion of the Lacey V. Murrow Bridge (1940) and the planned Evergreen Point Bridge (1963) because of the easier access the bridges afforded the area. In 1955, Hunts Point incorporated in an effort to protect the community from encroaching development (Cornwall 2002). Today, the town remains an exclusive community housing an upper class population (*Seattle Times* 2006).

Clyde Hill

Patrick Downey homesteaded much of the land that now makes up Clyde Hill in 1881. Born in Ireland, Downey came to the United States in 1860 and followed the Gold Rush to California. Eventually, Downey settled in the Seattle area, taking up a claim on a ridge on the eastern shore of Lake Washington and building a log cabin. In 1890, President Benjamin Harrison signed a land grant to Downey, assuring his claim in the area (Brazier 1969; *Seattle Times* 1960, 1983).

In the early years, Downey named a local dock on Meydenbauer Bay "Clyde Landing" after the Clyde River in Scotland. This name was later adopted by the community of Clyde Hill that grew around him. Downey married an Iowa native, Victoria, and brought her to the new home in 1892. After he cleared the land, Downey started a strawberry farm and large dairy with 30 to 40 cows. As the family grew, eventually having a total of 13 children, the Downeys built a new house in August 1903, which still stands today (Brazier 1969; McDonald 1955c; Seattle Times 1960, 1983).

With the growth of the Downey family and the arrival of more settlers, public services were needed in the area. The first school in the area had an enrollment of nine children and was started in 1886 in one of the Downey's berry field outbuildings. By 1900, the school had moved to a one-room building on Bellevue's main street and local enrollment had reached 70 students (McDonald 1955c).

Next to arrive in the area were religious services. Starting in 1910, the Downeys opened up their home to the community and a priest visiting from Kirkland would say mass (Brazier 1969; *Seattle Times* 1983). Later, Downey donated land on which the first Sacred Heart Catholic Church was built by the Seattle Archdiocese (Brazier 1969).

Like many other cities along the Gold Coast in the mid 1900s, Clyde Hill sought incorporation as a way to maintain its community's way of life. Touted as a way "to avoid becoming a city" (*Seattle Times* 1953), Clyde Hill was incorporated in 1955 (Woodward 1971). The city's first actions were to institute zoning regulations calling for lots to be at least 0.5 acre in size. Clyde Hill was also made exclusively an all-residential area, and in 1971, only two businesses were present in the area (Woodward 1971). In the process of incorporating, Clyde Hill turned down Bellevue's annexation request. Unsure of the direction the new Bellevue government would take, Clyde Hill opted for self government (*Seattle Times* 1953).

Yarrow Point

In 1888, Leigh S.J. Hunt also bought land on the shores of Lake Washington for his estate, Yarrow. Thereafter, the finger of land was known as Yarrow Point (Cornwall 2002; McDonald 1955b). Around 1888, Hunt deeded some land at the base of Yarrow Point to his friend, Jacob Furth, the founder of the Puget Sound National Bank. Furth developed the land, including some of the present-day Wetherill Nature Preserve, into a country summer estate complete with fruit orchards, vegetable gardens, strawberry fields, and pastures of milk cows and sheep. Furth's wife named the home Barnabee, after her favorite Shakespearean actor, Henry Clay Barnabee (Knauss 2003).

In about 1902, Edward P. Temper brought a different kind of elite agriculture to Yarrow Point. Trading some land on Bainbridge Island for 300 feet of waterfront, Temper began planting English holly on his Yarrow Point property. Waiting 18 years for the holly to mature, Temper planted strawberries between the rows before the holly plants were fully developed. By 1920, the Temper ranch was finally producing holly and was one of the largest such establishments in the United States. The family continued until just after World War II, when tax rates increased to the point that the holly operation was no longer profitable. In 1960, the Tempers sold the land for real estate development (Knauss 2003).

George F. Meacham, a Scotsman, filed the first plat for real estate development on Yarrow Point in 1907 (Knauss 2003). Giving the streets Scottish names, Meacham's development began the community's trend toward suburban living. Although small agricultural operations existed on Yarrow Point in the early nineteenth century, rising costs and land values led many residents to sell their property for real estate development (Knauss 2003).

Interest in developing Yarrow Point only increased with the completion of the Lacey V. Murrow Bridge (1940) and the planned Evergreen Point Bridge (1963). In June of 1959, Yarrow Point incorporated to have more control over local zoning and a strong influence in its local government (Knauss 2003). After its incorporation, Yarrow Point established zoning regulations outlining the minimum lot size and only permitting single-family dwellings (Knauss 2003).

Port of Olympia and Port of Tacoma

Port of Olympia

The area that became the Port of Olympia began as a peninsula known as *Cheet-woot*, which means "bear" in the Nisqually dialect of the Lushootseed language, because it resembled the shape of a bear at high tide. This spit of land was used by the Nisqually, Duwamish, and Squaxin Island tribes as a place to trade, gather shellfish, and camp in the winter. It was not until the mid-nineteenth century that Euroamerican settlers came to inhabit the area (Stevenson 1989; Wilma 2003).

In 1831, the Hudson's Bay Company established an outpost in the nearby settlement of Nisqually, sparking interest in the area. In 1846, Americans Levi Lathrop Smith and Edmund Sylvester claimed the beaches of *Cheet-woot* and named the area Smithfield. Together, the two men built the area's first wharf (Newell 1985; Stevenson 1989, Wilma 2003).

The first Puget Sound Collection District and Custom House was established at Smithfield in February of 1851. The Custom House required that all ships entering Puget Sound come down to Smithfield, which brought considerable prestige to the growing community. By 1852, shipments out of Smithfield (which is now Olympia) expanded to include coal, lumber, and fish. In the years following, steamship travel out of Olympia increased, the wharfs were expanded, and shipbuilding flourished (Stevenson 1989).

Along with increasing commerce, the growing population of settlers and immigrants rapidly pushed the area's native peoples from their lands. On December 26, 1854, the Treaty of Medicine Creek was signed by many tribes in the Puget Sound area, including those that had traditionally used *Cheet-woot*. With the treaty, the tribes were able to maintain permanent rights of access to traditional hunting and fishing grounds, but were confined to designated reservations and surrendered most of their lands in exchange for $32,500 (Crowley 2003).

By the 1870s, the lack of a railroad terminus and ever-present dredging needs drew the attention of Olympia residents. Passed up by the Northern Pacific Railroad for nearby Tacoma in 1873, Olympians came together to build their own railroad spur to the port, supplying everything from land and money to labor and provisions for workers (Miller 1921). In 1878, Olympia successfully connected the spur to the mainline railroad in Tenino. However, the shallow harbor with its famously extensive mudflats made the connection between the new rail line and the port facilities inefficient. Following an 1885 survey, the city hired a dredge and constructed a long wharf, measuring 4,798 feet and requiring 927 piles, to connect the port to deep water (Stevenson 1989). The USACE continued dredging efforts from 1909 to1911. Excavated soils were used to reclaim tidelands in the vicinity and resulted in the creation of an additional 29 blocks for development, including much of what is now downtown Olympia (Stevenson 1989).

A countywide vote established the Port District in Olympia on November 7, 1922. The new Port of Olympia facilitated additional expansions of the existing port facilities, including improvements for better navigation of the harbor, which attracted a growing amount of ship traffic (Stevenson 1989). During the years following the establishment of the Port District, Olympia emerged as a significant exporter of materials to locations around the world.

The sudden growth in cargo loads during World War II demanded additional facilities. During the 1940s, channel dredging continued, rail lines were expanded, and new buildings erected, including what is now the Port of Olympia administration building, a cold storage facility, and an improved shipping wharf (Stevenson 1989).

Port of Tacoma

British and American settlement in the southern Puget Sound region near Tacoma had drastically affected local Native American groups by the mid-nineteenth century. Many area tribes were relocated during this period. In 1854, the Treaty of Medicine Creek called for the abandonment of most southern Puget Sound villages and required Native Americans to relocate to the Puyallup, Muckleshoot, or Squaxin Island reservations (Ruby and Brown 1992). The Puyallup Reservation included the area now encompassed by the Port of Tacoma and the CTC facility.

Tacoma emerged as a prominent center for commerce and industry in the late nineteenth century, during which time much of the reservation land previously assigned to the Puyallup Tribe was encroached upon by the community’s urban and industrial growth. In 1873, the Northern Pacific Railroad (then the Milwaukee Railroad and Union Pacific Railroad) extended the region’s first transcontinental railroad line into Tacoma. Terminating at Commencement Bay near the foot of present-day Division Avenue, the railroad line directly connected Tacoma with the Great Lakes region and initiated a period of economic growth in the city. Tacoma grew around this focal point of trade and distribution on Commencement Bay, which served as a transfer point for goods from the railroad to steamships (Fairbanks and Martinez 1981).

At the time of the railroad’s arrival, much of the Port of Tacoma as it exists today was not yet developed. The mouths of Wapato and Hylebos creeks were located to the north and south of what is now the CTC facility, and areas to the west and northwest of East 11th Street still remained under the waters of Commencement Bay. Beginning in 1889, the Thea Foss Waterway (formerly City Waterway) was the first waterway in the former tideflats of Commencement Bay to be dredged for increasing the accessibility to industries established around the terminus of the railroad line. Eight waterways have been dredged in the former tideflats since that time, significantly changing the landforms in the area (Morgan 1979).

By the turn of the twentieth century, much of the northern portion of the tideflats had been filled in with dredged materials. Privately owned docks were constructed over the remaining tideflats to reach the bay's deeper waters. Private development of the bay continued until the Port of Tacoma was established in November 1918 by a countywide referendum. The port was established during a period of economic prosperity, largely sustained by the local timber industry. Other industries on the Tacoma waterfront included lumber and shingle mills, shipyards, flour mills, and electrometallurgical and electrochemical plants (Fairbanks and Martinez 1981).

The Port of Tacoma began developing 240 acres of the Commencement Bay tideflats in 1919. At this time, dredged materials from the enlarged waterways were redeposited on top of wetland areas to provide suitable land for development (Long 2003). This and subsequent dredging activities have created an artificial cap of imported fill material between at least 5 and 10 feet thick across most of the port's property (Cultural Resource Consultants 2008). The Blair Waterway extended to East 11th Street when it was first constructed. Both the Blair and Hylebos waterways were dredged several times between the 1930s and 1960s, extending both farther southeast.

The existing Hylebos Waterway Bridge was constructed in 1939, and this bridge, coupled with a wood trestle bridge erected across the Blair Waterway farther south on East 11th Street, provided northeast Tacoma residents with a direct link to the city center (Miller and Bowden 2006). The wood-trestle East 11th Street Bridge was removed in 1951, and the Blair Waterway was deepened and further extended. A new bridge, the Port Industrial Waterway Bridge, was constructed in 1951 to provide increased access for vessels to pass through the waterway, while maintaining the important north-south linkage; this bridge was demolished in January 1997 (Long 2008).

The port served as a major center of wartime industry, focusing on shipbuilding and chemical production, between 1939 and the end of World War II. Port development has continued; the port remains a principal shipping hub in the region and is known as the major distribution point for goods being shipped through Alaska.

5. Archaeological Resources Results and Recommendations

Since the initiation of the environmental review process for SR 520 in 2005, extensive research and archaeological investigations have occurred in the APE, focusing on the limits of construction within the APE (see Exhibit 1-8). However, both the APE and limits of construction have undergone several alterations since the initiation of the project. This chapter describes the status of archaeological research and investigations performed within the limits of construction for the Preferred Alternative.

Due to changes and alterations to the project APE, some areas previously investigated for this project fall outside of the current APE, or outside of the current limits of construction. The results of archaeological investigations of areas that are located completely outside of the current APE are not discussed in this chapter.

Preliminary research and archaeological investigations (Blukis Onat et al. 2006; Blukis Onat and Kiers 2007; Blukis Onat et al. 2007) of the proposed SR 520 limits of construction resulted in the need for supplemental analysis of the Miller Street Landfill (Schneyder et al. 2010) and Foster Island (Goodman et al. 2008; Schneyder et al. 2009; Hodges 2010; Elder et al. 2010a, 2010b). Subsequent to these archaeological investigations, analysis of the newly available WSAPM prompted additional research within the current limits of construction to assess whether all areas that have the potential to contain archaeological deposits have been previously identified.

The results presented in this chapter are organized by the study areas contained in the limits of construction. Results are presented chronologically for each study area and are followed by a series of recommendations. Within the Seattle study area, the results are presented in the four geographical segments (Roanoke/I-5, Portage Bay, Montlake, and West Approach).

Research and Field Investigations

Seattle Study Area

I-5/Roanoke Segment

Research

BOAS conducted an ethnographic place study and researched the land use history of the I 5/Roanoke segment to assess archaeological sensitivity, determining that there is "no evidence of the cultural significance of this area and it does not appear to retain any culturally important locations" (Blukis Onat and Kiers 2007).

The APE is located within the existing SR 520 right-of way in the I-5/Roanoke segment, which cuts through glacial deposits on Capitol Hill. Because of extensive cutting associated with the construction of the existing SR 520 in this segment during the 1960s, any archaeological sites that may have once existed in this location have been removed. BOAS further cites mass wasting (landslides, slumps, and slope failures) along the eastern flank of Capitol Hill, which resulted in the removal of formerly flat land surface, as an additional example of land removal within the I-5/Roanoke segment (Blukis Onat and Kiers 2007).

As a result of this research, BOAS did not identify any Probability Areas within the I-5/Roanoke segment of the APE.

Field Investigations

Because no Probability Areas were identified in the I-5/Roanoke segment, no archaeological investigations were conducted.

Supplemental Field Visit and Research

Subsequent to the investigations listed above, additional data from the WSAPM was provided by DAHP. This information, which was not available at the time of BOAS' original research and fieldwork, made it necessary to revisit and research as-built engineering plans and LiDAR images of the limits of construction to confirm that all areas with the potential to contain archaeological deposits had been identified.

As-built plans for I-5 and SR 520 within the I-5/Roanoke segment detail extensive sediment removal (cut) and subsequent imported sediment deposition (fill) activities conducted for the original construction of both I-5 and SR 520 (Andrews 1960, 1961). As-built plans for the I-5 corridor from Lakeview Boulevard to Shelby Street indicate extensive cutting and removal of sediment to construct I-5. Nearly 30 vertical feet of sediment was removed to build the freeway through this area.

Extensive sediment removal also occurred along SR 520, between east of I-5 and Delmar Drive East, where nearly 60 vertical feet of sediment was removed during the construction of the highway. LiDAR imagery of the area confirms the extensive cut activities detailed in the as-built plans (Puget Sound LiDAR Consortium 2000).

On October 28, 2010, ICF archaeologists visited the I-5/Roanoke segment to determine if accessible areas with the potential to contain intact Holocene-aged sediments and soils were present. Along both I-5 and SR 520, sediments were removed during earlier construction of the highways. Because the roads deeply incise a glacial till plain, no additional investigations are necessary in these areas.

Recommendations

Supplemental research and field visits to the I-5/Roanoke segment revealed two previously unsurveyed, yet accessible, locations within the limits of construction where ground disturbance is proposed. It is recommended that additional archaeological investigations occur in these areas to determine whether intact Holocene-aged surfaces are present.

Within the I-5/Roanoke segment, the paved surface along East Roanoke Street, 10th Avenue East, and Delmar Drive East is currently inaccessible, with no available evidence to assess the extent of ground disturbance. Therefore, it is recommended that these areas be investigated, once accessible, to determine whether intact Holocene-aged surfaces are present. Project activities in the I-5/Roanoke segment north of the Harvard Avenue East intersection with East Gwinn Place include road restriping that will not extend below the paved ground. No additional archaeological investigations are recommended at this location. However, if design plans change, and ground disturbance extends below paved ground, this area should be evaluated, once accessible, for the presence or absence of Holocene-aged sediments to determine appropriate monitoring procedures.

Portage Bay Segment

Research

In 2006, BOAS conducted an ethnographic place study and researched the land use history of the Portage Bay segment to assess archaeological sensitivity. The Portage Bay segment consists of the land directly adjacent to, and south of, Portage Bay. This study demonstrated the importance of Portage Bay to the Lakes people and their neighbors. Two Native American homesteads associated with ethnographic place names were identified as having been located on either side of Portage Bay. The Cheshiahud settlement was located on the southern part of Portage Bay on a property identified as a marsh or wetland (Blukis Onat and Kiers 2007), within the previously defined APE. BOAS did not discuss the extent to which historic and modern activities modified this segment, although the ground-disturbing activities in the segment were thought to be considerable (Blukis Onat and Kiers 2007).

BOAS also determined that the marshes located on the southern shore of Portage Bay were referenced by Waterman (1922) (Blukis Onat and Kiers 2007). This segment was referred to as *Spa'Lxad* "marsh," "wet flats" (Waterman 1922). These marshes would have been an ideal source for a variety of plants, birds, fish, and mammals. The segment was specifically known for the extensive wapato harvest that occurred there. BOAS determined that any archaeological remains located in the Portage Bay segment would be associated with the harvesting of these resources (Blukis Onat and Kiers 2007).

From this research, BOAS defined a single archaeological Probability Area in the Portage Bay portion of the APE.

Field Investigations

In April and May of 2006, BOAS conducted archaeological investigations in the Probability Area, which is located on the eastern shore of Portage Bay. This Probability Area in the Portage Bay segment was thought to be heavily disturbed due to the construction of SR 520 in the 1960s.

Four SPs were excavated in the Probability Area, reaching an average depth of 141 centimeters below surface. Three SPs were excavated south of SR 520 within the right-of-way, and one was excavated north of the right-of-way. Stratigraphy in SPs within the investigated Probability Area included fill in all of the SPs up to 135 centimeters deep, with gray sand beneath the fill. One SP contained a peat layer at 140 centimeters below surface and another was terminated at 38 centimeters as a result of the presence of electrical wires. Historic debris was recovered from the fill, but no intact archaeological deposits were identified in any of the SPs (Blukis Onat et al. 2007).

According to BOAS (Blukis Onat et al. 2007), the stratigraphy of the Probability Area in the Portage Bay segment "represents massive fill with recent debris above lacustrine/wetland deposits."

Supplemental Field Visit and Research

Subsequent to the investigations described above, additional data from the WSAPM was provided by DAHP. This information, which was not available at the time of BOAS' original research and fieldwork, made it necessary to confirm that all areas with the potential to contain archaeological deposits had been identified.

On October 28 2010, ICF archaeologists visited the Portage Bay segment to determine whether additional areas were present that had the potential to contain intact Holocene-aged sediments and soils. Two previously unsurveyed, yet accessible, locations were identified during this research.

Recommendations

The Montlake Playfield, located just inside the southern margin of the Portage Bay segment, is also currently accessible and has not been subject to previous archaeological investigations. However, project activities in this area would be limited to pile-driving. Because no sediments would be visible during this process, no additional archaeological investigations are recommended. However, archaeological monitoring is recommended if the project design changes to include additional work that would result in the excavation of sediments (e.g., trench and pier shaft excavation) in this area.

Montlake Segment

Research

In 2006, BOAS conducted an ethnographic place study and researched the land use history of the Montlake segment to assess archaeological sensitivity (Blukis Onat and Kiers 2007). The study demonstrated that the land between Portage Bay and Union Bay was an important place to the Lakes people and their neighbors. However, activities that occurred in and adjacent to the segment, including excavation associated with the construction of SR 520 to the south during the 1960s, indicate that it is likely that this segment was extensively modified (Blukis Onat and Kiers 2007). Other construction activities that likely modified the landscape include the construction of buildings and streets, the placement of buried utilities, and associated grading. From this research, BOAS defined two archaeological Probability Areas within the Montlake segment of the APE.

Field Investigations

In April and May of 2006, BOAS conducted archaeological investigations at one of the Probability Areas in the Montlake segment, located within the McCurdy Park property north of SR 520 between Montlake Boulevard and 24th Avenue East. Eight SPs were excavated in the area, reaching an average depth of 230 centimeters below surface. SPs in this area revealed that a weak A-horizon had formed over glacial drift, with deep fill at the surface in some areas. Historic debris was recovered from fill, but no buried relict A-horizon soils or intact archaeological deposits were identified (Blukis Onat et al. 2007).

Analysis of previous geotechnical data within the other Probability Area in the Montlake Probability segment suggested extensive filling in the vicinity, and no archaeological investigations were conducted in this area (Blukis Onat et al. 2007).

Supplemental Field Visit and Research

Subsequent to the investigations described above, additional data from the WSAPM was provided by DAHP. This information, which was not available at the time of BOAS' original research and fieldwork, made it necessary to revisit and research as-built plans and LiDAR images of the APE to confirm that all areas with the potential to contain archaeological deposits had been identified.

The original SR 520 as-built engineering plans that cover the Montlake segment detail extensive sediment removal (cut) and imported sediment deposition (fill) for the original construction of SR 520 (Morse 1961). Approximately 300 linear feet was filled to an average depth of 10 feet to reach grade for the alignment east of the proposed Montlake overpass. Approximately 815 linear feet of cut activities occurred from west of the Montlake overpass to just east of 24th Avenue East. The cut depth in these areas ranged from 10 to 20 feet below the original ground surface (Morse 1961). The LiDAR imagery of this area confirmed the extensive cut activities detailed in the as-built plans (Puget Sound LiDAR Consortium 2000).

On October 28, 2010, ICF archaeologists conducted a field visit of the Montlake segment. The ground surface along Montlake Boulevard East and East Montlake Place are paved. The open spaces adjacent to these roads contain buried utility boxes, indicating substantial ground disturbance in this area. It is unlikely that an undisturbed, naturally deposited, previously exposed surface is present below the road. However, given that topsoil removal is a common practice for road and building construction, there is no evidence to assess the extent of previous ground disturbance.

Along SR 520 and the lands directly adjacent, sediments were removed during construction of the highway. Because these deposits deeply incise a Pleistocene-aged glacial till plain, no additional investigations are necessary in this area.

Recommendations

BOAS' ethnographic research and analysis of the landscape modifications produced a single Probability Area in the Montlake segment interpreted as having the potential to contain archaeological deposits. No buried relict A-horizon soils or intact archaeological deposits were identified during field testing. No further investigations are recommended in this area.

Extensive cutting and filling occurred within the SR 520 right-of-way during the construction of the highway in the 1960s. These substantially altered areas have a low probability for containing intact archaeological deposits. Therefore, no additional archaeological investigations are necessary in these areas.

There is no evidence to assess the extent of previous road construction and utility ground disturbance along Montlake Boulevard East and East Montlake Place, although such disturbance is likely. Therefore, these areas should be investigated, once accessible, for the presence of Holocene-aged sediments. No further monitoring is recommended if there is clear evidence that Holocene-aged sediments and soils have been previously removed across this segment.

West Approach Segment

The West Approach segment encompasses the eastern portion of the Montlake peninsula, Union Bay, and Foster Island. This segment covers three ethnographic study areas defined by BOAS (Montlake, Union Bay, and Foster Island). Results of the analysis of each BOAS study area are summarized below. There are six probability areas in the West Approach segment.

Research

Montlake

Although previously mentioned under the Montlake segment, BOAS' ethnographic study of Montlake included areas that fall within the West Approach segment. The study showed that the land between Portage Bay and Union Bay was an important place to the Lakes people and their neighbors. A canoe portage, which was controlled by a local group known as the *hloo-weelh-AHBSH*, was located just south of the present-day Montlake Cut. This portage likely extended across both the Montlake segment and the West Approach segment, resulting in several possible locations associated with this portage. In addition to portaging, traditional cultural activities took place along the nearby shorelines, stream outlets, and prairies. Historically documented land use activities that occurred adjacent to the area, including the deposition of dredge spoils from construction of the Montlake Cut to the northwest and excavation associated with the original construction of SR 520 directly south, indicate that the area has been extensively modified since the mid-1800s (Blukis Onat and Kiers 2007).

Although extensive ground disturbance has occurred in the general vicinity, BOAS defined three Probability Areas within the east Montlake portion of the West Approach segment where ground disturbance may have been less severe.

Union Bay

Prior to the historic era, the southern shoreline was a marsh that contained abundant natural resources, including plants, birds, mammals, and fish (Blukis Onat and Kiers 2007). After Lake Washington was lowered in 1916, these marshes became exposed and desiccated. These newly exposed areas were used to deposit dredge spoils generated during the construction of the Montlake Cut. In addition to the area being a convenient location for depositing dredge spoils, it was also used as a municipal landfill (Miller Street Landfill) between 1912 and 1936. Additional portions of the marsh were dredged during the development of the Arboretum and during the original construction of SR 520 (Blukis Onat and Kiers 2007; Blukis Onat et al. 2006).

Foster Island

Since 1917, Foster Island has functioned as a park or arboretum, which likely resulted in minimal ground disturbance to the island (Blukis Onat and Kiers 2007). However, construction of SR 520 in the 1960s across the island resulted in extensive landscape modification within the road corridor and 10 to 20 meters north and south of the alignment. Marshes were also removed on the east and west sides of the island (Blukis Onat and Kiers 2007). Since the APE extends north and south of areas with extensive landscape modification, BOAS defined two Probability Areas within the Foster Island portion of the West Approach. In addition, BOAS recommended that Foster Island be evaluated as a TCP.

Field Investigations

During April, May, and August of 2006, BOAS conducted archaeological investigations at four Probability Areas within the West Approach segment. The other two Probability Areas in the West Approach segment were not investigated because, at the time of the survey, no ground disturbance was planned for the area (Blukis Onat et al. 2007). A summary of the results from the BOAS field investigations is provided below for each Probability Area within the West Approach segment.

Thirteen SPs and two backhoe trenches were excavated in the first Probability Area in the West Approach segment. Stratigraphy from these excavations revealed deep deposits of pebbly sand and silt fill with occasional pieces of lumber, plywood, asphalt chunks, and sewer pipe fragments. Fill deposits were underlain by lacustrine wetland deposits and glacial drift. No intact archaeological deposits were identified (Blukis Onat et al. 2007). Descriptions of the excavated SPs were not sufficient to provide a clear assessment of the depth of undisturbed soils and sediments, and consequently the potential for archaeological deposits to be located below the fill.

Nineteen SPs, four backhoe trenches, and a single block excavation unit were excavated in the next Probability Area in the West Approach segment. The excavation showed both structured and unstructured landfill deposits, fill unassociated with the landfill at the north end, and lacustrine deposits. Seven SPs contained thick deposits of historic domestic refuse, including bottle glass, ceramics, brick and tile, mammal bone (sawn and unmodified), chicken bone, Mason jar lids, and scrap metal (Blukis Onat et al. 2007). Two SPs extended below landfill deposits and into Holocene-aged lacustrine deposits, while five SPs were terminated within landfill deposits (Blukis Onat et al. 2007).

A single human patella, determined to be more than 50 years old by the King County Medical Examiner, was recovered from one of the SPs (Blukis Onat et al. 2007). This discovery prompted the excavation of a single 2x2 block excavation unit, with each 1x1 segment numbered separately. A datum was used to track vertical depth in the excavation unit. Stratified historic deposits with occasional interbeds of sterile clay were encountered during block excavations. Sterile clay interbeds were interpreted as capping events from earlier periods of landfilling. No clear indications of naturally deposited sediments were encountered, so there is the potential for additional landfill deposits below 245 centimeters below datum. Although the primary purpose of the block excavation unit was to further evaluate the context from which the human bone was recovered and to determine whether additional human remains were located in the vicinity, no additional human remains were recovered (Blukis Onat et al. 2007).

No additional archaeological deposits aside from the landfill were identified within this Probability Area. Shovel probes and mechanically excavated trenches that extended below landfill deposits encountered lacustrine silts, clays, and peats. Two trenches extended below lacustrine deposits and into sediments interpreted as having been deposited through glacial processes during the Pleistocene epoch. The presence of lacustrine deposits underlying fill and landfill deposits in several SPs and trenches indicates the widespread presence of buried Holocene-aged sediments. These deposits, in turn, have the potential to contain archaeological deposits. Although it is unlikely that lacustrine sediments contain archaeological deposits associated with habitation areas, they may contain deposits, features, or isolated artifacts related to resource exploitation.

Fourteen SPs and two trenches were excavated in the next Probability Area in the West Approach segment. Stratigraphy from these units exhibited both structured and unstructured landfill deposits, with marsh and lacustrine deposits encountered where probes and trenches were able to penetrate below the landfill (Blukis Onat et al. 2007).

Clearly discernable terminal depths of landfill deposits ranged from 90 to 320 centimeters below ground surface, but several SPs and one trench were terminated prior to encountering the maximum vertical extent of the landfill deposits. Landfill deposits extended at least 4.6 meters below ground surface in one trench. Landfill deposit depths varied across this Probability Area, leaving no indication of the underlying natural topography.

With the exception of landfill deposits, no additional archaeological deposits were identified within this Probability Area (Blukis Onat et al. 2007). Peat was identified in two SPs; however, no glacially deposited sediments were identified in any SPs or backhoe trenches. The presence of peat below the landfill deposits, combined with the paucity of SPs and backhoe trenches that extended below the landfill deposits, indicate that there is potential for widespread Holocene-aged lacustrine sediments within this Probability Area. These sediments have the potential to contain archaeological deposits. Although it is unlikely that lacustrine sediments contain archaeological deposits associated with habitation areas, they may contain deposits, features, or isolated artifacts related to resource exploitation.

A single SP was excavated in the last Probability Area in the West Approach segment, revealing historic fill overlying glacial drift. No buried surfaces or Holocene sediments were identified, indicating that all sediments with the potential to contain archaeological deposits have been removed (Blukis Onat et al. 2007).

Supplemental Field Visit and Research

In response to redesign and alteration of the project alternatives and changes to the limits of construction boundary, supplemental studies were conducted in support of the Section 106 process. These additional studies included GPR, geomorphological investigation, and historic map analysis of the Foster Island historic shoreline; ethnographic research; archival research on the Miller Street Landfill; and subsequent archaeological studies of Foster Island. The results of these additional studies are presented in this section.

Miller Street Landfill Investigations

WSDOT retained ICF in 2010 to evaluate the eligibility of the Miller Street Landfill (45KI760) for listing in the NRHP. Because of its lack of integrity and compromised data potential, WSDOT recommended that the Miller Street Landfill be determined not eligible for listing in the NRHP. The SHPO concurred with this determination on September 2, 2010. The discussion below summarizes the findings from the NRHP Evaluation Report for the Miller Street Landfill (Schneyder et al. 2010).

BOAS identified the presence of historic-period deposits associated with the Miller Street Landfill during the 2006 investigations of the APE, and had initially suggested that the site may potentially be eligible for listing in the NRHP (Blukis Onat and Kiers 2007; Blukis Onat et al. 2007). However, BOAS did not formally evaluate the landfill for NRHP eligibility during their project work. The subsequent evaluation of 45KI760 by ICF focused on archival research and the background information, data, and artifacts collected during the BOAS investigations. ICF archaeologists researched and described the historical context for refuse disposal practices in the United States, in the city of Seattle, and at the Miller Street Landfill in the late 1800s and early to mid-1900s. ICF also reviewed the background information, data, and artifacts collected during the BOAS investigations. Artifacts included a large quantity of domestic, personal, and structural materials dating between 1900 and 1930. ICF conducted an independent analysis of the artifacts recovered by BOAS, and classified and analyzed them to determine if the assemblage could contribute significant data to historical research questions.

Historical documentation shows that the Miller Street Landfill received refuse from a population of residents as diverse as the city itself and that the majority of the refuse was presorted prior to being deposited at the landfill. The landfill contained a sorter's shelter, a refuse sorting area, an area for waste incineration, and a salvage storage area (Department of Health and Sanitation 1934). Typical twentieth-century Seattle refuse disposal practices included extensive presorting and salvage operations prior to deposition in a landfill. Municipal employees brought all the unsorted refuse to a central transfer station where the refuse was dumped, and another team hauled the refuse directly to the landfill (Hering and Greeley 1921; Lee 1921; Seattle Engineering Department 1920). At the landfill, so-called "dump men" continued to rake and cover exposed trash. These landfill workers, who often occupied a small cabin on the property, would reclaim paper, rags, metal, and other materials to pay for their wages and help offset the costs of refuse disposal (Murray 1917).

To assess the significance of the Miller Street Landfill, data from archaeological investigations, archival research, and comparative archaeological studies were used. The data potential of the Miller Street Landfill was evaluated against NRHP Criteria A, B, C, and D and an assessment of the integrity of the archaeological site. The examination of integrity focused on the three aspects most relevant to archaeological deposits: location, materials, and association.

According to the historical research on the Miller Street Landfill operations and the City's waste management practices, off-site sorting, recycling, and salvage were standard treatment for household refuse collected during the early twentieth century. The presence of a sorter's shelter, a refuse sorting area, an area for waste incineration, and a salvage storage area at the Miller Street Landfill indicates that the refuse at the landfill was heavily sorted and culled prior to deposition; the refuse deposits identified within 45KI760 are not discrete representative samples of the materials discarded by individuals, households, or businesses in this particular collection district. The contextual relationships between materials were destroyed by sorting and culling prior to being sealed in the landfill deposit. The associations of the refuse deposit that originated at the household level were compromised by historical waste management practices at the time of deposition, and the archaeological relationships between refuse and household or district no longer exist.

Archaeological site 45KI760, the remains of the Miller Street Landfill, was determined to be not eligible for listing in the NRHP. The site lacks data potential because of the historical waste management practices and, consequently, no associations with specific communities, neighborhoods, institutions, or ethnic groups are evident. Site 45KI760 has been salvaged throughout its history, and the archaeological deposit is not a representative sample of even the large-scale community that created it. Significant research questions applicable to a municipal refuse disposal site type are not addressable by 45KI760 because of the substantial modifications to the landfill over time by historical waste management practices and more recent dredging, grading, and land-filling activities (Schneyder et al. 2010).

Foster Island Investigations

The following summarizes the results of a TCP assessment, relict shoreline delineation and geomorphic analysis, and archaeological investigations on Foster Island.

WSDOT and FHWA, in consultation with the tribes, have determined that Foster Island is eligible for listing in the NRHP as a TCP (WSDOT 2010c). The Preferred Alternative would diminish the integrity of the Foster Island TCP and contribute to the project's adverse effect on historic properties. The effects on the Foster Island TCP will be resolved through stipulations provided in the Foster Island Treatment Plan discussed in greater detail in Chapter 8 of this Cultural Resources Assessment Discipline Report.

Ground-Penetrating Radar Survey

Geophysical Archaeometry Laboratory Inc. was contracted by WSDOT to conduct a GPR survey of Foster Island. The purpose of this survey was to delineate soils that were a part of the original island, as opposed to lake bed deposits, before the Montlake Cut lowered water levels in Lake Washington. The goal of the GPR survey was to identify the location of the historic shoreline (pre-Montlake Cut) and topographic contours of the island (Goodman et al. 2008).

Between July 23 and 26, 2008, a total of 22,346 linear meters of the Foster Island ground surface was surveyed using GPR. From this survey, 748 radiogram profiles were generated, reaching a maximum estimated depth of 368 centimeters when using a 270-MHz antenna, and 219 centimeters when using a 400-MHz antenna (Goodman et al. 2008). Analysis of these radiogram profiles revealed that there was no unequivocal evidence that helped to delineate the original shoreline or topographic contours of the island. As a result, Goodman et al. (2008) recommended that the results of the survey be compared with available historic topography contours of the island to assist in interpreting the results of the GPR analysis, and that further mapping was necessary in areas that were inaccessible at the time of the survey.

Historic Shoreline Map Research and Analysis

In 2009, ICF conducted extensive cartographic and archival research to supplement the previous analysis of the Foster Island shoreline. This research resulted in the collection of numerous historic maps and photographs, which were scanned and converted to georeferenced spatial layers. These layers were uploaded into the ArcGIS program and analyzed (Schneyder et al. 2009).

Several historic maps that pre- and post-date the completion of the Montlake Cut show variation and evolution of Foster Island over the last 150 years. Prior to the completion of the Montlake Cut, Foster Island consisted of two islands separated by a low spot that was submerged under Lake Washington. Once the Montlake Cut was completed and lake levels lowered, the previously submerged low spot was exposed, and the two islands became one contiguous island. The SR 520, I-5 to Medina project would most closely intersect the previously submerged area between the two islands prior to the completion of the Montlake Cut (Schneyder et al. 2009).

Geomorphic Investigations

Pacific Geoarchaeological Services, with field support from ICF, conducted subsurface excavations and created map profiles and three-dimensional topographic maps of inferred historic shorelines to ground-truth previous GPR investigations of north Foster Island. Pacific Geoarchaeological Services also developed a geomorphic history for Foster Island (Hodges 2010).

From April 5 to April 14, 2010, 25 hand-excavated trenches, 11 SPs, and 26 narrow-diameter soil probes were excavated throughout areas previously investigated with GPR. In addition to macroscopic analysis of soils and stratigraphy, micromorphological analysis of a single soil profile collected from an excavation trench was conducted. Stratigraphic exposures revealed no clear evidence for a relict shoreline within the area previously surveyed with GPR (Hodges 2010).

Additional analysis of landform history determined that Foster Island occupies a landform composed of molded Vashon till overlain by glaciolacustrine clays and silts deposited by glacial Lake Russell. Results of the micromorphological analysis of the single soil profile were inconclusive regarding whether the modern A-horizon was formed prior to the lowering of Lake Washington in 1916, or subsequent to the lowering of the lake.

Archaeological Investigations

WSDOT retained ICF to conduct archaeological investigations of Foster Island within the proposed areas of ground disturbance associated with the construction of SR 520. Archaeological investigations were conducted in two phases. Phase 1 archaeological investigations were conducted between August 2 and August 10, 2010, and involved excavating 115 1x1 TUs. Phase 2 archaeological investigations were conducted between August 9 and September 22, 2010, and involved excavating an additional 497 1x1 TUs. At the completion of both phases of archaeological investigation, a total of 612 1x1 TUs were excavated, representing 100 percent of the area of planned construction ground disturbance on the island.

Given the context in which all the historic artifacts were found, they do not appear to represent the historic activities that are documented to have occurred near Foster Island (logging, sawmill, landfill, etc.). It is more likely that these items were brought in with fill and disturbed during subsequent construction activities, as evidenced by the modern materials found in the same context. Since the historic artifacts were recovered from disturbed sedimentary context in association with modern cultural materials, these artifacts do not represent part of an intact archaeological site, and do not comprise or suggest the presence of a property eligible for listing in the NRHP (Elder et al. 2010a, 2010b).

Two prehistoric isolated artifacts were identified during Phase 1 and Phase 2 archaeological investigations. The first was found near the surface in a disturbed context and adjacent to a paved footpath. Three additional TUs were excavated around the artifact, but none produced cultural materials, indicating that this is an isolated find (Elder et al. 2010a). The second was found in disturbed context during Phase 2 investigations. The artifact was clearly recovered in fill composed of glacial till, overlying a concentration of modern nails, likely associated with the construction of the Evergreen Point Bridge. Since the artifact was within an obviously disturbed sedimentary context, no additional

TUs were excavated outside of the existing 2x2 TU in which it was recovered (Elder et al. 2010b).

The excavations showed that much of the ground surface was extensively modified during construction of SR 520 in the 1960s. Surface modifications include the scraping and removal of topsoil and glaciolacustrine clays, as well as the deposition of imported fill. Isolated, patchy remnants of in-situ topsoil and peat deposits, which would ordinarily have the potential to contain cultural resources, were identified along the eastern and western margins of Foster Island. All such deposits located within TUs were completely screened and sampled during Phase 1 and Phase 2 archaeological investigations (Elder et al. 2010a, 2010b).

ICF identified no NRHP-eligible archaeological resources during the Phase 1 or Phase 2 investigations. As a result, no additional archaeological investigations were recommended, unless the proposed construction footprint on Foster Island is altered to include areas that have not been previously investigated.

West Approach Investigations

Subsequent to the investigations listed above, additional data from the WSAPM was provided by DAHP. This information, which was not available at the time of the original BOAS research and fieldwork, made it necessary to revisit and research as-built plans and LiDAR images of the APE to confirm that all areas with the potential to contain archaeological deposits had been identified.

Analysis of the original SR 520 as-built engineering plans that cover the West Approach segment detail moderate amounts of sediment removal (cut) and imported sediment deposition (fill) activities conducted for the original construction of SR 520 (Morse 1961). Two cut areas ranging in depth from 8 to 12 feet separated by a fill area of approximately 5 feet deep are detailed on the western end of the West Approach segment. Two additional areas of cut and fill are located on Foster Island. The western margin of Foster Island was moderately filled from 5 to 8 feet where the bridge structure meets the island and approximately 3 to 5 feet of cut depth occurred immediately east of the West Approach fill. The area east of the cut was filled to a depth range of 3 to 6 feet (Morse 1961). The LiDAR imagery of this area provides visual evidence of the cut activities detailed in the as-built plans (Puget Sound LiDAR Consortium 2000).

On October 28, 2010, ICF archaeologists visited the West Approach segment to identify additional accessible areas with the potential to contain Holocene-aged sediments and soils.

Recommendations

Probability Areas

No archaeological deposits were identified in the first Probability Area. However, a lack of sedimentary context information makes it impossible to determine whether the potential for buried archaeological deposits still exists, or if all sediments with the potential for archaeological deposits have been removed. Additional archaeological investigations are recommended for this Probability Area prior to ground disturbance activities associated with the construction of SR 520. These investigations should primarily focus on determining whether undisturbed Holocene-aged soils or sediments are present in this area.

Archaeological investigations of two other Probability Areas produced evidence of the Miller Street Landfill. The site was determined to be not eligible for listing in the NRHP. As a result, no additional archaeological investigations are recommended for any deposits associated with the Miller Street Landfill. In areas where only pile-driving is expected to occur, no additional archaeological investigations are recommended, since planned activities do not include the excavation and removal of sediment.

ICF identified no NRHP-eligible archaeological resources during the Phase 1 or Phase 2 investigations of Foster Island. As a result, no additional archaeological investigations are recommended, unless the proposed construction footprint on Foster Island is altered to include areas that were not previously investigated.

No archaeological deposits or buried surfaces were identified in the final Probability Area. An SP from this area revealed the presence of historic fill overlying glacial drift; no additional archaeological investigations are recommended.

Other Areas

The ground surface along East Lake Washington Boulevard and within the MOHAI parking lot is paved. Therefore, there is no way to assess the extent of previous ground disturbance. It is recommended that these areas be evaluated, once accessible, for the presence of Holocene-aged sediments to determine appropriate investigations. Analysis of geotechnical monitoring data may be used to determine if Holocene-aged sediments are present. No further investigations are recommended if there is clear evidence that Holocene-aged sediments and soils have been previously removed across this segment.

Lake Washington Study Area

Research

In 2006, BOAS conducted an ethnographic place study and researched the land use history of the entire APE to assess archaeological sensitivity of the area to the east of Lake Washington (Blukis Onat and Kiers 2007). However, activities that occurred in and adjacent to the area, including the excavation associated with the original construction of SR 520, indicate that the area was extensively modified (Blukis Onat and Kiers 2007). Other construction activities that likely modified the landscape include the lowering of Lake Washington, timber harvesting, and later farm and residential development (Blukis Onat and Kiers 2007).

BOAS determined that it is unlikely that the location of the “Fingers” area (also called the Points, including Evergreen Point, Hunt’s Point, and Yarrow Point) on the Eastside of Lake Washington retains “historic significance” because of extensive ground disturbance and landform modifications associated with the construction of the Montlake canal and SR 520 (Blukis Onat et al. 2007; Blukis Onat and Kiers 2007). However, BOAS concluded that the potential for previously undisturbed archaeological deposits still existed and that subsurface investigations were necessary to determine if the project will affect significant historic properties (Blukis Onat and Kiers 2007).

From this research, BOAS defined three archaeological Probability Areas within the Lake Washington portion of the APE.

Field Investigations

In April and May of 2006, BOAS conducted archaeological investigations in three Probability Areas. This section summarizes the results of the BOAS field investigations.

Two SPs were excavated in the first Probability Area, reaching an average depth of 198 centimeters below surface. SPs in this area showed a weak A-horizon had formed over glacial drift, with fill originating from the eroding bluff at the surface. No buried relict A-horizon soils or intact archaeological deposits were identified (Blukis Onat et al. 2007).

Five SPs were excavated in the second Probability Area, reaching an average depth of 130 centimeters below surface. SPs in this area revealed that intact A- and B-horizons had formed to an average depth of 62 centimeters below surface over glacial drift. No buried relict A-horizon soils or intact archaeological deposits were identified (Blukis Onat et al. 2007).

No SPs were excavated in the third Probability Area. This area was significantly affected by the original construction of SR 520 and, as a result, BOAS determined that subsurface investigations were unnecessary (Blukis Onat et al. 2007)

Supplemental Field Visit and Research

Subsequent to the investigations described above, two additional data sources were consulted to confirm that all areas within the limits of construction having the potential to contain archaeological deposits had been identified. These data sources were several submerged resource studies within the APE and additional data from the WSAPM. The results of these additional studies are presented below.

Submerged Investigations

Two studies have been conducted to identify submerged resources in the APE. The first study, conducted by Golder & Associates in 2003, included a side scan sonar study of the APE and historic research regarding the use of water vessels in Lake Washington. The second study, conducted by Advanced Commercial Divers in 2003, focused on areas of interest identified during the side scan sonar study. As a result of these studies, three submerged resources were found within the limits of construction in the Lake Washington study area. These resources, discussed in more detail below, are 45KI761 (wooden steamer or schooner), 45KI762 (barge), and 45KI763 (barge).

Site 45KI761 is a large wooden schooner or steamer located at the bottom of Lake Washington. When observed by divers in October, November, and December of 2003, the shipwreck was found in poor condition. Prior to sinking, the vessel was stripped of machinery, decking, attachments, and other hardware. All cargo was also removed except for some beams, metal fragments, and automobile tires. Physical damage was also evident to the vessel; notably the stern was missing, the structure was heavily rotted, and fire damage had been sustained to the bow and beams within the hull (Calvit and Bard 2005a). Because of the vessel’s poor condition, loss of integrity, and lack of identifying features, WSDOT, with concurrence from the SHPO, determined that

45KI761 was not eligible for listing in the NRHP (Calvit and Bard 2006a).

Site 45KI762 is an early 1900s wooden barge located at the bottom of Lake Washington. When observed by divers in October of 2003, the shipwreck was found in poor condition. Major damage was evident to the bow, the northwest side of the vessel, and the decking, of which 30 percent was missing. No machinery, cargo, or other distinctive hardware was present (Calvit and Bard 2005b). Because of the vessel's poor condition, loss of integrity, and lack of identifying features, WSDOT, with concurrence from the SHPO, determined that 45KI762 was not eligible for listing in the NRHP (Calvit and Bard 2006b).

Site 45KI763 is a wooden barge located at the bottom of Lake Washington. The vessel was identified by markings as the Forest No. 15, a barge built in 1924 and berthed in Aberdeen, Washington. When observed by divers in October of 2003, the shipwreck was found in fair to poor condition. No machinery, cargo, or other distinctive hardware was present. Although 35 percent of the decking was missing, 40 percent of the remaining wooden structure appeared to be intact (Calvit and Bard 2005c). Calvit and Bard (2006c) conducted additional research on the barges in order to better understand the major functions, potential vessel types, and role of these ships in Washington historical events. However, they found limited information, concluding that these vessels were commonplace. As a result, they could not place the role of the Forest No. 15 within any important historical events during its period of significance from 1870 to 1950. These factors, combined with the vessel's fair to poor condition and loss of integrity, led to WSDOT's determination, with concurrence from the SHPO, that 45KI763 was not eligible for listing in the NRHP (Calvit and Bard 2006c).

Supplemental Field Visit and Research

Subsequent to the investigations described above, additional data from the WSAPM was provided by DAHP. This information, which was not available at the time of the original BOAS research and fieldwork, made it necessary to research as-built plans and LiDAR images to confirm that all areas with the potential to contain archaeological deposits had been identified.

The SR 520 as-built engineering plans that cover the Lake Washington study area show moderate grading and imported sediment deposition (fill) from the original construction of SR 520 (McKay 1963). The east approach for the Evergreen Point Bridge was filled to depths of 5 to 10 feet to accommodate the bridge-to-road transition at the steep bluff on the east side of Lake Washington (McKay 1963). The LiDAR imagery of this area is consistent with the grading and filling detailed in the as-built plans (Puget Sound LiDAR Consortium 2000).

ICF archaeologists visited the Lake Washington study area on October 28, 2010, to identify any additional areas with the potential to contain intact Holocene-era sediments and soils. The adjoining areas were previously surveyed by BOAS and glacial till was encountered at the ground surface (Blukis Onat et al. 2007). Therefore, no additional archaeological investigations are recommended in previously surveyed areas.

Along SR 520 and the lands directly adjacent, sediments were removed during construction of the highway. No additional investigations were recommended.

Recommendations

Ethnographic research and landscape analysis by BOAS generated three Probability Areas, having the potential to contain archaeological deposits. Archaeological investigations of two of these Probability Areas identified no buried relict A-horizon soils or intact archaeological deposits. Visual inspection of the third Probability Area revealed extensive ground disturbance associated with the construction of SR 520 in the 1960s. No further investigations are recommended in previously surveyed areas.

Golder & Associates (2003) identified three possible submerged resources within the APE. Subsequent diving investigations conducted by Advanced Commercial Divers (2003) of these areas identified no additional submerged NRHP-eligible resources within the APE. No further investigations are recommended for submerged resources.

A subsequent field visit to the eastern shoreline of the Lake Washington study area identified several small, previously unsurveyed locations within WSDOT's right-of-way on either side of SR 520. Additional archaeological investigations are recommended in those areas that have not been previously surveyed.

Eastside Transition Study Area

Research

The entire Eastside transition study area and eastern margin of the Lake Washington shoreline are located in the eastern portion of the Lake Washington ethnographic study area researched by BOAS (Blukis Onat and Kiers 2007). In many cases, a named ethnographic locality can be an indicator of archaeological potential. However, it is likely that the area has been extensively modified by the initial SR 520 construction activities, which is likely to have destroyed any intact archaeological deposits. Other activities that likely modified the landscape include the lowering of Lake Washington, timber harvesting, and later farm and residential development (Blukis Onat and Kiers 2007).

BOAS identified three Probability Areas in this study area, none of which are located within the current limits of construction. Only one Probability Area is discussed below, because it is located within the current APE although it is outside the limits of construction.

Field Investigations

In April and May of 2006, BOAS conducted archaeological investigations of one Probability Area within the Eastside transition study area. A total of 20 SPs were excavated. Six of the SPs contained gray silty clay and peaty material, indicating a lacustrine depositional environment below sediments interpreted as fill, which contained modern debris. The remainder of the SPs' clean silt or sand—which according to Blukis Onat et al. (2007) did not resemble fill—possibly represented undisturbed glacial drift. Stratigraphy in SPs revealed the area consists of massive fill that contained modern debris. No archaeological resources were found in this Probability Area.

Supplemental Field Visit and Research

SR 520 as-built engineering plans covering the Eastside transition study area detail cut and fill activities conducted for the original construction of SR 520 (McKay 1963). The east approach for the Evergreen Point Bridge within the Eastside transition study area was filled to accommodate the bridge-to-road transition. The areas between the Evergreen Point Road overpass to 92nd Avenue NE were alternately cut and filled to accommodate SR 520 through the undulating Eastside landscape. The Evergreen Point Road area was cut to depths from 10 to 25 feet to accommodate the undercrossing. The area between 80th Avenue NE and south of Fairweather Bay was filled from 5 to 25 feet.

The approach and undercrossing at 84th Avenue NE was cut to depths ranging from 10 to 25 feet. The alignment east of 86th Avenue NE to NE 32nd Street was filled to depths ranging from 5 to 27 feet. The approach and undercrossing at 92nd Avenue NE were cut to depths ranging from 10 to 20 feet (McKay 1963). The LiDAR imagery of this area is consistent with the extensive cut and fill activities detailed in the as-built plans (Puget Sound LiDAR Consortium 2000).

ICF archaeologists visited the Eastside transition study area on October 28, 2010, to identify any additional areas with the potential to contain intact Holocene-era sediments and soils. Two areas contain deep deposits of fill—east of Hunts Point Park (with fill depth of 8 to 10 feet) and just south of Fairweather Bay on the north side of SR 520 (with fill depth of 10 to 15 feet).

Along SR 520 and the lands directly adjacent, sediments were removed during construction of the highway. No additional investigations are recommended in this area because these deposits deeply incise a Pleistocene-aged glacial till plain.

Recommendations

Project activities in the Eastside transition study area include road restriping and will not extend below the paved ground surface. As a result, no additional archaeological investigations are recommended in these areas.

Pontoon Production Sites

The APE was revised in 2010 to include the Port of Olympia and Port of Tacoma as potential pontoon production sites. Archaeological monitoring of geotechnical investigations was conducted at both alternative sites in August and September 2010. Up until December of 2010, WSDOT was actively considering and evaluating the two port sites, but the Port of Olympia site is no longer being considered. The pontoon production sites will be selected by the contractor. If the Port of Olympia site is selected by the contractor, the appropriate environmental compliance processes, including Section 106, will be reinitiated.

6. Historic Built Environment Results

This chapter presents the results of the surveys conducted for the SR 520, I-5 to Medina project to identify historic built environment properties located in the APE as well as the previously investigated historic properties in the APE. The results are organized by the three study areas: Seattle, Lake Washington, and Eastside transition. The Seattle study area is divided further into four geographical segments: I-5/Roanoke, Portage Bay, Montlake, and West Approach. Two sites at the Port of Tacoma and the Port of Olympia were investigated as possible pontoon production sites. Properties identified on the potential Section 6(f) replacement sites are counted in their respective study areas, but are discussed in detail in a section dedicated just to Section 6(f) replacement sites at the end of this chapter.

A total of 366 built environment historic properties were identified in the APE, as well as one TCP, for a total of 367 historic properties in the APE. The total of historic properties includes previously identified properties, the properties presented in the 2009 *Cultural Resources Discipline Report, SR 520: I-5 to Medina Bridge Replacement and HOV Project, Supplemental Draft Environmental Impact Statement and Section 4(f)/6(f) Evaluation* (see Attachment 7 to the Final EIS), and properties identified during the additional cultural resources survey investigations in 2010 and early 2011.

Exhibit 6-1 shows the historic property totals by study area and segment. The historic properties include two historic districts, contributing elements to the historic districts, and individual properties located outside the historic district boundaries that are either listed in or eligible for listing in the NRHP. Historic properties in this chapter are discussed by project segment within each study area. Due to the large number of historic properties in the APE, not every property is discussed in detail, but rather representative examples of historic properties surveyed is described in detail in this chapter. Properties in each section are presented in order of their property ID numbers. See the HPI forms in Attachments 2, 3, and 4 for more information on each property.

Exhibit 6-1. Summary of Historic Properties in the Area of Potential Effects by Study Area and Segment

Study Area	Segment	Resources Surveyed	Historic Properties[1]
Seattle Study Area	I-5/Roanoke Segment	296	146
	Portage Bay Segment	135	31
	Montlake Segment	230	174
	West Approach Segment	3	4
Lake Washington Study Area		4	4
Eastside Transition Study Area		10	2
Pontoon Production Sites		14	6
Total		**692**	**367**

[1] The historic property totals include previously identified properties and properties surveyed as a part of this project. These totals could change as design and construction proceed; they reflect information known at the time of this report.

Exhibits 6-2 and 6-2a through 6-2j show the locations and NRHP eligibility of all the surveyed properties within the APE.

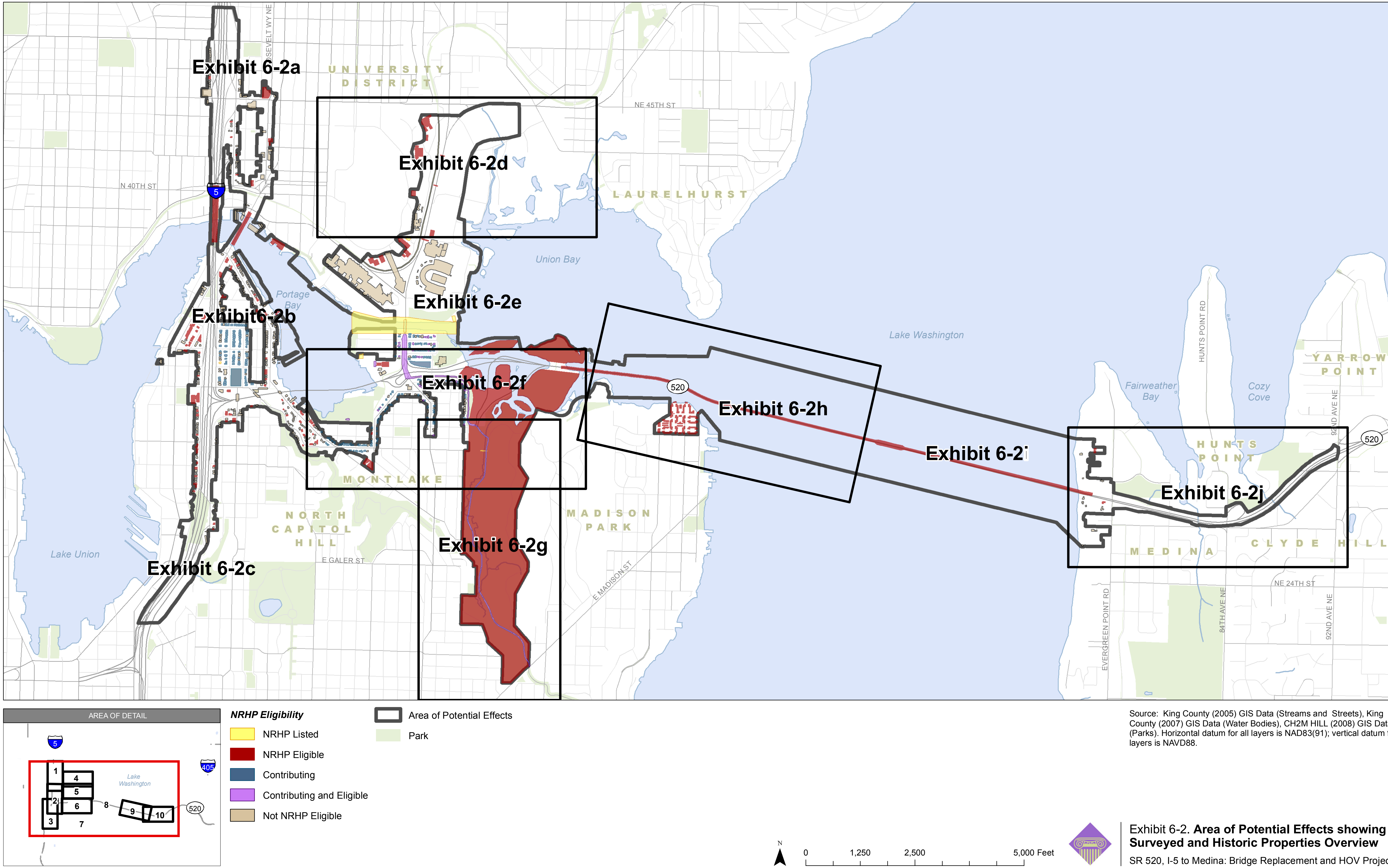

Exhibit 6-2. **Area of Potential Effects showing Surveyed and Historic Properties Overview**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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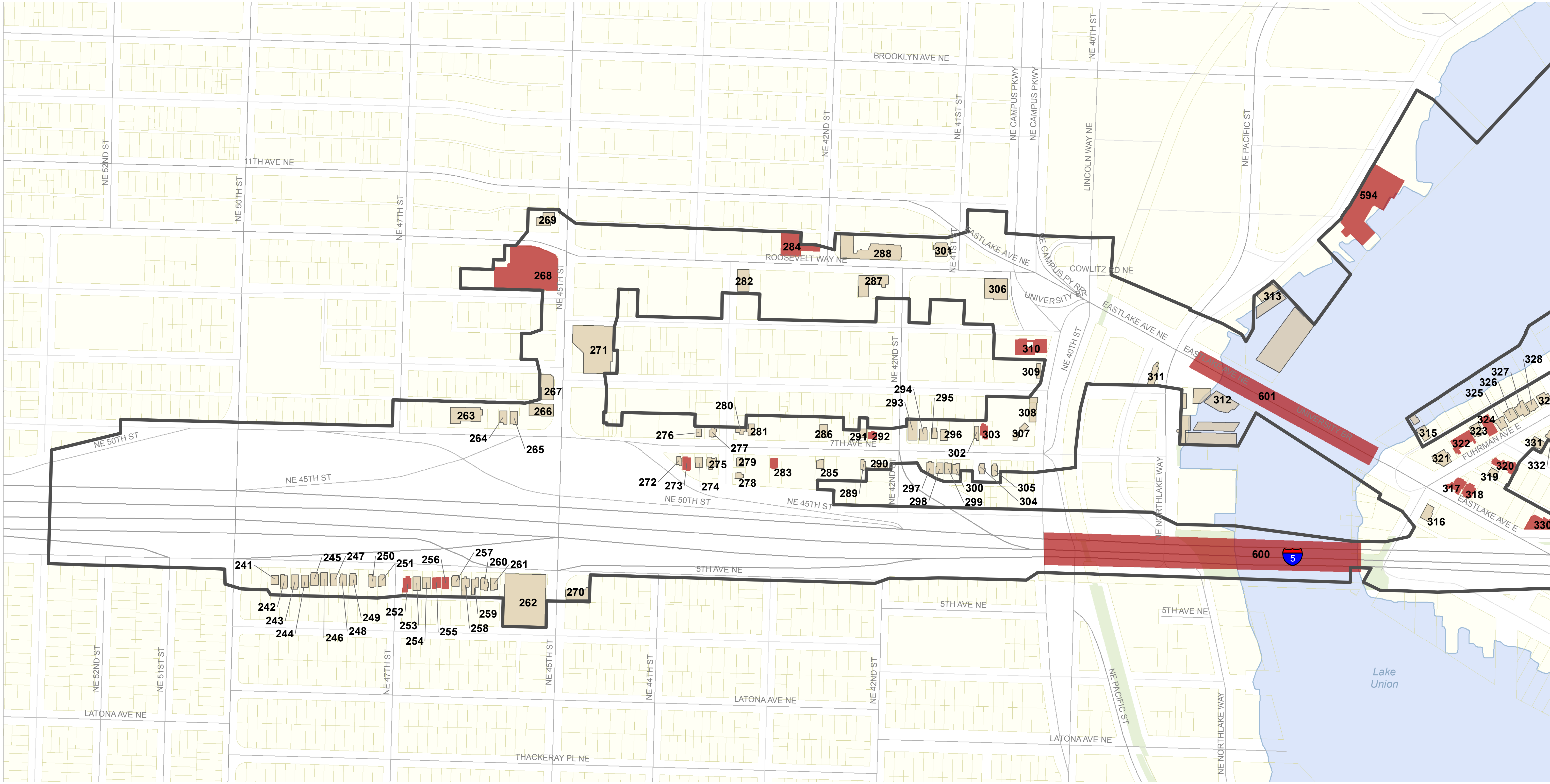

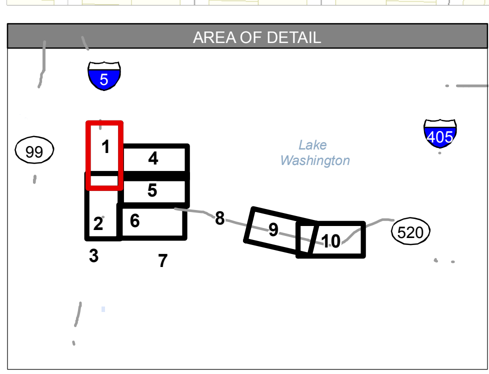

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible

- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 6-2a. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 1**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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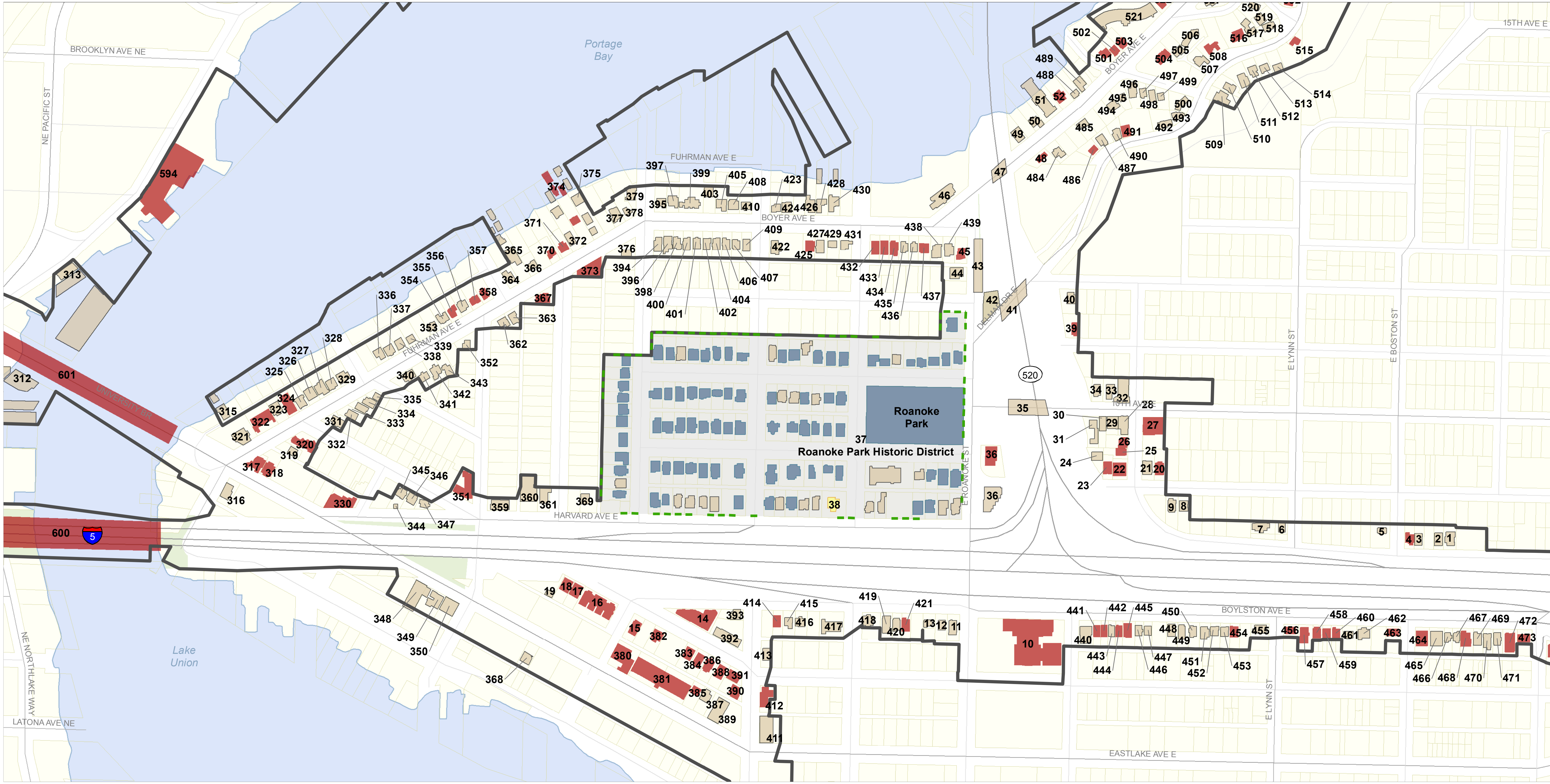

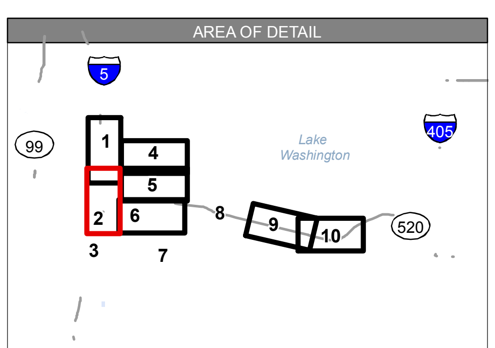

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible

- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 6-2b. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 2**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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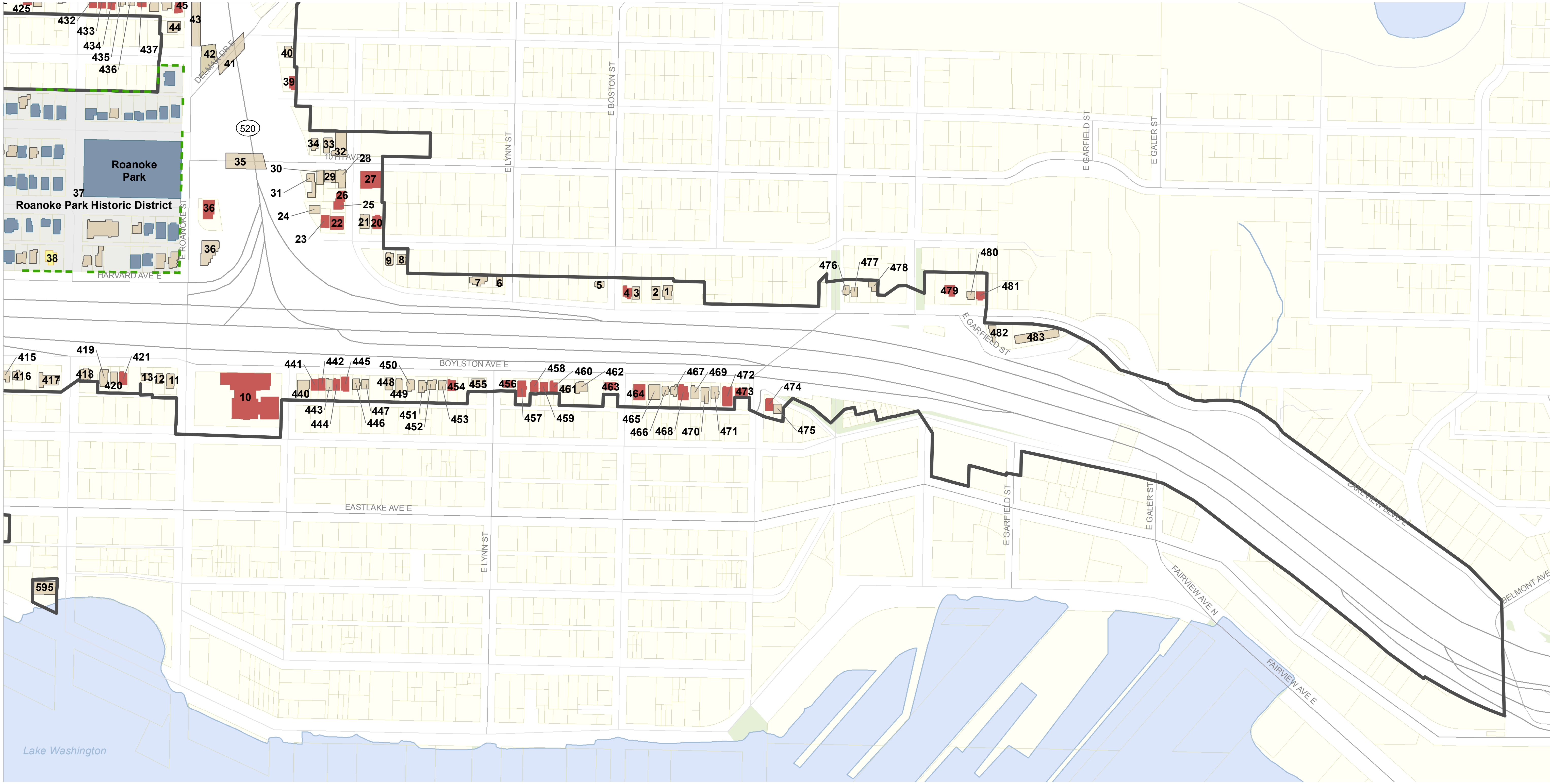

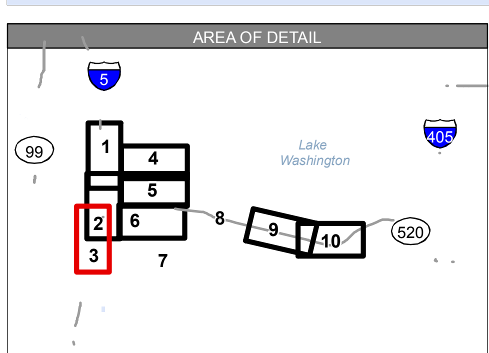

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible
- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-2c. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 3**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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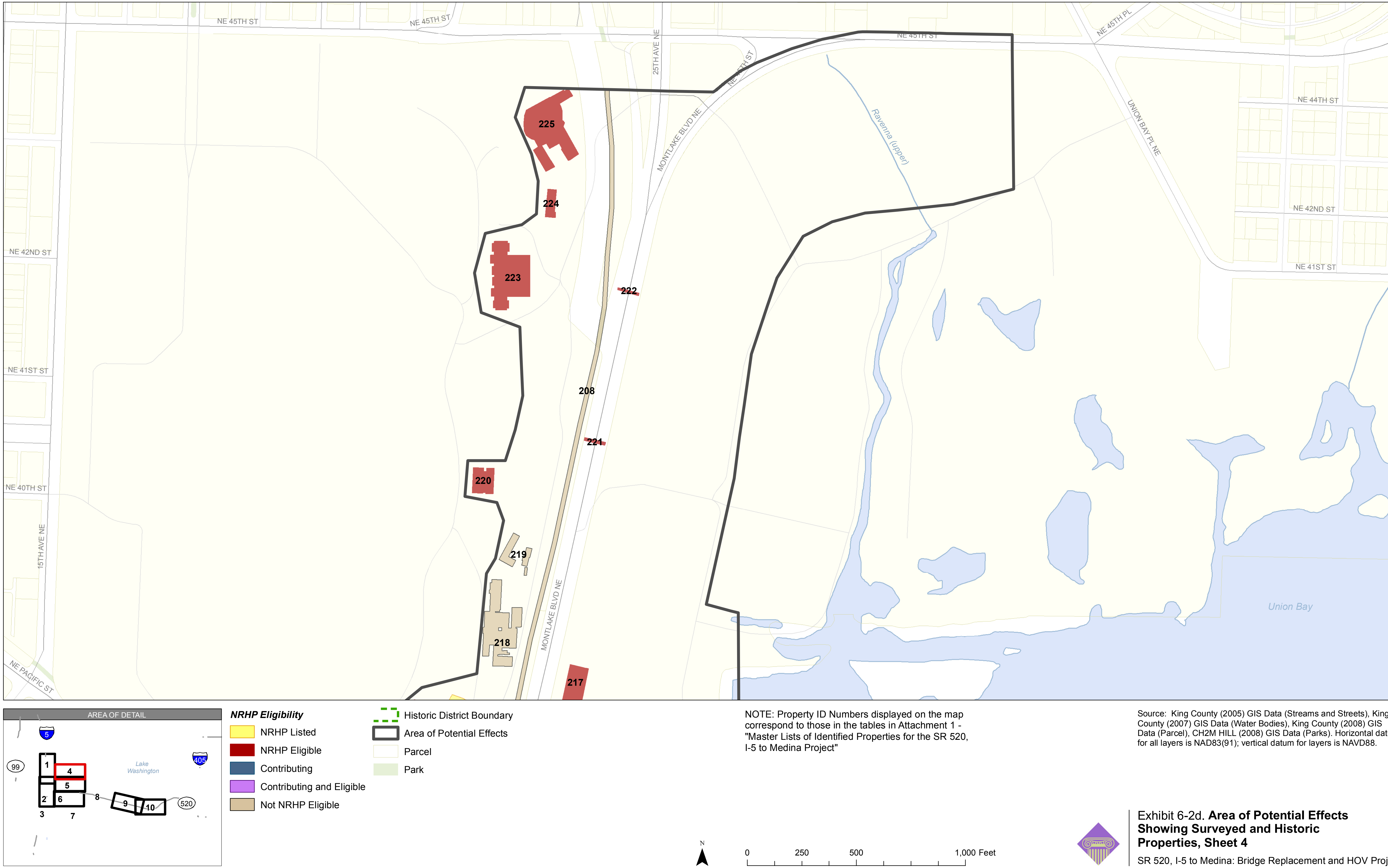

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 6-2d. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 4**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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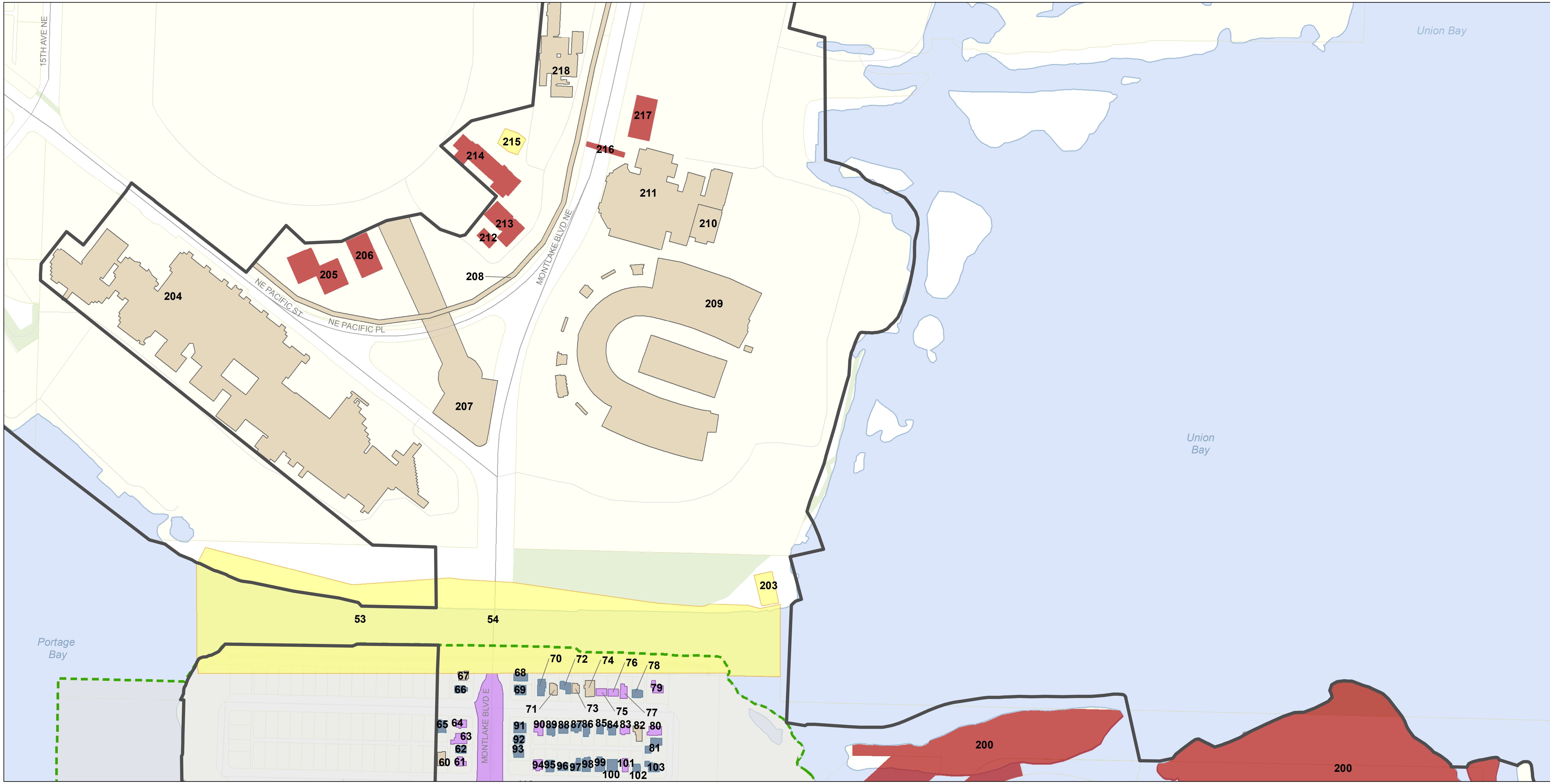

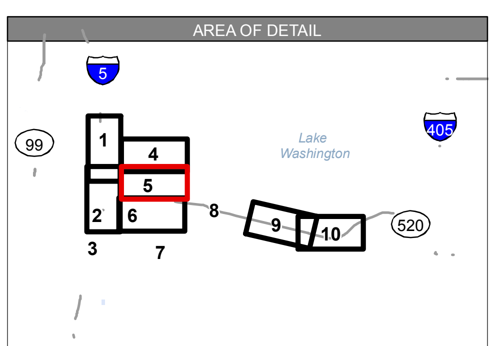

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible

- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-2e. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 5**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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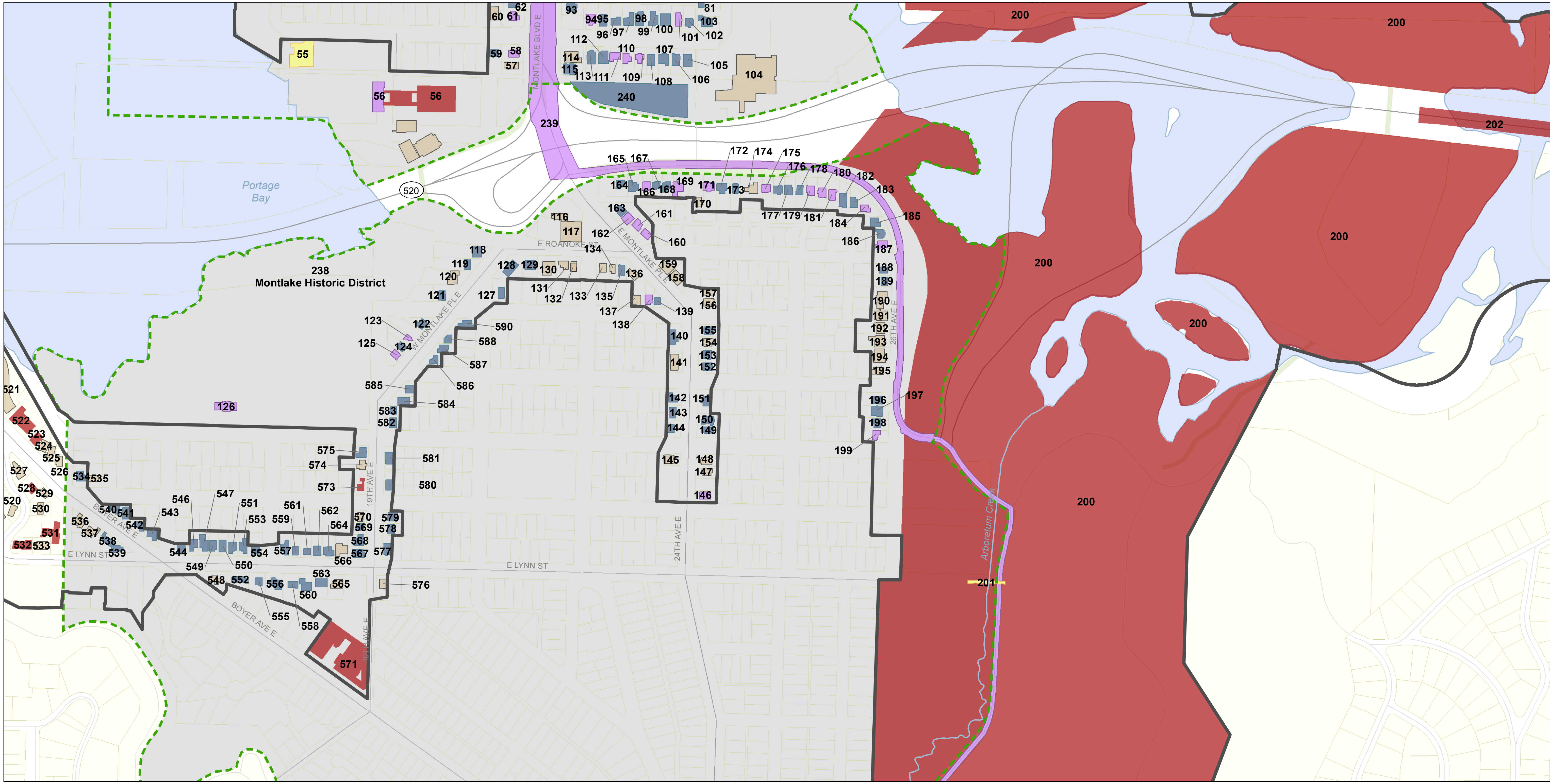
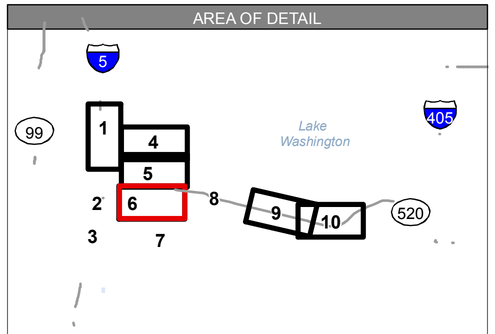


AREA OF DETAIL



NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible

- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

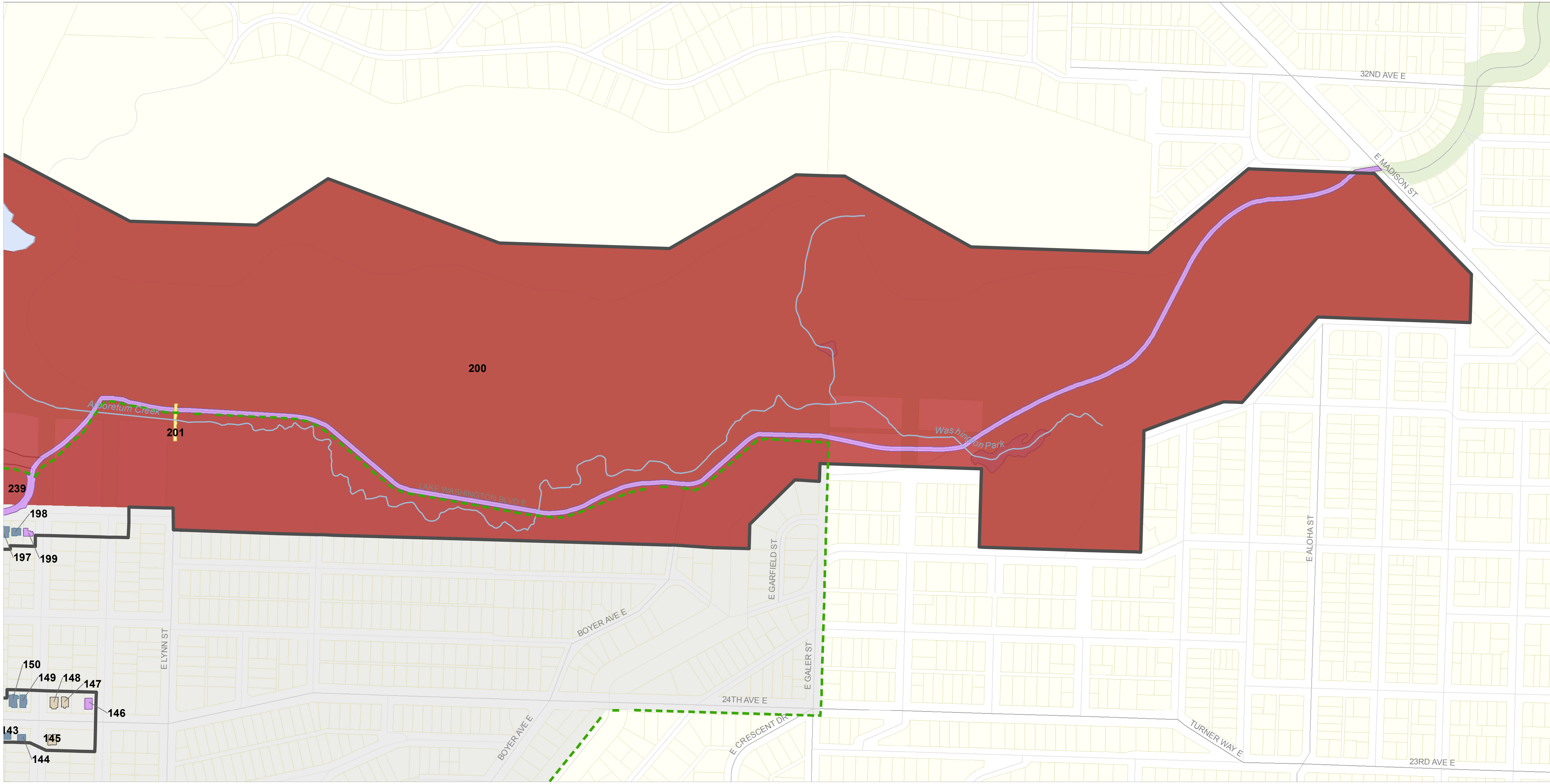
N

0 250 500 1,000 Feet

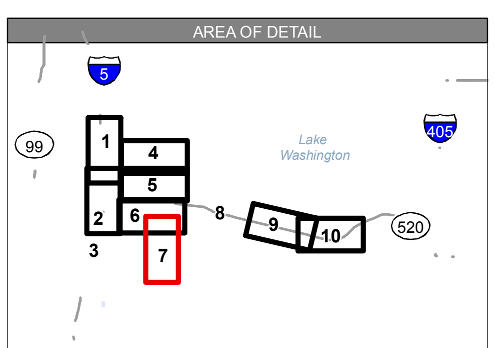
Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 6-2f. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 6**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project



AREA OF DETAIL



NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible
- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-2g. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 7**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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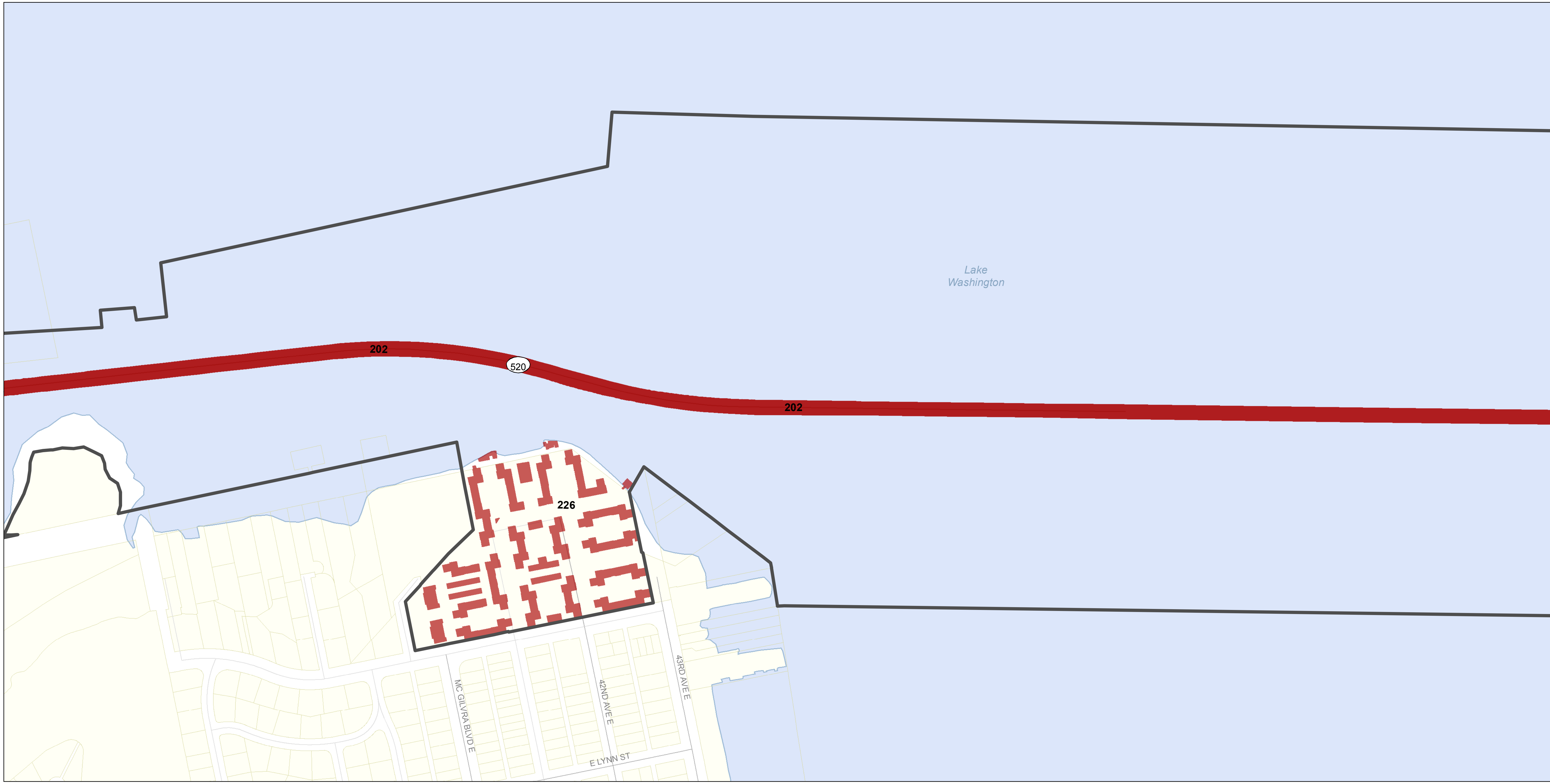

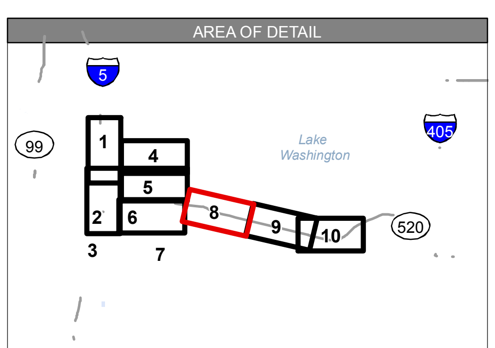

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible
- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-2h. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 8**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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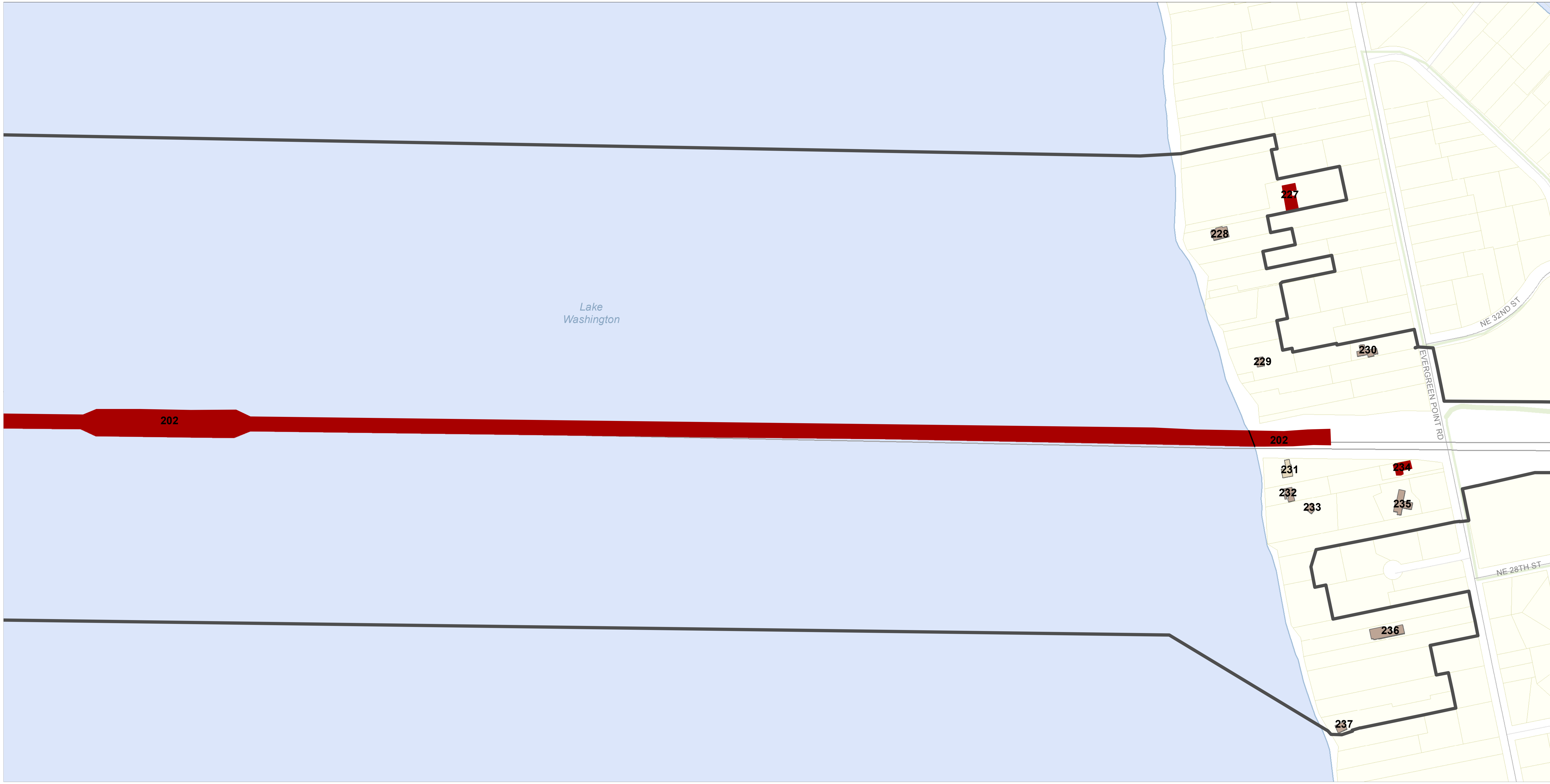

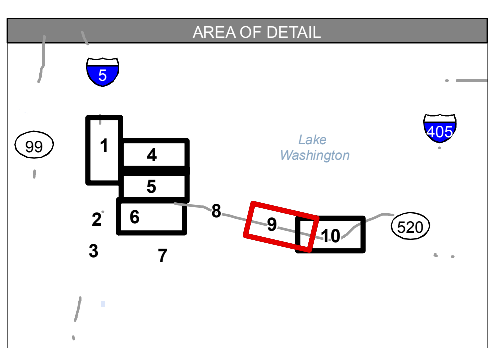

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible
- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-2i. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet 9**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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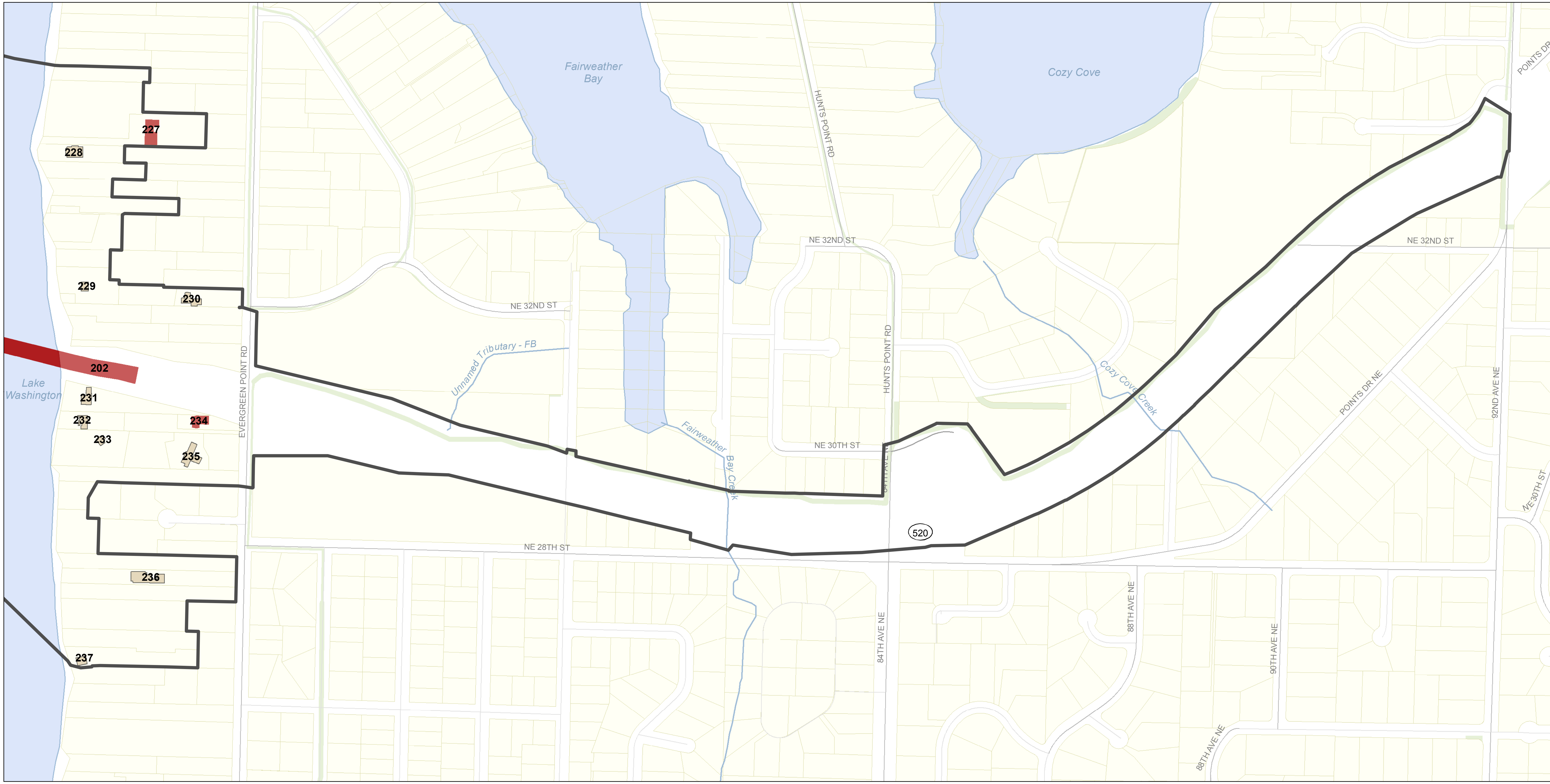
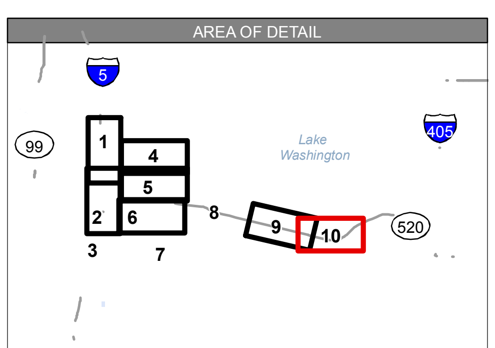




NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Not NRHP Eligible
- Historic District Boundary
- Area of Potential Effects
- Parcel
- Park

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-2j. **Area of Potential Effects Showing Surveyed and Historic Properties, Sheet10**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

Seattle Study Area

I-5/Roanoke Segment

The historic resources surveys identified 216 properties in the I-5/Roanoke segment of the Seattle study area constructed prior to 1972. This total does not include the 80 contributing properties to the Roanoke Park Historic District, which is listed in the NRHP and includes the NRHP-listed William H. Parsons House (Harvard Mansion). Two other previously recorded properties were identified in the I-5/Roanoke segment: the Denny-Fuhrman (Seward) School at 2515 Boylston Avenue East and the L'Amourita Apartment Building at 2901 Franklin Avenue East, which are also designated City of Seattle landmarks and are listed in the WHR. Also in this segment are the Lake Washington Ship Canal Bridge (I-5 Bridge), previously determined eligible for listing in the NRHP, and the University Bridge over the Ship Canal, which is listed in the NRHP.

The 216 identified properties were evaluated to determine their eligibility for listing in the NRHP. Based on NRHP evaluation criteria (36 CFR 60.4), 61 of the newly identified properties were determined to be eligible for listing in the NRHP. These properties are listed in Table 1A in Attachment 1, and their locations and NRHP eligibility are presented in Exhibits 6-2a, 6-2h, and 6-2i.

Attachment 1 provides a complete list of the properties surveyed in this segment (the NRHP-listed Roanoke Park Historic District contributing resources are not shown in this attachment because they were not surveyed for this project). Attachment 3 contains copies of the nomination forms for the previously recorded properties. Attachment 4 includes the HPI forms for those resources surveyed as a part of this project. Table 1D in Attachment 1 lists the historic properties identified as a part of this project in the I-5/Roanoke segment of the Seattle study area.

This section describes the significance of representative examples of the historic properties identified within the APE in the I-5/Roanoke segment of the Seattle study area.

Roanoke Park Historic District

Property ID# 37 – Period of Significance 1899 to 1939
Listed in the NRHP under Criteria A and C

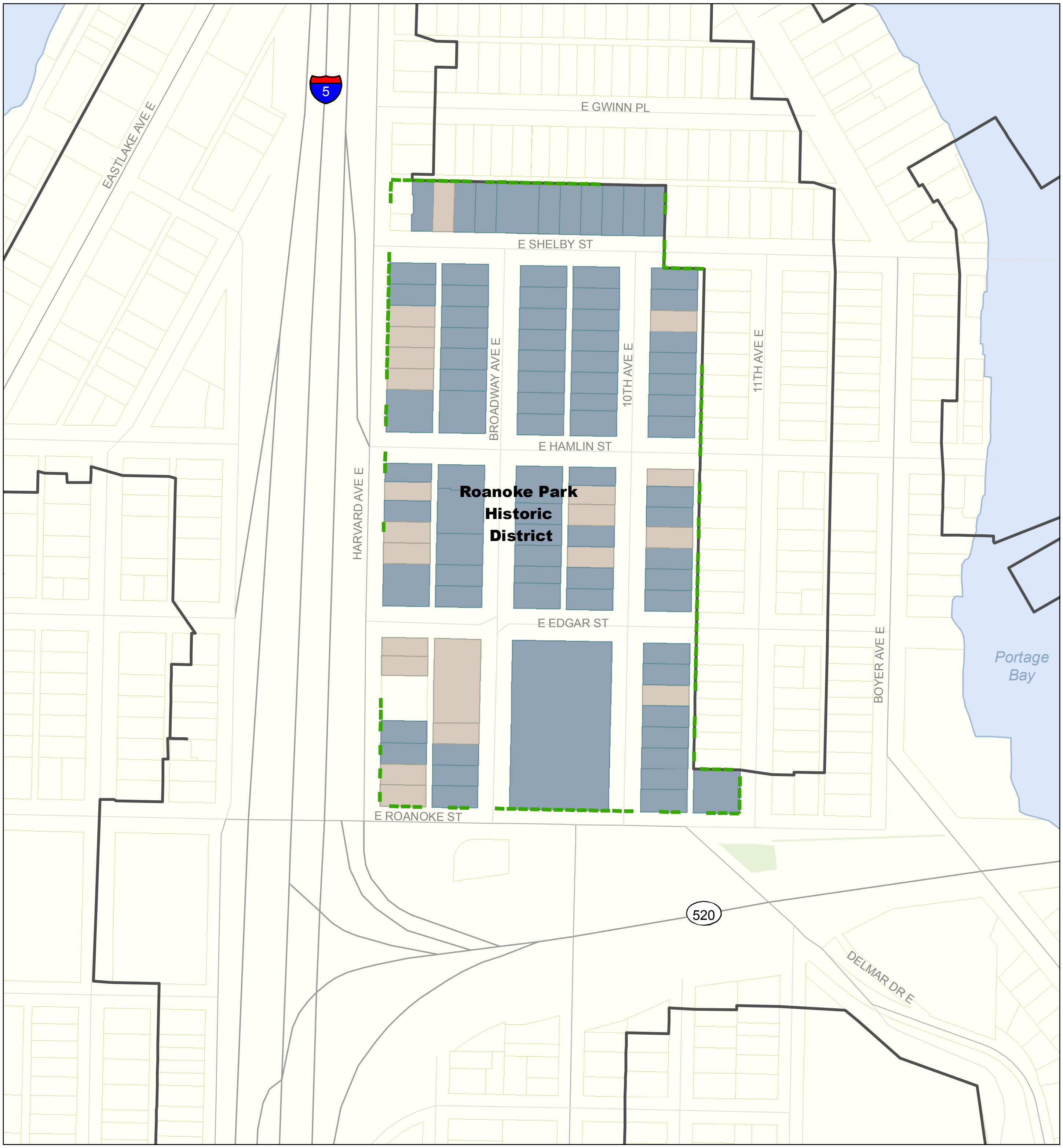
The boundaries of Roanoke Park Historic District are roughly East Roanoke Street, Harvard Avenue East, East Shelby Street, and 10th Avenue East, and include Roanoke Park (Exhibit 6-3). The entire Roanoke Park Historic District is included in the APE and was listed in the NRHP in July 2009. The historic district as a whole and the individual properties within the district were not resurveyed for this project because it is already listed in the NRHP and the properties had been surveyed within the previous 5 years. There are 101 properties in the historic district, 80 of which are contributing elements, including Roanoke Park and the individually listed William H. Parsons House (ID# 38). The NRHP nomination form for the district is included in Attachment 3 (O'Connor et al. 2009).

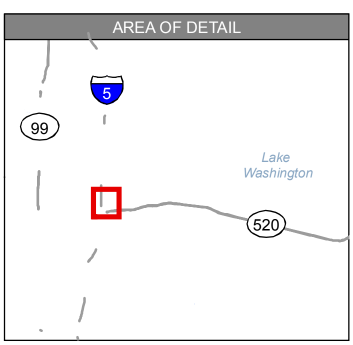
According to the 2009 nomination form:

> The Roanoke Park Historic District is [significant] under Criterion A for its direct association with events that made a significant contribution to the broad patterns of local and national history. The district is also significant under Criterion C for its collection of early 20th century residential architecture designed by many notable Seattle architects. The period of significance for the Roanoke Park Historic District begins in 1899 (the earliest construction date) and ends in 1939 (the date the neighborhood was built out) (O'Connor et al. 2009).

The nomination form describes the defining physical characteristics of the historic district as follows:

> The district is tightly unified geographically, with 96 single-family residences and 3 houses now serving as duplexes on relatively small lots usually 50 feet wide and 110 feet deep. The park … is the district's chief amenity apart from its views.... A sense of pleasant confinement and shelter comes from the large elms and horse chestnuts that shield the park and surrounding streets from the arterial at the district's south end. The continuous blocks of East Shelby Street with no perpendicular interruptions … clearly mark the north boundary of the district....





Roanoke Park Historic District
Area of Potential Effects
Contributing Resource
Non-Contributing Resource
Parcel
Park

N
0 100 200 400 Feet

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 6-3. **Roanoke Park Historic District**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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> The Olmsted Brothers had identified Block 9 of the Denny-Fuhrman Addition as a good place for a park to connect with Interlaken Park and its western viewpoint, now the Bagley […] Viewpoint. The Parks Department acquired the 2.2 acres of Block 9 in 1908 and established Roanoke Park.
>
> [A] streetcar finally came directly to the neighborhood and its new park just west and north of the viewpoint on the western edge of Interlaken Park. At the same time, preparations for the Alaska-Yukon-Pacific Exposition of 1909 turned the attention of both locals and visitors to the north, where the new suburb happened to lie on a plateau overlooking the Exposition grounds.
>
> The greatest number of houses in the district [was] built in 1908, 1909, and 1910 (O'Connor et al. 2009).

The Roanoke Park Historic District is considered historically significant under Criterion A for its contribution to the broad patterns of history. The neighborhood was an early streetcar suburb of Seattle, and "drew some of Seattle's and the country's most authentic characters, powerful influencers, and notable benefactors" (O'Connor et al. 2009). The NRHP nomination notes the Roanoke Park Historic District was home to many influential residents. Two early Seattle mayors lived in the neighborhood—Ole Hanson and Hugh Caldwell—and Louisa Boren Denny, the last surviving adult member of the landing party at Alki Point, spent her last years living in what is now the historic district.

Several other women influential in Seattle's early history have also called the Roanoke Park Historic District home. Bernice Stern, the first woman elected to the King County Council, later serving as King County Council chairwoman (Chesley 2006), grew up in the neighborhood and lived there during her early years of marriage. She also served on the Seattle City Council and later, on the Washington State Transportation Commission. Alice Franklin Bryant, another Roanoke Park resident, was known internationally as a peace activist and advocate for justice, and ran unsuccessfully for Congress on multiple occasions. Bryant lectured around the world and received numerous honors, including recognition as a Distinguished Citizen by the Washington State House of Representatives (June 18, 1977), First Citizen of Seattle (November 19, 1976), Honorary Citizen of Hiroshima (1951), and a civilian decoration for materially contributing to the success of the war in the Pacific (1945) (Williams 1977). Jean Ross, who lived in the district from ages 5 to 87 (1926 to 2008), was the first female engineer to work for Boeing (O'Connor et al. 2009).

Another notable resident was Harry W. Kent, one of the founders of the Kenworth Motor Truck Corporation. The company incorporated in Seattle in January 1923 and Kent became president of the company in 1929. Kenworth began producing custom fire trucks in 1932, and in 1933, was the first American truck manufacturer to install diesel engines as standard equipment. Kent remained president of the company until his death in 1937. During World War II, Kenworth was a significant producer of military trucks, especially the famous M-l wreckers (Kenworth Truck Company 2009).

Under Criterion C, the Roanoke Park Historic District is considered historically significant as "an oasis of substantial single-family residences, many of which were designed by architects of some renown…. The Roanoke Park Historic District contains a distinctive collection of housing stock representative of a forty-year period from 1899 through 1939" (O'Connor et al. 2009). According to the NRHP nomination, the historic district contains a variety of architectural styles, including the Colonial Revival, Neo-classical Revival, Tudor Revival, Mission/Spanish Revival, English Arts and Crafts, Craftsman, American Foursquare, Italian Renaissance, French Norman Revival, and many others. The NRHP nomination notes designs from the following architects represented in the district:

- Eric Almquist
- Bebb & Gould
- T.F. Bellamy
- Beezer Bros.
- Bertrand & Chamberlin
- Cutter & Malmgren (undocumented)
- Elmer Ellsworth Green
- Julian Franklin Everett
- Virgil Hall
- Charles Haynes
- Hunt & Wheatley
- Huntington & Gould
- Edwin J. Ivey
- Alvin L. Johnson
- Lawton & Moldenhour
- John I. Mattson
- McClelland & Pinneh
- Merritt, Hall & Merritt
- Frederick A. Sexton
- Bertram Dudley Stuart
- Victor W. Voorhees
- Thomas L. West
- Arthur Wheatley
- Andrew Willatsen
- W.R.B. Willcox
- Willcox & Sayward

In addition to its architecture, the Roanoke Park Historic District is notable for its park and landscape, both of which are considered contributing features. The NRHP nomination describes Roanoke Park as "the district's jewel, a 2.2-acre, green gateway" to the neighborhood. It was originally included as a component in the Olmsted Brothers' plan for Seattle's parks and boulevard system as "the Roanoke terminus of Interlaken Park" (O'Connor et al. 2009).

In reference to changes the park has experienced, the NRHP nomination states:

> Roanoke Park has undergone an extensive renovation over the past ten years. Working with the Parks Department, the Department of Neighborhoods, and resident University of Washington Professor Emeritus of Landscape Architecture Robert Buchanan, residents and other volunteer groups have planted some 500 trees in the neighborhood and at least 100 trees and thousands of shrubs and perennials in Roanoke Park, which now contains 79 varieties of trees. Parents and other residents worked with the Parks Department to reconfigure, resurface, and re-equip the Buchanan-redesigned playground at the north end of the park, and Buchanan laid out a more pleasing, curving path and bed configuration to encourage strolling along the park's paths and new beds. The informal basketball court under the evergreens was 'formalized' with a concrete pad, and a new hoop at standard height was installed.... Residents have bought new and more park benches to encourage visitors to spend time in the park (O'Connor et al. 2009).

As noted above, the park and neighborhood are home to a substantial tree collection.

> The twenty-five mature elms in Roanoke Park and on the immediately surrounding streets are 100 years old and have been identified by City Arborist Nolan Rundquist as a 'significant elm cluster....' [T]he Roanoke Neighborhood Elms Fund successfully nominated the handsome elm in the center of the park's west lawn as a Heritage Elm within the City of Seattle, marked by a small boulder and plaque at the elm's foot (O'Connor et al. 2009).

In addition to the elms in the park, there are also elms along East Edgar Street from Tenth Avenue East to Harvard Avenue East, and along the St. Patrick's Church curb lawns. The historic district also has mature horse chestnut and hedge maple trees.

Another aspect of the Roanoke Park Historic District is the distinctive views from the area. Because it sits on a plateau, the historic district has unique views that contribute to its setting. As noted in the NRHP nomination, "[t]o the east and the west the eye is drawn out to the lakes and even farther to the rugged often snowcapped mountains of the Cascades on the east and the Olympics on the west" (O'Connor et al. 2009). From the historic district's east side, the view encompasses Portage Bay, the Montlake Cut, the historic Montlake Bridge, the Seattle Yacht Club, and the NOAA Northwest Fisheries Science Center buildings. The Gothic Revival Suzzallo Library and other buildings on the UW campus are likewise visible across the bay to the northeast. From the historic district's west side, the view includes the downtown Seattle skyline, the Space Needle, Lake Union, the industrial structures of Gas Works Park, and the east side of Queen Anne Hill.

For examples of contributing resources in the Roanoke Park Historic District, see Exhibits 6-4 and 6-5. The Gates-Bass Mansion at 1018 East Roanoke Street (Exhibit 6-4) is one of the more ornate houses in the historic district. It occupies one of the best-sited parcels, on a large corner lot overlooking a prominent bluff with views of Portage Bay. The Betterton-Hillman House (no longer used as a residence) at 2601 Broadway Avenue East (Exhibit 6-5) faces Roanoke Park and is a substantial building with Craftsman-style details, typical of properties in the historic district. See the NRHP nomination form in Attachment 3 for more information on the historic district's contributing properties, including detailed property descriptions and photographs.

Exhibit 6-4. 1018 East Roanoke Street, Gates-Bass Mansion, Roanoke Park Historic District

Exhibit 6-5. 2601 Broadway Avenue East, Betterton-Hillman House, Roanoke Park Historic District

Seattle Apartment Buildings 1900–1957: NRHP Multiple Property Nomination

The SHPO accepted an NRHP multiple property nomination for Seattle Apartment Buildings constructed from 1900 to 1957 on November 20, 2008, and the properties initially documented by the nomination were individually listed in the NRHP on January 9, 2009 (Sheridan 2008). None of the initially documented properties are located in the APE. However, the historic resources survey identified 15 additional apartment buildings located in the APE as eligible for listing in the NRHP under the multiple property nomination (Exhibits 6-6, 6-7, and 6-8). Fourteen of these properties are located within the I-5/Roanoke segment:

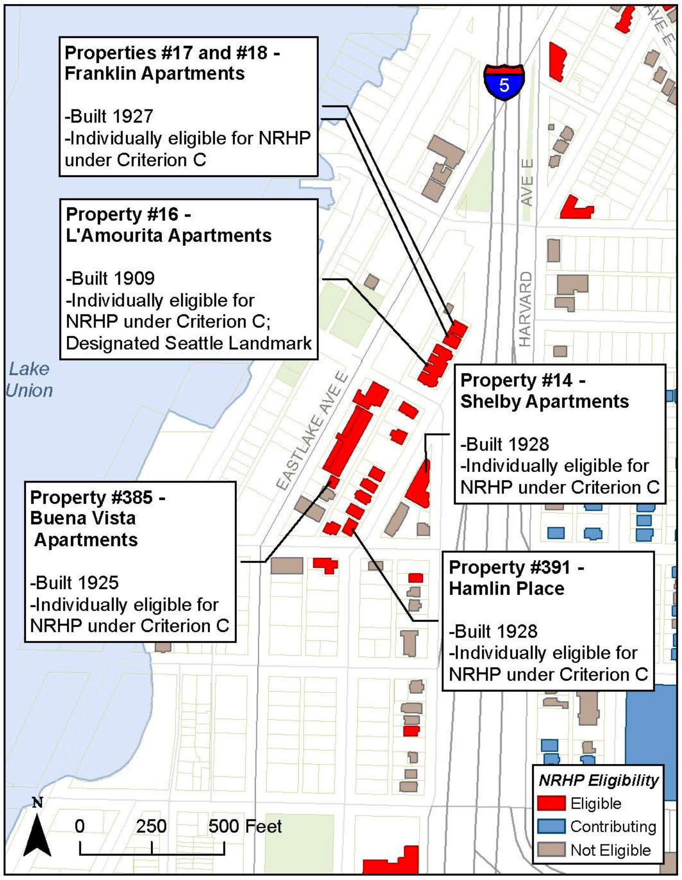
- Shelby Apartments at 2815 Boylston Avenue East (ID# 14)
- Valencia Apartments at 2852 Eastlake Avenue East (ID# 380)
- L'Amourita Apartments at 2901 Franklin Avenue East (ID# 16)
- Franklin Apartments at 2919 Franklin Avenue East (ID# 17)
- Franklin Apartments at 2923 Franklin Avenue East (ID# 18)
- Lanai Apartments at 3240 Fuhrman Avenue East (ID# 322)
- Wembley Court at 3100 Franklin Avenue East (ID# 351)
- Franklin Arms at 2821 Franklin Avenue East (ID# 383)
- Buena Vista Apartments at 2822 Eastlake Avenue East (ID# 385)
- The Joyce at 2807 Franklin Avenue East (ID# 388)
- Hamlin Place at 222 East Hamlin Street (ID# 391)
- Primrose Apartments at 269 East Boston Street (ID# 464)
- 3261 Fuhrman Avenue East (ID# 320)
- 3226 Fuhrman Avenue East (ID# 324)

One apartment building, the Edgewater Condominiums at 2411 42nd Avenue East, is located in the West Approach segment of the APE.

These additional 15 identified apartment buildings meet the requirements of the NRHP multiple property listing (Sheridan 2008). They are purpose-built apartment buildings; they were constructed between 1900 and 1957; they have good integrity; they were designed with and retain more than five self-sufficient dwelling units, each with private kitchen and bath; and they are within the Seattle corporate limits. Representative example of these apartment buildings is discussed in greater detail below. The Edgewater Condominiums are discussed in the *West Approach Segment* section.

Franklin Apartments –
2919 and 2923 Franklin Avenue East

The Shelby Apartments –
2815 Boylston Avenue East



L'Amourita Apartments –
2901 Franklin Avenue East

Hamlin Place –
222 East Hamlin Street

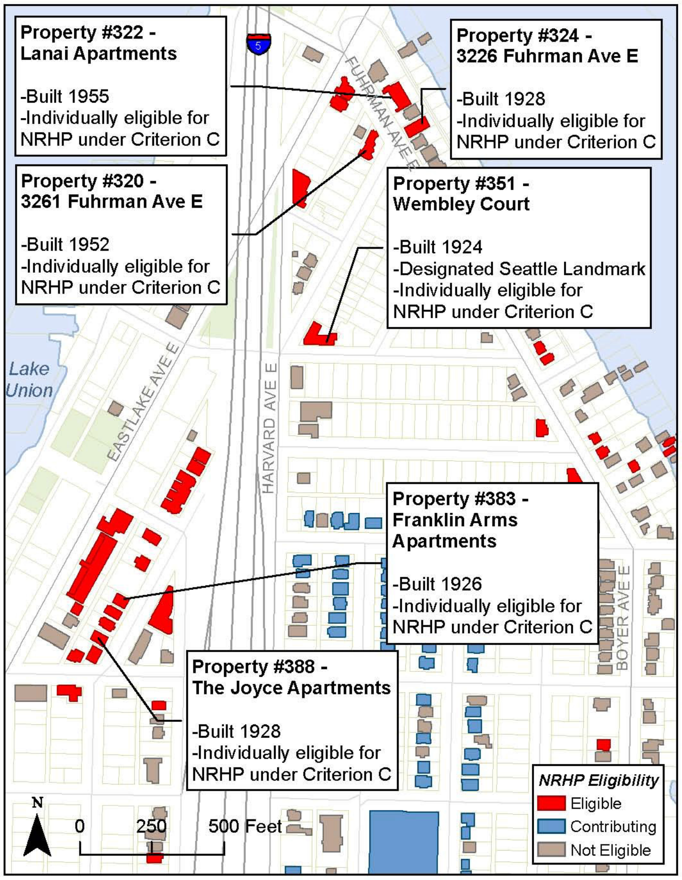
Buena Vista Apartments –
2822 Eastlake Avenue East

Exhibit 6-6. **Seattle Apartment Buildings (1900-1957) – Franklin Apartments, Shelby Apartments, L'Amourita Apartments, Buena Vista Apartments, and Hamlin Place**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

Wembley Court
3100 Franklin Avenue East

Lanai Apartments
3240 Fuhrman Avenue East



Apartment Building
3226 Fuhrman Avenue East

Apartment Building
3261 Fuhrman Avenue East

The Joyce Apartment
2807 Franklin
Avenue East

Franklin Arms Apartments
2821 Franklin Avenue East

Exhibit 6-7. **Seattle Apartment Buildings (1900-1957) – Wembley Court, Lanai Apartments, The Joyce Apartment, Franklin Arms Apartments, 3226 Fuhrman Avenue East, and 3261 Fuhrman Avenue East**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

Shelby Apartments

2815 Boylston Avenue East
Property ID# 14 – Built 1928
Individually eligible for listing in the NRHP under the multiple property nomination

The Shelby Apartments at 2815 Boylston Avenue East (Exhibit 6-6) were designed by B. Dudley Stuart (1885–1977) and built in 1928. The apartments feature ornate terra-cotta details, especially at the entry, and leaded glass windows. The unusually shaped footprint was designed to fit the odd lot shape, while still giving each unit as much natural light as possible.

L'Amourita Apartments

2901 Franklin Avenue East
Property ID# 16 – Built 1909
Individually eligible for listing in the NRHP under the multiple property nomination

The L'Amourita Apartments at 2901 Franklin Avenue East (Exhibit 6-6) were built in 1909 by investor Adolph J. Jarmuth. According to the *Seattle Times*, Mr. Jarmuth "built the L'Amourita whole-piece and lived with his family in its first apartment at the corner of Franklin Avenue and Shelby Street for the first two years only." In the beginning there were only eight apartments, described in the *Seattle Times* then as "divided by concrete walls and having from seven to nine rooms." The building was "the first of its kind in Seattle" (Dorpat 2002). The apartment building is considered unique for its ornate Mission Revival style, uncommon in Seattle, and is a designated Seattle Landmark. It is now used as residential condominiums.

Franklin Apartments

2919 and 2923 Franklin Avenue East
Property ID#s 17 and 18, respectively – Built 1927
Individually eligible for listing in the NRHP under the multiple property nomination

The buildings at 2919 and 2923 Franklin Avenue East (Franklin Apartments) are separate but matching six-unit apartment blocks (Exhibit 6-6), both constructed in 1927. They both feature unusual green terra-cotta ornamentation (including window sills and keystones) and a dramatic green, terra-cotta, pedimented door surrounds. The surrounds are composed of pairs of fluted Doric columns with a full entablature, topped by a balustrade with a center panel featuring a row of swags.

3261 Fuhrman Avenue East

3261 Fuhrman Avenue East
Property ID# 320 – Built 1952
Individually eligible for listing in the NRHP under the multiple property nomination

The property is a three-story apartment building designed in the Modern style with a unique, irregularly shaped plan. It has a flat roof with overhanging eaves and metal coping. The exterior walls are clad with a brick veneer and vertical wood siding. The building embodies the distinctive characteristics of the Modern style and is an unusual design for a multifamily apartment building.

Lanai Apartments

3240 Fuhrman Avenue East
Property ID# 322 – Built 1955
Individually eligible for listing in the NRHP under the multiple property nomination

The Lanai Apartments (Exhibit 6-7) is a good example of the open-corridor, multifamily apartment building type that was popular from the 1950s to the 1970s. It was designed in 1955 by Ted La Court for Orville Cohen, and built by the Century Construction Company (Sheridan 2006a). The apartment building embodies the distinctive characteristics of the Modern style and is a notable example of the building type and style. Its modern features include concrete block construction, aluminum windows, and glass-enclosed entry pavilions. It has 28 units, each averaging approximately 500 square feet.

3226 Fuhrman Avenue East

3226 Fuhrman Avenue East
Property ID# 324 – Built 1928
Individually eligible for listing in the NRHP under the multiple property nomination

The property contains a three-story apartment building with a rectangular plan and unreinforced masonry construction. The building was designed in the Renaissance Revival style with Beaux Arts–style elements. It has a flat roof with metal coping, and the exterior walls are clad with a brick veneer. The building has good integrity and embodies the distinctive characteristics of its style and building type.

Wembley Court

3100 Franklin Avenue East
Property ID# 351 – Built 1924
Individually eligible for listing in the NRHP under the multiple property nomination

Wembley Court (Exhibit 6-7) is a one-story, V-shaped apartment court with a central courtyard. It was designed in 1924 by Howard Riley, a local architect who also designed other bungalow courts in the Seattle area in the Tudor Revival–style (Sheridan 2006b). It is considered unusual for its V-shaped footprint, which was designed to fit onto the corner lot. It has six large units, averaging 937 square feet with amenities such as fireplaces and tiled kitchens and baths. Wembley Court is an excellent example of the Tudor Revival style and a good example of the small, multifamily apartment courts that were popular in Seattle and throughout the country in the 1920s.

Franklin Arms

2821 Franklin Avenue East
Property ID# 383 – Built 1926
Individually eligible for listing in the NRHP under the multiple property nomination

The Franklin Arms (Exhibit 6-7) is a three-story apartment building built in 1926. It is a good example of the Renaissance Revival style, but it also has Beaux Arts–style elements. The building has a flat roof with a stepped parapet and metal coping with a brick exterior. It is a good example of this combination of styles in a Seattle apartment building from the early twentieth century.

Buena Vista Apartments

2822 Eastlake Avenue East
Property ID# 385 – Built 1925
Individually eligible for listing in the NRHP under the multiple property nomination

The property contains a two-story multifamily apartment building with a rectangular plan and wood frame construction. It was designed in the Spanish Colonial Revival style. The building has a flat roof with a stepped parapet and clay tile coping, and the exterior walls are clad with a smooth stucco finish. The property embodies the distinctive characteristics of the Spanish Colonial Revival style, and is an unusual example of this combination of style and type in Seattle.

The Joyce

2807 Franklin Avenue East
Property ID# 388 – Built 1928
Individually eligible for listing in the NRHP under the multiple property nomination

The Joyce (Exhibit 6-7) is a two-story apartment building erected in 1928. It was designed in the Renaissance Revival style with Beaux Arts–style elements. It has a rectangular plan, is unreinforced masonry construction, and has a flat roof with a parapet and decorative terra cotta cornice. The exterior walls are clad with brick, and the fenestration throughout the building consists of original wood frame windows with leaded glass panes. The building has good integrity and embodies the distinctive characteristics of the Renaissance Revival style.

Hamlin House

222 East Hamlin Street
Property ID# 391 – Built 1928
Individually eligible for listing in the NRHP under the multiple property nomination

The property contains a three-story apartment building with a rectangular plan and unreinforced masonry construction. The building was designed in the Renaissance Revival style with Beaux Arts–style elements. It has a flat roof with a short parapet and concrete coping. The exterior walls are clad with brick. The building has good integrity and embodies the distinctive characteristics of its style and building type.

Primrose Apartments

269 East Boston Street
Property ID# 464 – Built 1929
Individually eligible for listing in the NRHP under the multiple property nomination

The Primrose Apartments (Exhibit 6-8) is a four-story apartment building with a rectangular plan and unreinforced masonry construction. The building was designed in the Renaissance Revival style. It has a flat roof with a stepped parapet and metal coping, and the exterior walls are clad with brick. The building has good integrity and embodies the distinctive characteristics of the Renaissance Revival style.

Exhibit 6-8. Seattle Apartment Buildings (1900–1957)—Primrose Apartments

Individual Historic Properties

Denny-Fuhrman (Seward) School

2515 Boylston Avenue East

Property ID# 10 – Built 1893, 1905, and 1917

Individually eligible for listing in the NRHP under Criteria A and C

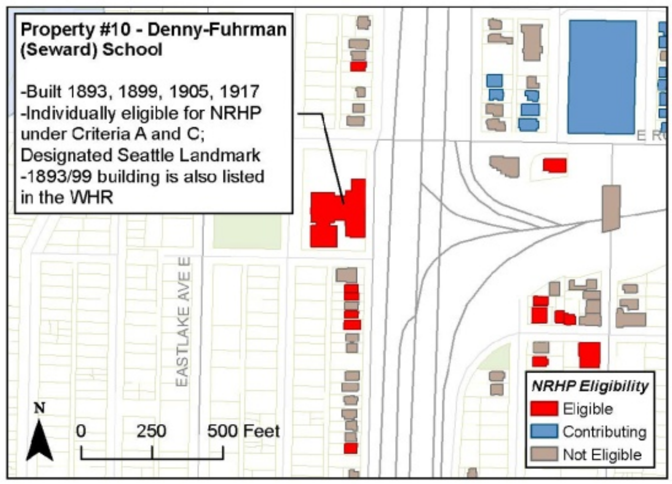
The Seward School (Exhibit 6-9) consists of a small campus of three historic buildings located in what is now considered the Eastlake neighborhood. The small campus illustrates the development of public school architecture in the late nineteenth century and early twentieth century. The school is considered eligible for listing in the NRHP under Criterion A for its association with education in Seattle and the development of the Eastlake community. Under Criterion C, the property contains buildings that are excellent examples of late nineteenth and early twentieth century public school buildings.

Exhibit 6-9. Seward School, 2515 Boylston Avenue East

Seward School (1905)

Seward School (1917)

Denny-Fuhrman School (1893)



The oldest of the three buildings, known as the Denny-Fuhrman School or the Seward School Lunchroom and Gymnasium, was originally built in 1893 facing east onto Boylston Avenue. In 1899, an addition to the building doubled its size and resulted in the current footprint, roofline, and arched entries. The building was relocated to its present site in 1917. It was renovated in 1997 and 1998, and reopened in September 1999, along with the rest of the complex. This building is listed in the WHR and is a designated Seattle Landmark. The Seattle Landmark Nomination Form (1980) (see Attachment 3 to the Final EIS) notes that it is one of only two nineteenth-century frame schoolhouses remaining in Seattle, and states that it is of "unique significance in representing the history of early public education in Seattle." The nomination form for the WHR (Corley 1973) states that it is "the oldest frame school building in a generally unaltered state in the city of Seattle," and that it is the only one-room schoolhouse remaining in the city.

The second school building was constructed in 1905 to accommodate increased enrollment. Originally the school served all eight grades in one room, but by 1897, enrollment had risen to 70, and three classrooms were established (Corley 1973). By 1904, the enrollment was 206, and the school board built the school building that is now to the north of the 1893 structure, facing Franklin Avenue East. The buildings were then renamed "Seward School" for Secretary of State William Henry Seward (1801–1872), who had negotiated the purchase of Alaska (Long 2001). The Alaska-Yukon-Pacific Exposition held on the University of Washington campus in 1909 brought new transportation and great exposure to the Eastlake neighborhood. Eastlake Avenue was graded, and the streetcar lines were extended north. By 1914, more than 400 pupils attended Seward School, reflecting the growth and development of the area. In 1932, enrollment was about 580, and Seward became a demonstration school. As a demonstration school, teachers from all over the school district attended half-day sessions at Seward to observe the latest teaching methods and materials. In 1950, Seward School's boundaries were expanded when the nearby Cascade School was destroyed in an earthquake (Thompson and Marr 2002).

The second school building is a designated Seattle Landmark. The Seattle Landmark Nomination (1980) states that in plan and internal arrangement, the building conforms to the standard eight-room school plan developed by architect James Stephen and used throughout the school district between 1904 and 1906. It notes that it is "significant as an essentially unaltered and early example" of this plan.

Built in 1917, the third school building, designed by Edgar Blair, is also a designated Seattle Landmark. When built, the school building's design reflected new approaches in the design of educational facilities, which were particularly concerned with fireproof construction. The building's masonry construction was a consequence of these influences, which also affected its external form. In particular, the Seattle Landmark Nomination Form (1980) notes the building is "significant architecturally as one of the two most distinguished elementary school designs built for the District ... and exhibit(s) unusually refined brick and terra cotta detailing."

Keuss Building

2351 10th Avenue East
Property ID# 27 – Built 1930
Individually eligible for listing in the NRHP under Criterion C

The Keuss Building is a traditional tripartite row of commercial storefronts. Built in 1930, the building exhibits elements of the Art Deco style in corbelled brick detailing on vertical pilasters and distinctive, stylistic, cast stone ornamentation. The three storefronts are typical early twentieth century design, with recessed center entries between large plate-glass windows, topped by a row of transoms. The building retains good integrity and is considered eligible for listing in the NRHP under Criterion C for its distinctive architectural characteristics.

Fire Station #22

901 East Roanoke Street
Property ID# 36 – Built 1965
Individually eligible for listing in the NRHP under Criteria A and C

Fire Station #22 (Exhibit 6-10) was constructed in 1965 on a narrow strip of land between East Roanoke Street and SR 520, across the street from the Roanoke Park Historic District (Wickwire 2002). This fire station replaced an older facility at a nearby site after the construction of SR 520 (City of Seattle 2004, 2009). It was designed by architect LaMonte Shorett. The building is considered historically significant for its architectural design and associations with the development of the Seattle Fire Department and the North Capitol Hill neighborhood. The fire station will be eligible for listing in the NRHP under Criterion A for its association with the development of the Seattle Fire Department and under Criterion C for its distinctive Modern architectural style in 2015, once it reaches 50 years old.

Exhibit 6-10. **Fire Station #22, 901 East Roanoke Street**

Eldridge Buick/University Chevrolet Building

4501 Roosevelt Way NE
Property ID# 268 – Built 1926
Individually eligible for listing in the NRHP under Criteria A and C

The Eldridge Buick/University Chevrolet Building (now Performance Bicycles) is a large one-story former automobile showroom on a corner lot in the University District of Seattle (Sodt 2001). It was designed in the Mediterranean Revival style by Schack, Young and Myers, a well-known Seattle firm of architects and engineers. Architects James Hansen Schack and David John Myers, and engineer Arrigo M. Young, were prolific designers of many Seattle commercial buildings in the 1920s, including several other buildings in the University District. Built as the home of the Eldridge Buick Company, the property was purchased by J. E. Blume in 1935 as the new home of the University Chevrolet Company (University Motors). The building embodies the distinctive characteristics of the Mediterranean Revival style in a commercial retail building, and continues to convey a strong association with the early automobile industry in Seattle during the 1920s.

University Friends Meeting of the Religious Society of Friends

4001 9th Avenue NE
Property ID# 310 – Built 1964
Individually eligible for listing in the NRHP under Criterion C

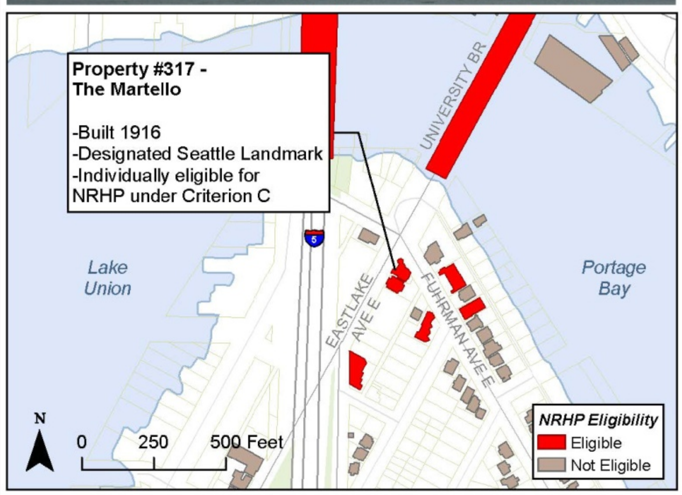
The property contains two related, two-story commercial buildings, each with a rectangular plan and concrete construction. They are connected by covered corridors, which create a central courtyard between the two structures. The entire property was designed in the Modern style with strong Japanese stylistic influences. It was designed by architect Perry Johanson, and houses the meeting house of the University Friends Meeting of the Religious Society of Friends (Quakers) and the regional offices of the American Friends Service Committee (Religious Society of Friends 2010). The building is an unusual example of the Modern style and has good integrity. The property will be eligible for listing in the NRHP under Criterion C for its distinctive Modern architectural style in 2017, once it reaches 50 years old.

The Martello

3242 Eastlake Avenue East
Property ID# 317 – Built 1916
Individually eligible for listing in the NRHP under Criterion C

The Martello (Exhibit 6-11) is a three-story, mixed-use building, consisting of two levels of apartment units over ground-level commercial space. Designed in the Tudor Revival style, it is characterized by a steeply pitched, conical, corner tower; a complex cross gable roof; and stucco clad exterior walls. Built in 1916 as a single-family house, the property was remodeled in the 1920s into a furniture store by Frederick Anhalt, one of Seattle's most prominent apartment developers at the time. Anhalt was renowned for his use of the French Eclectic and Tudor Revival styles, which is evident in The Martello. The store was originally Skewe's Furniture and later Rapunzel's tavern. In the 1950s, the apartments were called Lake Union Court Apartments, but are currently known as The Martello. The building was recently renovated and converted to condominiums. The Martello building has good integrity, embodies the distinctive characteristics of the Tudor Revival style, and is a unique building design on a prominent corner lot.

Exhibit 6-11. The Martello, 3242 Eastlake Avenue East



A. W. Larson Building

3206 Harvard Avenue East
Property ID# 330 – Built 1924
Individually eligible for listing in the NRHP under Criterion C

The property contains a two-story commercial building with a triangular plan and unreinforced masonry construction. The building was designed in the Renaissance Revival style with Beaux Arts–style elements. It has good integrity and embodies the distinctive characteristics of its style and type; it is one of a dwindling number of intact 1920s commercial buildings that remain in the Eastlake neighborhood.

Coronado Apartments

2828-2840 Eastlake Avenue East
Property ID# 381 – Built 1958
Individually eligible for listing in the NRHP under the multiple property nomination

The Coronado Apartments is an eight-story building with a rectangular plan and steel frame construction. Built in 1958, it was designed in the International style. It has a flat roof and exterior hallways. The exterior walls are clad with concrete and a wood siding veneer. The fenestration consists of original metal windows throughout the building. The building has good integrity and embodies the distinctive characteristics of the International style from the mid-twentieth century, and is an uncommon example of the style in Seattle.

Boylston East Apartments

2007 Boylston Avenue East
Property ID# 472 – Built 1965
Individually eligible for listing in the NRHP under Criterion C

The property contains a two-story multifamily residence with a rectangular plan, designed in the Modern style. It has a flat roof with slightly overhanging eaves, and features an integrated ground-floor carport. The exterior walls are clad with wood clapboard siding and pebble dash stucco. The building's integrity remains intact and it is a good example of the Modern style in a residential apartment building.

Portage Bay Segment

The historic resources survey identified 135 properties constructed prior to 1972 in the Portage Bay segment of the Seattle study area. No previously recorded historic properties were identified in this segment. The 135 identified properties were evaluated to determine their eligibility for listing in the NRHP. Based on NRHP evaluation criteria (36 CFR 60.4), 31 of the properties were determined to be individually eligible for listing in the NRHP. These properties are listed in Table 1E in Attachment 1, and their locations and NRHP eligibility are presented in Exhibits 6-2a and 6-2b.

Attachment 1 provides a complete list of the resources surveyed in the Portage Bay segment; Attachment 4 includes the HPI forms for resources surveyed as a part of this project.

Individual Historic Properties

Alden Mason House

2545 Boyer Avenue East

Property ID# 48 – Built 1949

Individually eligible for listing in the NRHP under Criteria B and C

The Alden Mason House was built in 1949 for artist Alden Mason by Victor Steinbrueck, a prominent Seattle architect and one of the designers of the Space Needle. The house is visually striking, situated on the hill overlooking Portage Bay, and is considered an excellent example of the Modern style. The Mason house was published in *Architectural Record* "Houses of the Northwest" (Steinbrueck 1953). The house is eligible for listing in the NRHP under Criteria B and C. It is significant under Criterion B for its association with Alden Mason, noted Seattle artist and influential long-time faculty member at the UW, and under Criterion C for its architecture and as the work of a master architect.

Kelley House

2518 Boyer Avenue East

Property ID# 52 – Built 1909

Individually eligible for listing in the NRHP under Criterion C

The Kelley House, located on the shore of Portage Bay, is an Arts and Crafts/Swiss Chalet–style residence from 1909, sited on a bluff on the shore of Portage Bay. The house features elaborate "half timbering" in the gable ends and is a particularly intact example of this picturesque style. The property is eligible for listing in the NRHP under Criterion C for its distinctive architectural characteristics.

Canal Market

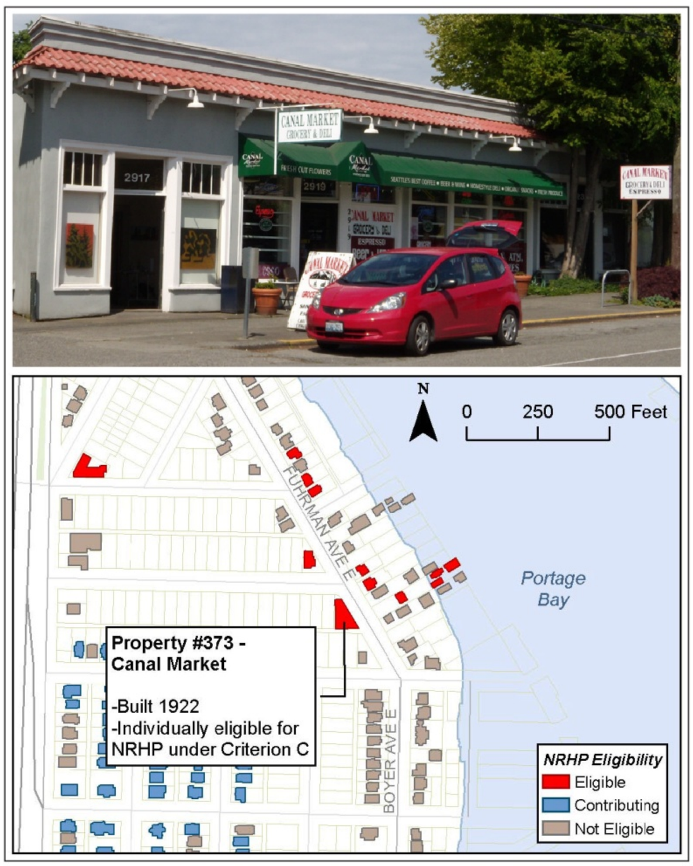
2917 Fuhrman Avenue East

Property ID# 373 – Built 1922

Individually eligible for listing in the NRHP under Criterion C

The Canal Market (Exhibit 6-12) is a one-story commercial building with a polygon

Exhibit 6-12. Canal Market, 2917 Fuhrman Avenue East



plan and wood frame construction. Built in 1922, it was designed in the Spanish Colonial Revival style with a flat roof and cornice and with a pitched clay tile roof along the front elevation. The exterior walls are clad with stucco and many of the original windows remain. The building has good integrity and embodies the distinctive characteristics of the Spanish Colonial Revival style in a commercial building. It is also an unusual building type and style in the area.

Montlake Segment

The historic resources survey of the Montlake segment of the Seattle study area, which includes properties on the UW campus, identified 230 properties constructed prior to 1972.

Six previously recorded properties were identified in this segment (Exhibit 3-6). These properties include the Montlake Cut of the Lake Washington Ship Canal, the Montlake Bridge at Montlake Boulevard NE over the Montlake Cut, the Seattle Yacht Club Main Station at 1807 East Hamlin Street, the Montlake Community Center at 1618 East Calhoun Street, the Canoe House (former Naval Military Hangar/University Shell House), and Nuclear Reactor Building (More Hall Annex) on the UW campus. All of these properties are listed in the NRHP and the WHR, except for the Montlake Community Center. All are designated City of Seattle Landmarks, except for the Canoe House and Nuclear Reactor Building.

The 230 identified properties in the Montlake Segment were evaluated to determine their eligibility for listing in the NRHP. Based on NRHP evaluation criteria (36 CFR 60.4), 168 of the properties were determined to be eligible for listing in the NRHP. The 168 properties include contributing elements to the Montlake Historic District and individually eligible properties. Of the 168 properties, 154 are contributing elements to the Montlake Historic District and 16 are individually eligible for listing in the NRHP, but do not contribute to the district. Additionally, 37 of the 154 contributing properties are both individually eligible and historic district contributors. These properties are listed in Table 1F in Attachment 1, and their locations and NRHP eligibility are presented in Exhibits 6-2b, 6-2d, and 6-2e.

Attachment 1 provides a complete list of the properties surveyed in the Montlake segment. Attachment 3 contains copies of the nomination forms for the previously recorded resources. Attachment 4 includes the HPI forms for those resources surveyed for this project.

Montlake Historic District

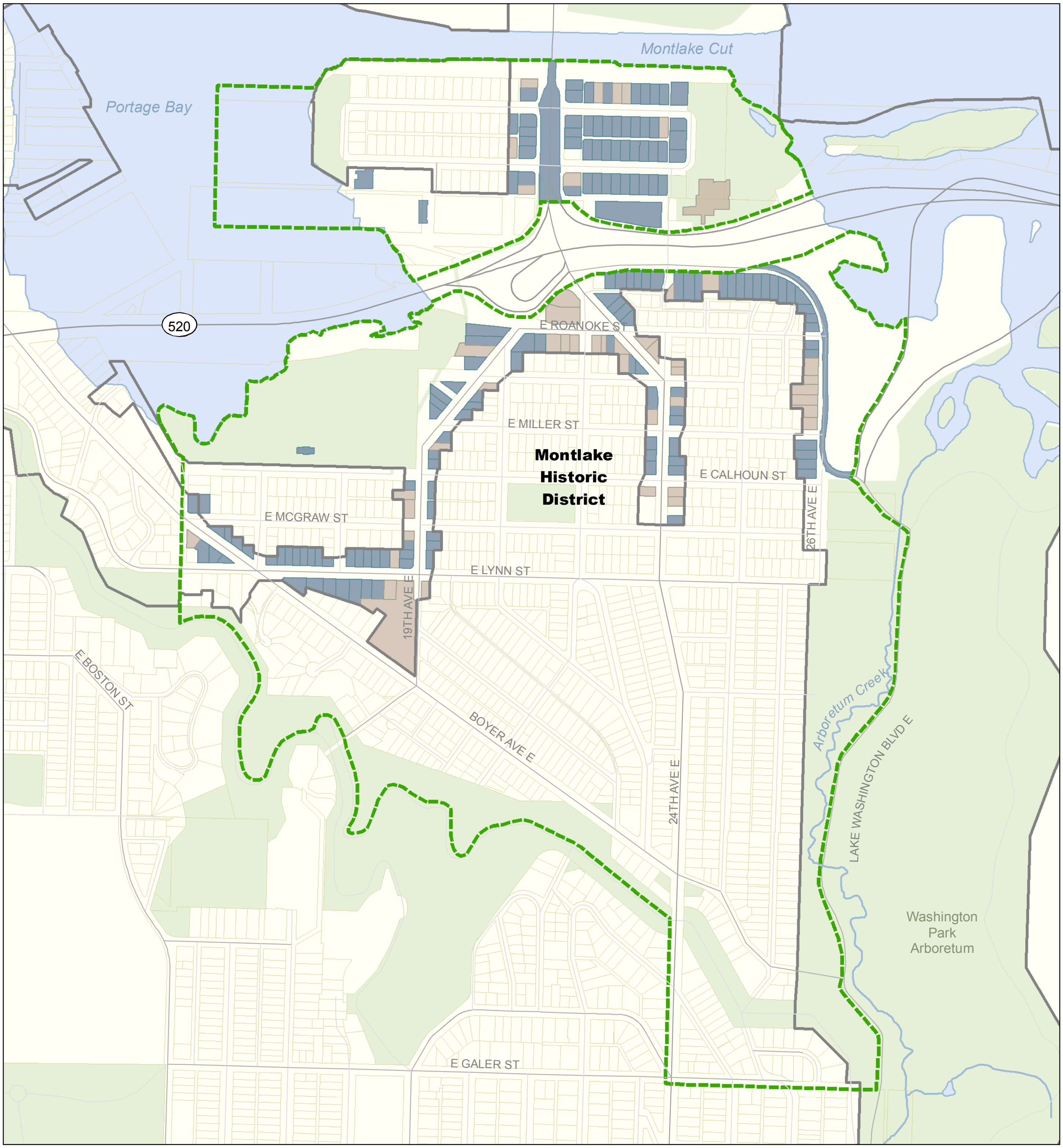
Property ID# 238 – Period of Significance 1905 to 1952
Eligible for listing in the NRHP under Criterion C

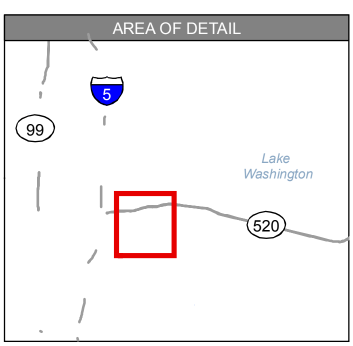
The Montlake neighborhood is generally considered to be from the Arboretum on the east to Portage Bay on the west, with the northern boundary at the Montlake Cut and the southern boundary often listed as Interlaken Park or Interlaken Boulevard. The name “Montlake” frequently appears on maps as the label for this entire neighborhood. The Montlake Historic District, which encompasses the majority of this neighborhood, meets the criteria for an NRHP-eligible historic district under Criterion C. Boundaries of the Montlake Historic District are illustrated in Exhibit 6-13. Only properties within the district boundaries and in the APE were surveyed as a part of this project. HPI forms for these surveyed properties are provided in Attachment 4.

There are 154 contributing properties to the Montlake Historic District within the APE. Thirty-seven of these properties are also individually eligible for listing in the NRHP, apart from their status as contributing elements to the district. The individually eligible properties include the Seattle Yacht Club (which is listed in the NRHP), the NOAA Northwest Fisheries Science Center buildings, and Lake Washington Boulevard. Two of the eligible buildings at NOAA were constructed outside of the historic district’s period of significance, so are not considered contributing elements.

The Montlake Historic District is historically significant as a cohesive collection of intact architecture, which represents the development of early twentieth century Seattle and the distinct design styles that typified this period. The historic district contains a combination of distinctive builders’ houses, high-style, architect-designed residences, and impressive nonresidential structures, with a very low level of intrusions. The period of significance is 1905 to 1952, from the platting of the neighborhood to the construction of MOHAI.

Although the Montlake neighborhood was compromised by the construction of SR 520 in the early 1960s, most of it remains intact (Smith 2010). Many of the individual buildings have experienced minor alterations, such as window replacements and rear additions; however, most of these do not detract significantly from the integrity of the individual properties nor of the district as a whole. Only a small number of the buildings have been so altered as to make them contributing, and the percentage of these in the historic district is low.





- Montlake Historic District
- Area of Potential Effects
- Contributing Resource
- Non-Contributing Resource
- Parcel
- Park

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 6-13. **Montlake Historic District**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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The residential styles in the Montlake Historic District primarily consist of the Craftsman, Tudor, and Colonial Revival styles, and many are considered “individually distinctive” (Gould 2000). Exhibits 6-14 and 6-15 demonstrate some of the diversity of architectural styles found in the neighborhood. The large Tudor-style house at 2158 East Shelby Street has picturesque details from 1925 (Exhibit 6-14). Across the street, noted Seattle architecture firm Bebb and Gould designed the Mary Houlahan House at 2159 East Shelby Street. Erected in 1914, the house exhibits a Colonial Revival style that mimics the Georgian period (Exhibit 6-15). Both of these houses are considered individually eligible for listing in the NRHP under Criterion C, in addition to being contributing elements of the historic district.

Exhibit 6-14. **2158 East Shelby Street, Montlake Historic District**

Exhibit 6-15. **2159 East Shelby Street, Mary Houlahan House, Montlake Historic District**

Exhibits 6-16 and 6-17 show other representative examples of contributing elements to the Montlake Historic District. The residence at 1902 East McGraw Street is a good example of a Craftsman bungalow, which is a common building type and style found in the historic district. Another style typical of this area is the timbered Tudor, as seen in Exhibit 6-17, which shows a photograph of the house at 2302 Boyer Avenue East.

There are also several noteworthy nonresidential properties located within the boundaries of the Montlake Historic District. These properties include the south end of the Montlake Bridge, the Montlake Cut, the Seattle Yacht Club, the NOAA Northwest Fisheries Science Center buildings, and a portion of Lake Washington Boulevard. The

Exhibit 6-16. 1902 East McGraw Street, Montlake Historic District

Exhibit 6-17. 2302 Boyer Avenue East, Montlake Historic District

Seattle Yacht Club and the NOAA Northwest Fisheries Science Center West Wing Building contribute to the physical and cultural fabric of the historic district. The Seattle Yacht Club is a recreational and cultural institution that supports the residential quality of the neighborhood.

The segment of Lake Washington Boulevard that contributes to the historic district was part of the original 1903 Olmsted Park and Boulevard Plan. At the intersection with Montlake Boulevard, the segment assumes the name Montlake Boulevard and turns north, heading toward the UW campus and crossing the Montlake Cut. The segment of Lake Washington Boulevard that connected the Arboretum and the UW campus was specifically laid out in March 1907, in preparation for the Alaska-Yukon-Pacific Exposition, and completed in 1909. According to BOLA and Kiest (2003), "Outside the campus, the exposition's legacy was the extension of Lake Washington Boulevard, under the design direction of Olmsted Brothers."

The MOHAI building was designed by architect Paul Thiry and built between 1950 and 1952 (Durio 2004). Located at 2161 East Hamlin Street/2720 Lake Washington Boulevard East, the MOHAI building was an excellent example of a Modernist-style public building (Exhibit 6-18) (Woodbridge and Montgomery 1980). However, additions by other architects are numerous, and the museum has undergone architecturally incompatible alterations, most notably changes to the original entrance and a reorientation of the building as the result of the original SR 520 construction (Durio 2004). The multiple additions and alterations to the building have greatly

Exhibit 6-18. MOHAI, 2161 East Hamlin Street/2720 Lake Washington Boulevard East

affected its integrity. Through consultation with the SHPO, WSDOT determined that the MOHAI building no longer retains sufficient integrity to warrant listing in the NRHP, either individually or as a contributing element to the Montlake Historic District.

The Montlake Community Club, an organization of neighborhood residents, has expressed interest in having the Montlake neighborhood considered for nomination for listing in the NRHP (Montlake Community Club 2010). In pursuit of this goal, the Montlake Community Club has undertaken volunteer efforts to map out the historic district boundaries (noted earlier in Exhibit 6-13), begun to survey each property in the historic district, and gathered history on the neighborhood to prepare a historic context.

Individual Historic Properties

NOAA Northwest Fisheries Science Center

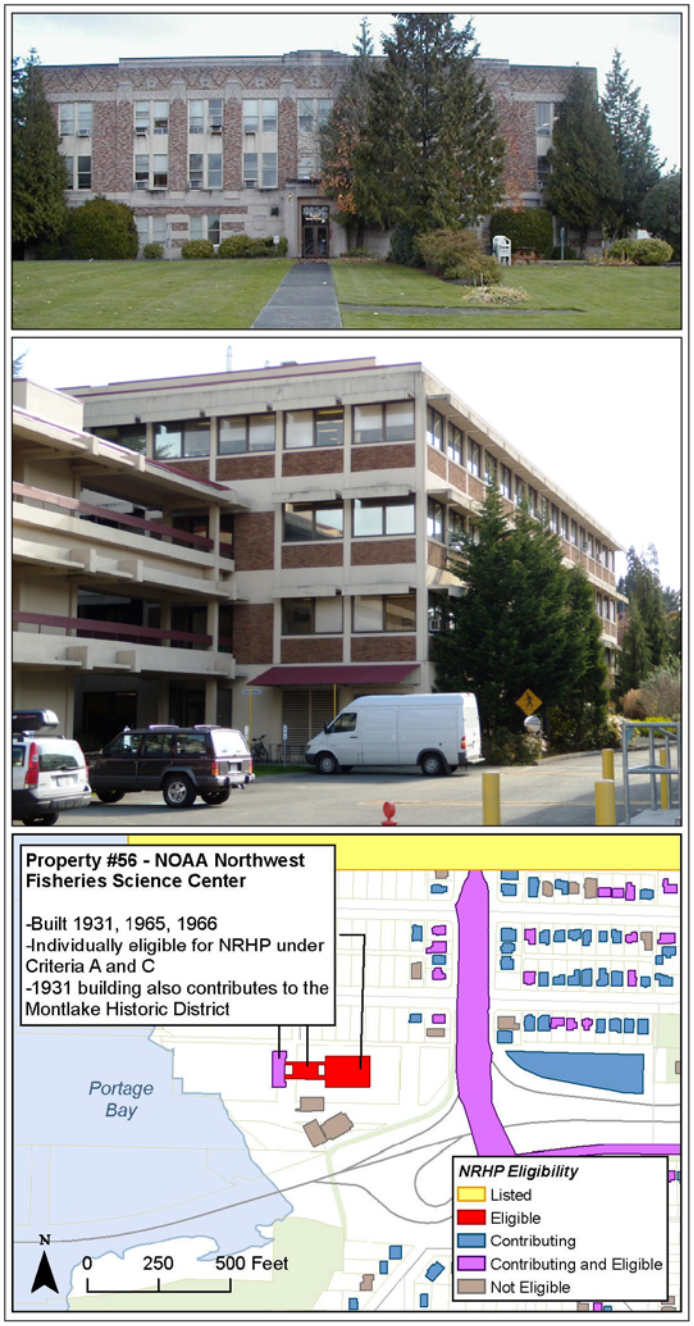
2723 Montlake Boulevard NE
Property ID# 56 – Built 1931, 1939, 1940, 1965, 1966
West Wing building (1931) and North Campus buildings (1965 and 1966)
Individually eligible for listing in the NRHP under Criteria A and C

The NOAA Northwest Fisheries Science Center contains multiple buildings and is located in the Montlake Historic District. Five buildings on the site predate 1972. The original building on the property is from 1931, and is located at the western end of the complex. Immediately to the east of this building is a three-story building constructed in 1965. To the east of this building is another larger building constructed in 1966. These three buildings are connected by covered exterior walkways. A hatchery, constructed in 1940, is located to the south of these buildings. To the southeast of the hatchery is a small metal “Butler” building, also from 1940.

Of these five buildings, only the original building on the site, constructed in 1931 (Exhibit 6-19), is a contributing element to the Montlake Historic District. The 1931 building was the first federal fisheries building constructed on the West Coast (Peacock pers. comm. 2004) and was designed by distinguished architect John Graham, Sr. in the Art Deco style (Ochsner 1998). Graham is best known for his downtown Seattle commissions, including the Dexter Horton, Bon Marché, and Exchange buildings. Graham also designed the Ford Motor Assembly Plant on Valley Street, several buildings on the UW campus, and the Seattle Yacht Club. Graham is noted as being “particularly adept in the Art Deco style,” and he designed several other "finely detailed, terra-cotta clad commercial structures" (Ochsner 1998). The 1931 building was ornamented with terra cotta details (such as seashells, coral, sea horses, and waves with fish) that reflect the marine association of the facility. These details extend to the interior as well. The building contains a number of science labs and is also the main chemistry building at the facility.

The 1931 building is considered individually eligible for listing in the NRHP under Criteria A and C for its association with important research that is significant locally, regionally, and nationally; distinctive architectural characteristics; and association with a master architect. It is also a contributing element to the Montlake Historic District. The 1965 and 1966 buildings connected to the 1931 building are also eligible for listing in the NRHP under Criteria A and C. However, these two 1960s buildings do not contribute to the Montlake Historic District because they were built after the historic district's period of significance. The 1965 and 1966 buildings were constructed to house offices and meeting space to accommodate the expanded staff of NOAA at this site (Herkelwrath pers. comm. 2004). The 1965 building also contains a large library and a 150-seat auditorium.

Exhibit 6-19. NOAA Northwest Fisheries Science Center



The 1940 hatchery building is the second oldest building remaining on the campus, and has been the site of important marine research. However, numerous additions and alterations have resulted in a loss of integrity of design, materials, workmanship, and feeling. In addition, the construction of many newer buildings adjacent to the structure, as well as the construction of SR 520 immediately to its south, has affected its setting. Because of this loss of integrity, the 1940 hatchery building lacks sufficient integrity to be eligible for listing in the NRHP, either individually or as a contributing element to the Montlake Historic District.

The 1940 Butler building is a prefabricated metal building used to store chemicals. It is not architecturally significant and is utilitarian in design. It does not meet the criteria for listing in the NRHP.

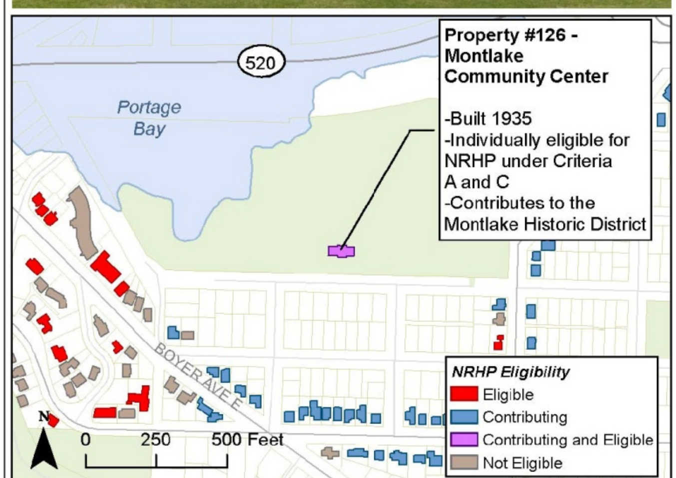
Montlake Community Center

1618 East Calhoun Street
Property ID# 126 – Built 1935
Individually eligible for listing for NRHP under Criteria A and C
Contributing element to the Montlake Historic District

The Montlake Community Center (Exhibit 6-20) is a Tudor Revival–style building constructed in 1935 as part of the Montlake Playfield, which is located within the boundaries of the Montlake Historic District. It was designated a Seattle Landmark on January 19, 2005; the designation included the 1935 building and a 10-foot perimeter around the structure (Landmarks Preservation Board 2005). The building is considered historically significant for its architectural design and its associations with the Civil Works Administration (CWA), the Washington Emergency Relief Administration (WERA), and the development of Montlake Playfield.

The Montlake Playfield was established in 1932 at the request of the Montlake Community Club (City of Seattle 2000). The community club advocated for a neighborhood playfield and field house to provide a recreational area for neighborhood children, and to supplement the facilities of the nearby local Montlake Elementary School. The City of Seattle experienced financial difficulties in 1932, which caused construction of the playfield and field house to be postponed until January of 1934, when the CWA stepped in to assist the city with various public works projects, including the Montlake Playfield.

Exhibit 6-20. Montlake Community Center, 1618 East Calhoun Street



Construction of the playfield and field house continued until spring 1934, when the CWA was dissolved. The project was completed under WERA, which in 1935 was superseded by the WPA. The WPA completed much of the work to develop the playfield.

Although the architect is unknown, the Montlake Community Center is a good example of the Tudor Revival style and is representative of its period of construction, when Seattle park structures were meant to be "pleasing in design and permanent in nature" (Landmarks Preservation Board 2005). This building has good integrity, although its setting has been somewhat compromised by the large gymnasium constructed to the north. It is individually eligible for listing in the NRHP under Criterion A for its association with development of the Montlake neighborhood and the City of Seattle parks system, as well as its association with the CWA and WERA. It is also eligible under Criterion C for its distinctive characteristics as an early field house and recreation center, and as a good example of Tudor Revival–style architecture. In addition, the building is a contributing element of the Montlake Historic District and is a representative example of the early twentieth century architecture that makes up the historic district.

University of Washington Buildings

The following 10 buildings and three structures on the UW campus were identified as eligible for listing in the NRHP:

- Bloedel Hall (ID# 205)
- Winkenwerder Forest Sciences Laboratory (ID# 206)
- Hewitt Wilson Ceramics Laboratory (ID# 212)
- Wilcox Hall (ID# 213)
- More Hall (ID# 214)
- Graves Hall (ID# 217)
- University of Washington Club (ID# 220)
- McMahon Hall (ID# 223)
- Center for Experimental Nuclear Physics and Astrophysics (CENPA) Instrument Shop (ID# 224)
- North Physics Laboratory (CENPA) (ID# 225)
- Montlake Boulevard Pedestrian Overpass South (ID# 221)
- Montlake Boulevard Pedestrian Overpass North (ID# 222)
- Pavilion Pedestrian Bridge (ID# 216)

Exhibit 6-21 shows Winkenwerder Forest Sciences Laboratory, Bloedel Hall, Hewitt Wilson Ceramics Laboratory, and Wilcox Hall. These properties are discussed in greater detail below by property ID number.

Bloedel Hall

Property ID# 205 – Built 1971
Individually eligible for listing in the NRHP under Criterion C

Bloedel Hall (Exhibit 6-21) was designed by Grant, Copeland, Chervenak & Associates (Durio 2009). It is a classroom and office building in the College of Forestry complex of buildings, next to the Winkenwerder Forest Sciences Laboratory, which was designed by the same architects and is similar in style. Like Winkenwerder, it "demonstrates the potential that wood offers for finish and structural applications" (Johnston 2001), as appropriate for a forestry education facility. Bloedel Hall will be 50 years old in 2021. At that time, it will be eligible for listing in the NRHP under Criterion C for its distinctive design in a unique Northwest Regional vocabulary.

Winkenwerder Forest Sciences Laboratory

Property ID# 206 – Built 1962
Individually eligible for listing in the NRHP under Criterion C

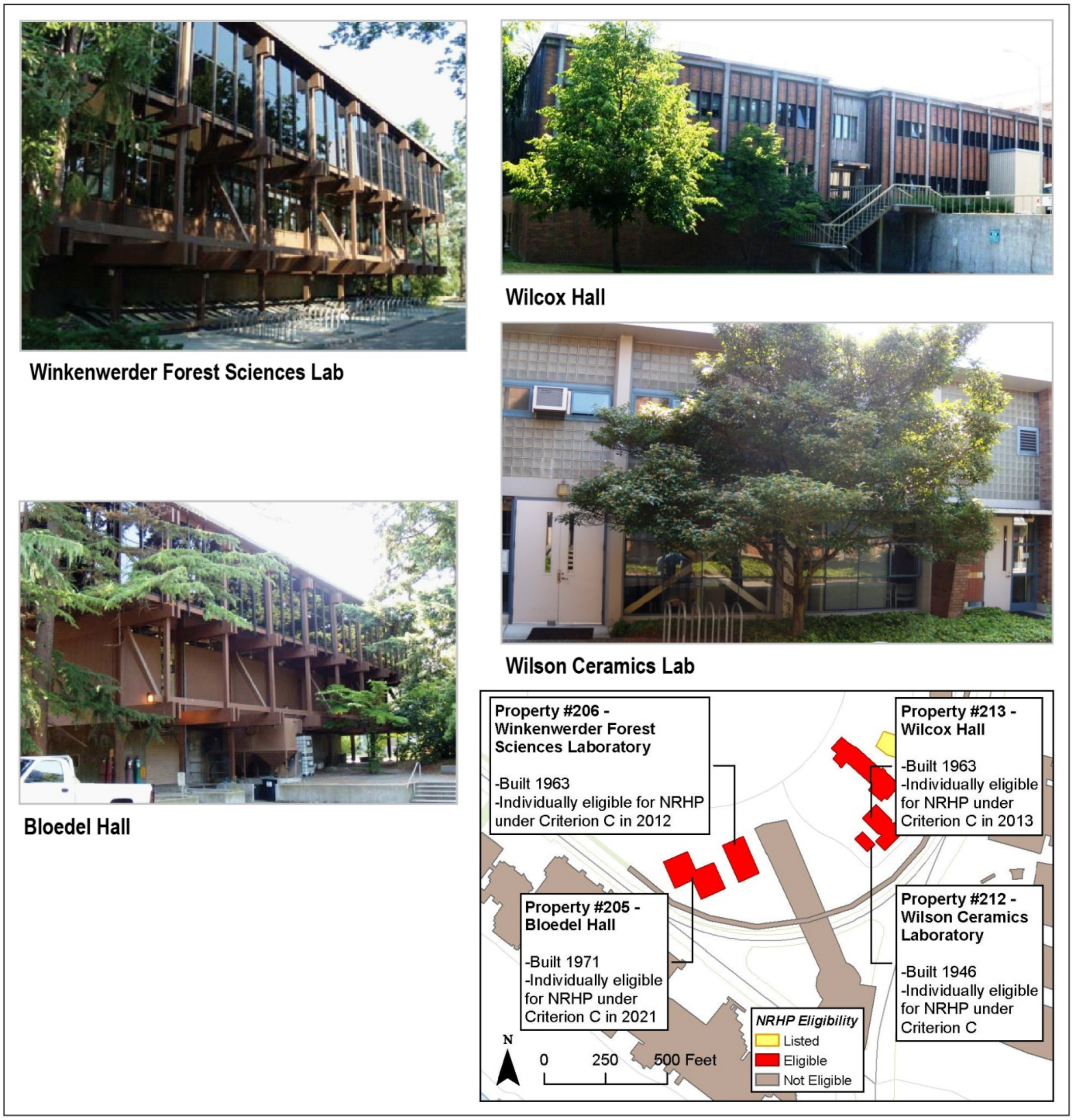
Winkenwerder Forest Sciences Laboratory (Exhibit 6-21) was called the Forest Products Science Building when it was built in 1962, and renamed the Winkenwerder Forest Sciences Laboratory in 1972. It was designed by architects Grant, Copeland, Chervenak & Associates. Noted Northwest artist Dudley C. Carter carved the ornate door panels at the main entrance. The building was specifically designed to serve as a forestry science lab. "In the design … a conscious effort was made to demonstrate the structural versatility and visual elegance of timber. A system of columns and beams creates the skeleton for glass-enclosed laboratories" (Johnston 2001). The building will be 50 years old in 2012. At that time, will be eligible for listing in the NRHP under Criterion C for its distinctive Modern architectural design rendered in wood and glass, giving it a Northwest regional feel in a visually arresting manner.

Hewitt Wilson Ceramics Laboratory

Property ID# 212 – Built 1946
Individually eligible for listing in the NRHP under Criterion C

Hewitt Wilson Ceramics Laboratory (Exhibit 6-21) was designed by noted architect Paul Thiry (1904–1993). Thiry is credited with

Exhibit 6-21. University of Washington—Winkenwerder Forest Sciences Laboratory, Bloedel Hall, Hewitt Wilson Ceramics Laboratory, and Wilcox Hall



Winkenwerder Forest Sciences Lab

Wilcox Hall

Wilson Ceramics Lab

Bloedel Hall

introducing European Modern architecture to the Northwest region and is well known internationally for his modern designs (Ochsner 1998). He was the principal architect for the Seattle World's Fair in 1962 and is credited with the design of many well-known Seattle buildings, including Key Arena, MOHAI, and St. Demetrios Greek Orthodox Church. The Hewitt Wilson Ceramics Laboratory is a modest example of Thiry's work, built for engineering students pursuing mining studies. The facility, originally called the Kiln Building, housed three kilns built by the U.S. Bureau of Mines. Students used the kilns to perform standard tests of high refractory materials prepared from northwest-mined sources. The building was named to honor Dr. Hewitt T. Wilson in 1955 (Woodbridge and Montgomery 1980). It is eligible for listing in the NRHP under Criterion C for its Modern architectural design, representing the work of a master architect.

Wilcox Hall

Property ID# 213 – Built 1963
Individually eligible for listing in the NRHP under Criterion C

Wilcox Hall (Exhibit 6-21) was built to supplement operations at Roberts Hall in 1963; it was initially called Roberts Hall Addition and Computer Center. In 1981, the Board of Regents renamed it Wilcox Hall, reinforcing its identity as a separate building. The building was designed by architects McClure and Adkison of Spokane (Ells 1998). Until 1976, Wilcox Hall housed the Computer Center, but it currently provides space for many different engineering departments. It is associated with Paul Allen and Bill Gates of Microsoft, who worked on projects in this building (Bishop et al. 2010). Wilcox Hall will be 50 years old in 2013. At that time, the building will be eligible for listing in the NRHP under Criterion C for its Modern architectural design, representing the work of noted architects.

More Hall

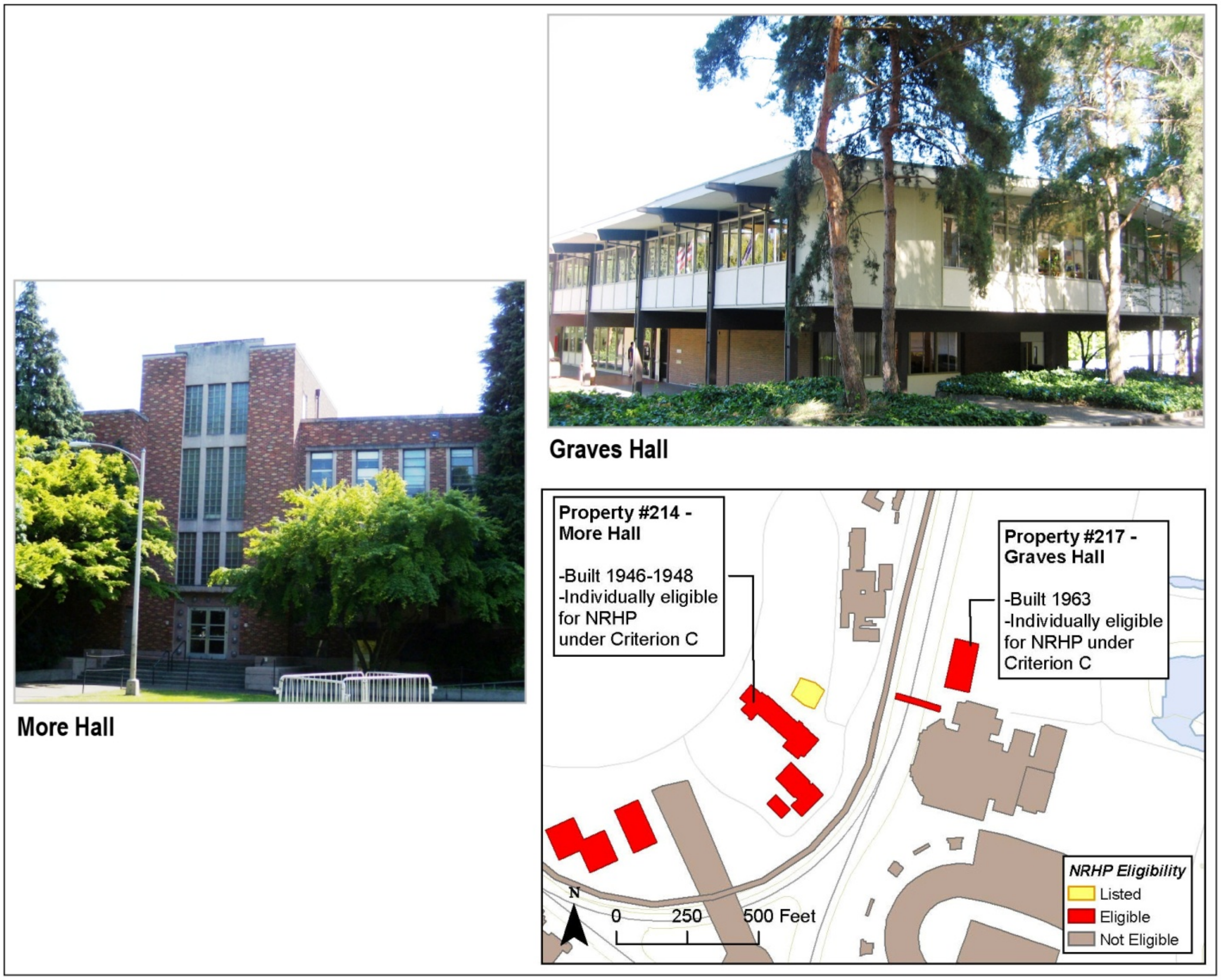
Property ID# 214 – Built 1946–1948
Individually eligible for listing in the NRHP under Criterion C

More Hall (Exhibit 6-22) was designed by architects Bebb and Jones, in association with Leonard Bindon, and constructed to house the UW's Civil Engineering Department. Charles Bebb, a leading Seattle architect, was important in the development of the architectural terra-cotta industry in Washington State, and John Paul Jones became the consulting architect for the UW after World War II (Ochsner 1998).

The building, as originally constructed, "expressed the modern architectural philosophy of function over form and incorporated lighting from large windows to convey the feeling of spaciousness" (UW 2009a). The east end of the building was added in 1948 as the Structural Testing Laboratory, designed by John Paul Jones.

> The lab was located adjacent to the Northern Pacific Railroad so a spur track could carry materials directly into the room. One of the first items delivered by rail was a 2.5 million pound

Exhibit 6-22. University of Washington—More Hall and Graves Hall



compression testing machine. Its testing capacities outperformed any other in the Pacific Northwest and were used by Washington manufacturers of aircraft, steel, lumber and light metals in the post WWII years to test their products. In addition, the machine could replicate earthquake-like shock waves that enabled students to study how to incorporate seismic factors into their civil engineering design" (UW 2009a).

Kolb and Stansfield remodeled More Hall in 1972–1975, and the structural and geotechnical research laboratories were remodeled in 1993–1996.

More Hall is eligible for listing in the NRHP under Criterion C for its Modern architectural design and as the work of master architects.

Graves Hall

Property ID# 217 – Built 1963
Individually eligible for listing in the NRHP under Criterion C

Graves Hall (Exhibit 6-22) was designed by architect Robert Billsborough Price (1915–1981). It houses the central administrative offices for UW Intercollegiate Athletics, as well as coaches' and staff offices, training and meeting rooms, the sports ticket office, and the Husky Marching Band offices (Ells 1998). As an architect, Price specialized in educational projects and designed a number of schools in the Puget Sound area from the late 1950s through the 1970s, including Graves Hall (DOCOMOMO WEWA 2011). Other Price-designed buildings in Seattle include the Seattle World's Fair Hall of Industry (1961) and the UW Golf Driving Range Building.

Graves Hall's Modern style is representative of Price's educational design projects and retains good integrity. Graves Hall will be 50 years old in 2013. At that time, the building will be eligible for listing in the NRHP under Criterion C for its Modern architectural design, representing the work of a noted architect.

University of Washington Club

Property ID# 220 – Built 1958-1960
Individually eligible for listing in the NRHP under Criterion C

The University of Washington Club (Exhibit 6-23) was designed by architect Victor Steinbreuck, in association with Paul Hayden Kirk Associates. The UW architecture faculty collaborated with them on the design, including Daniel Streissguth. Thomas E. Sparling and Associates were the electrical engineers, and Eckbo, Dean and Williams were the landscape architects.

The University of Washington Club, originally called the Faculty Club, was incorporated in 1909 (Ells 1998). During the Alaska-Yukon-Pacific Exposition, this site was the Hoo Hoo Club, a part of the Forestry exhibit, designed by Ellsworth Storey. At the conclusion of the exposition, the building was left for a faculty club. In 1958, the original building was torn down and the current building was constructed. Articles about the University of Washington Club were published in *Progressive Architecture* in 1961 and in *Architectural Forum* in 1962. The building won the American Institute of Architects (AIA) Seattle Honor Award in 1960 (Woodbridge and Montgomery 1980).

The University of Washington Club is an important example of regional modernism. It is eligible for listing in the NRHP under Criterion C as an important example of Modernism and the work of a significant local architect. Although some renovation work has occurred over the years, including the enclosure of part of the south balcony area and renovations in 2005 to the bar area, the building retains very good integrity and easily communicates its original design.

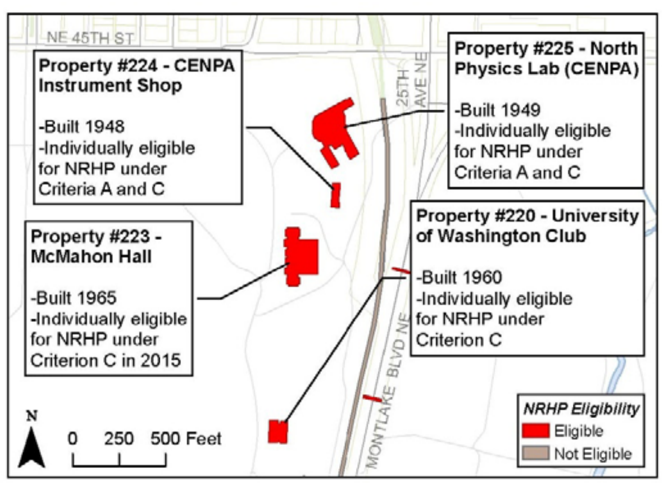
Exhibit 6-23. University of Washington—University of Washington Club, McMahon Hall, CENPA Instrument Shop, and North Physics Laboratory

North Physics Laboratory (CENPA)

CENPA Instrument (Cyclotron) Shop

University of Washington Club

McMahon Hall



McMahon Hall

Property ID# 223 – Designed in 1965
Individually eligible for listing in the NRHP under Criterion C

McMahon Hall (Exhibit 6-23) is a residence hall designed by architect Paul Hayden Kirk of Kirk, Wallace, McKinley & Associates (Ells 1998). It received an AIA Seattle Honor Award in 1966 (AIA Seattle 2010). The residence hall is considered significant for its modern Brutalist design, softened by the rough concrete forms and puzzle piece-like plan, sited on a steep hill that affords breathtaking views of Lake Washington and the Cascade Mountains (Woodbridge and Montgomery 1980). The building will be 50 years old in 2015. At that time, it will be eligible for listing in the NRHP under Criterion C for its distinctive architectural design and as the work of a master architect.

CENPA Instrument Shop

Property ID# 224 – Built in 1948
Individually eligible for listing in the NRHP under Criteria A and C

The CENPA Instrument Shop (Exhibit 6-23) was built in 1948 as the Cyclotron Shop to support the construction of the cyclotron building next door. The building was designed by noted architect John Graham, Jr. The cyclotron was dismantled in the 1980s, and the property is now known as the CENPA Instrument Shop. Founded in 1998, CENPA is one of the UW's nuclear physics laboratories (Ells 1998). The U.S. Department of Energy funds the laboratories, where research is conducted in nuclear physics, astrophysics, and related fields (Woodbridge and Montgomery 1980). It has been designated a Center for Excellence by the Department of Energy, and has been the recipient of numerous awards and recognitions (UW 2009b). The program includes neutrino research, participation in the KATRIN tritium beta decay experiment, and work in developing experiments to search for neutrinoless double beta decay. CENPA also performs user-mode research at large accelerator and reactor facilities around the world. An instrument shop has always been an integral part of the physics laboratory operation.

The building was designed by noted Seattle architect John Graham, Jr. (1908–1991). Graham designed the Northgate Shopping Center, the first large-scale regional shopping center of its kind in the country, which established Graham as a leader in the field. He went on to build an international reputation and design projects all over the world (Ochsner

1998). His best-known project is probably the Space Needle for the Seattle World's Fair in 1960–1962, designed with Victor Steinbrueck.

The CENPA Instrument Shop is eligible for listing in the NRHP under Criterion A, for its association with the development of nuclear physics, and under Criterion C, for its distinctive architectural design and as the work of a recognized master, John Graham, Jr.

North Physics Laboratory

Property ID# 225 – Built 1949
Individually eligible for listing in the NRHP under Criteria A and C

The North Physics Laboratory (Exhibit 6-23), originally known as Nuclear Physics Laboratory/Cyclotron, houses the CENPA, discussed above. The building was designed by noted Seattle architect John Graham, Jr. (1908–1991). It originally held the cyclotron, which was dismantled in the 1980s.

> The Cyclotron was a cylindrical vacuum chamber wherein particles were accelerated using a high power high frequency oscillator to alternate voltages between two half-cylinder electrodes called 'Dees'.… Particles injected into the cyclotron were accelerated each time they crossed the intervening layer between the Dees. The particles took on more and more energy as they accelerated, and eventually were directed out of the chamber toward a target. At a fundamental level, particle accelerators smash atoms into one another, producing nuclear reactions (Smoliak 2007).

Additions were made to the building in 1951 and 1958, and one of these additions was to house the Van de Graff particle accelerator, which remains in use (Smoliak 2007).

The North Physics Laboratory (CENPA) is eligible for listing in the NRHP under Criterion A for its association with the development of nuclear physics, and under Criterion C for its distinctive architectural design and as the work of a recognized master architect.

Montlake Boulevard Pedestrian Overpasses South and North

Property ID#s 221 and 222, respectively – Built 1958
Individually eligible for listing in the NRHP under Criterion C

The Montlake Boulevard Pedestrian Overpasses (South and North) are identical concrete bridges that cross Montlake Boulevard NE, connecting the UW campus and the Burke Gilman Trail to parking lots on the east side of Montlake Boulevard (Exhibit 6-24). An early example of post-tensioned, pre-stressed concrete, the overpasses were built in 1958 and designed by noted structural engineer Jack Christiansen (Woodbridge and Montgomery 1980). The overpasses served as models for other pedestrian bridges throughout the state. These bridges are eligible for listing in the NRHP under Criterion C for their distinctive design and important engineering qualities.

Pavilion Pedestrian Bridge

Property ID# 216 – Built 1938
Individually eligible for listing in the NRHP under Criterion C

The Pavilion Pedestrian Bridge (Exhibit 6-24) crosses over Montlake Boulevard NE, connecting the Hec Edmundson Pavilion with the Burke-Gilman Trail and the main UW campus. At the request of the UW, the City of Seattle built this pedestrian bridge in 1938 for use by students (Ells 1998). It is designed in poured concrete, with restrained Art Moderne lines and minimal detailing, typical of modernist designs of the 1930s. It is eligible for listing in the NRHP under Criterion C for its distinctive Art Moderne style design.

Lake Washington Boulevard

Segment from East Madison Street to NE Pacific Street
Property ID# 239 – Built 1904-1909, designed by the Olmsted Brothers
Individually eligible for listing in the NRHP under Criteria A and C
Contributing element to the Montlake Historic District

Lake Washington Boulevard is a winding park boulevard that passes through the Arboretum and the Montlake Historic District and continues north to the UW (Exhibit 6-25). The part of Lake Washington Boulevard within the APE is a 2-mile segment from East Madison Street to the Y intersection of Montlake Boulevard NE and NE Pacific Street, which was the entrance to the 1909 Alaska-Yukon-Pacific Exposition. It occurs in both the Montlake and West Approach segments of the APE.

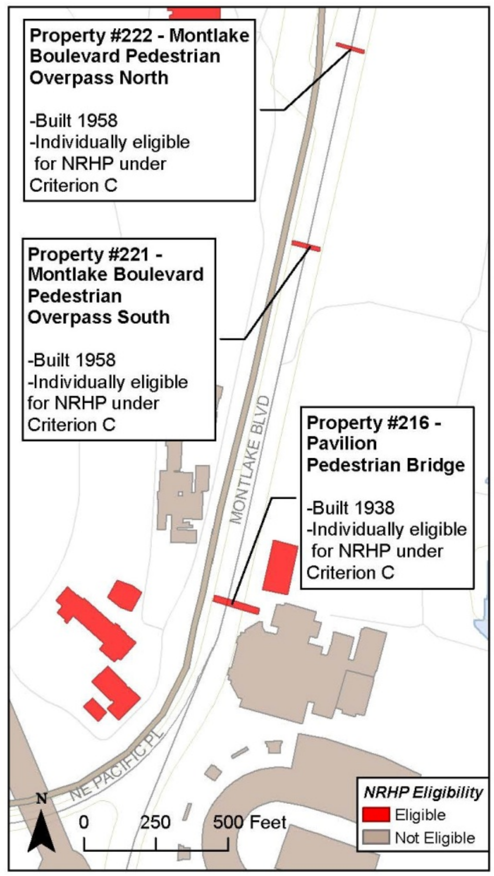
The first section of the 2-mile segment begins at the intersection with East Madison Street in the Arboretum and ends where it exits the park at 26th Avenue East. Today it is referred to as Lake Washington Boulevard East. The second section begins at the intersection with 26th Avenue East and continues to the intersection with Montlake Boulevard East. This section is now called 26th Avenue East until the intersection with East Roanoke Street, where the name changes to East Lake

Exhibit 6-24. Pedestrian Bridges—Montlake Boulevard Pedestrian Overpasses North and South and Pavilion Pedestrian Bridge

Pavilion Pedestrian Bridge

Montlake Boulevard Pedestrian Overpass North

Montlake Boulevard Pedestrian Overpass South

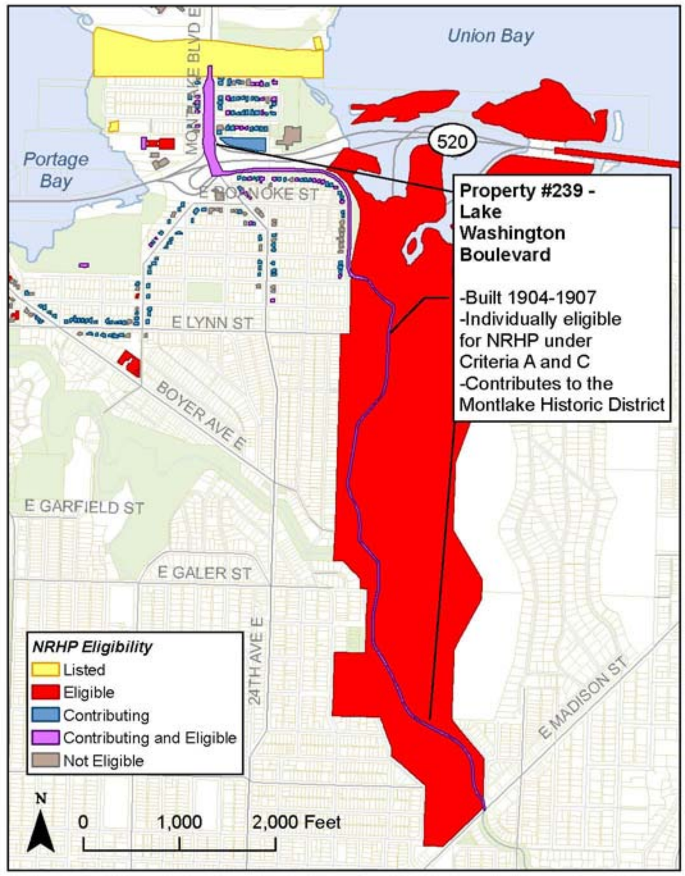


Washington Boulevard and continues to the east. The third section starts at the southern end of Montlake Boulevard East and proceeds north to the southern edge of the Montlake Cut. The current name of this section is Montlake Boulevard East. The fourth section begins at the southern edge of the Montlake Cut and goes north to the intersection with NE Pacific Street. This northernmost section is now called Montlake Boulevard NE. Maps showing the four segments are included with the HPI form in Attachment 4.

The entirety of Lake Washington Boulevard passes through or by 14 parks and is the main link in Seattle's Olmsted legacy of citywide park boulevards (Friends of Seattle's Olmsted Parks 2009). The boulevard was planned to reach from Washington Park in the north continuously to Seward Park in the south. It was the first of the park boulevards to be built following the Olmsted Plan.

In 1909, the Seattle Parks and Recreation Department extended Lake Washington Boulevard from Washington Park to the south entrance of the Alaska-Yukon-Pacific Exposition (Ott 2010). This extension was called University Boulevard, in hopes of extending the boulevard system to the north, which never came to fruition. The extension was later folded into Lake Washington Boulevard, but what was University Boulevard is now Montlake Boulevard.

Exhibit 6-25. Lake Washington Boulevard



Currently, the section of Lake Washington Boulevard at the entrance to the park at Madison Street is the most consistent with the original landscape plan (BOLA and Kiest 2003). This first stretch within the Arboretum still shows a mix of oak and sycamore trees (Exhibit 6-26). The more open, valley section follows the original plan with fewer trees along the edges of the boulevard and shorter trees and shrubs. A group of willows, not part of the original plan, have been added at the intersection with Interlaken Boulevard. The northern section in

Exhibit 6-26. Lake Washington Boulevard at East Madison Street

the Arboretum has intermittent sycamore trees, but it is not clear if the shrubs shown in the plan were ever planted.

The first section of Lake Washington Boulevard within the boundaries of the Arboretum maintains integrity of design, association, setting, feeling, and location. The boulevard winds through the park along the same alignment as when it was built from 1904 to 1906; it has taller, more dense plantings at the southern end, then fewer trees to enable the view over the valley in the central section, and then the more sparsely planted, taller trees in the north, as was called for in the Olmsted Brothers' 1906–1907 planting plan. The pavement, curbs, and gutters of Lake Washington Boulevard have had periodic changes, upgrades, and maintenance, and the light standards along the roadway have been replaced. In the 1960s, entrance and exit ramps to and from SR 520 were added to the northern section of the park. These ramps intersect Lake Washington Boulevard just south of the intersection with 26th Avenue East. The ramps' intersections are a small portion of the 1.2 miles of the roadway and do not diminish the overall integrity of this section. This first section of the 2-mile segment retains sufficient integrity to convey the significance of Lake Washington Boulevard.

The second section of the boulevard between the northwest boundary of the Arboretum and East Montlake Boulevard has retained integrity of location, association, and design (Exhibit 6-27). It is in the same alignment as when it was designed and built, and retains the function as originally envisioned. The integrity of setting and feeling has been diminished on the north side by SR 520, which introduced visual elements and the sound of a wide, well-traveled highway and disrupted the viewshed from this portion of the boulevard. The south side of the boulevard maintains the neighborhood setting and shaded green space. This section has also had changes in paving, curbing, and gutters since its construction. Although there have been alterations to the setting on the north side of the

Exhibit 6-27. **Lake Washington Boulevard at 24th Avenue East**

boulevard, this section as a whole maintains sufficient integrity to support the eligibility of Lake Washington Boulevard.

The third section, going north as East Montlake Boulevard to the Montlake Cut, has lost integrity of materials, design, and feeling as a result of growth on both sides of the boulevard, widening of the roadway, and the SR 520 interchange. The roadway here is now four to six lanes wide, but has a planted median down the center, which makes it feel like a smaller, narrower roadway (Exhibit 6-28). This section maintains integrity of setting, location, and association. Although the areas on either side of the road were not built out in 1909 when the road was constructed, it was already platted for residential development. The boulevard in this section is wider than as originally built, but it is along the 1909 alignment, it serves the same transportation function, the surroundings are still vegetated, and the road bisects residential parcels as the plan intended. The southernmost portion of this section has lost considerable integrity due to the SR 520 interchange, resulting in an overcrossing above an excavated roadway below this alignment, but the rest of this section maintains the essence of the original roadway plan, surrounded by greenery. Overall, despite the SR 520 overcrossing and interchange, this third section retains enough integrity to convey the significance of the boulevard.

Exhibit 6-28. East Montlake Boulevard

The northernmost section of the boulevard includes the Montlake Cut, which was excavated in 1917, and the Montlake Bridge, built in 1925, both of which occurred after the Alaska-Yukon-Pacific Exposition and after the extension of Lake Washington Boulevard to the exposition in 1909 (BOLA and Kiest 2003). The change from a surface road to a bridge over a body of water significantly affects the integrity of design, setting, and feeling of the roadway. Both the Montlake Cut and Montlake Bridge are listed in the NRHP for their own merits, and the bridge is also a designated Seattle Landmark. However, the original boulevard was replaced, and the Montlake Cut and the bridge detract significantly from the integrity of the roadway.

North of the Montlake Cut on the other side of the bridge, the former boulevard has been affected by the growth and development of the university, widening of the road, and the loss of greenery surrounding the roadway (Exhibit 6-29). There is a major, signalized intersection at the junction of Montlake Boulevard NE and NE Pacific Street, with multiple lanes converging in a Y north of the bridge. The effects on the integrity of this section diminish its ability to convey the significance of the boulevard. This section does not contribute to the eligibility of Lake Washington Boulevard.

Exhibit 6-29. **Montlake Boulevard NE at NE Pacific Street**

The 2-mile segment of Lake Washington Boulevard located in the APE is eligible for listing in the NRHP under Criterion A for its association with the citywide Olmsted Brothers' parks and parkways plan. It is significant as the first boulevard constructed as a part of the plan and was the standard by which the other boulevards were designed. The boulevard also is eligible for listing in the NRHP under Criterion C as a noted work of the master landscape architects John Charles Olmsted and Frederick Law Olmsted, Jr. The period of significance for this segment of the linear resource is 1904, when construction began based on the Olmsted Brothers' design, through 1909, when the final section of what was then University Boulevard was completed. Lake Washington Boulevard was an integral part of the Olmsted Brothers' plan for the development of linked outdoor spaces throughout Seattle. Lake Washington Boulevard is also a contributing element of the Montlake Historic District wherever it lies within the district boundaries.

Canal Reserve Land

South of East Hamlin Street and east of Montlake Boulevard
Property ID# 240 – Planted ca. 1910
Contributing element to the Montlake Historic District
Not individually eligible for listing in the NRHP

The Canal Reserve Land north of SR 520, behind the alley of the houses facing East Hamlin Street, is what remains undeveloped of the former Old Government Canal, the location of the original log canal between Lake Union and Lake Washington (Exhibit 6-30). This piece of land was not included in the Olmsted Brothers' plans for Washington Park, but was one of the first areas formally planted with specimen plantings as early as 1909 (BOLA and Kiest 2003). Frederick W. Leissler, Jr., the assistant director of the Arboretum, directed WPA crews in planting Yoshino cherry trees and incense cedars on the Canal Reserve Land during the winter of 1935–1936, adding to existing trees in this area.

Exhibit 6-30. **Canal Reserve Land**

In 1961, the State Department of Highways acquired approximately 47 acres of Arboretum property to construct and operate SR 520, including the Arboretum's share of the Old Government Canal land (BOLA and Kiest 2003). Many of the cherry trees were relocated to the liberal arts quad of the University of Washington, but five cherry trees remain today on the Canal Reserve Land. Most of the surrounding land and plantings have been removed, and the introduction of SR 520 severely compromised the integrity of this early landscape.

The Canal Reserve Land is located within the boundaries of the Montlake Historic District. Today the area is mostly used by neighbors as exterior space and is accessible to the public along the northern boundary of the parcel. The parcel is significant for the original specimen plantings that have survived at this location. There are 59 specimen plantings on this land, of which 24 are from the historic period of the district (1905–1952) (BOLA and Kiest 2003). Fifteen of the specimens were planted prior to 1945: seven Sequoias from 1931, three incense cedars from 1909, and five cherry trees—one from 1910 and four from 1944 (UW 2009c).

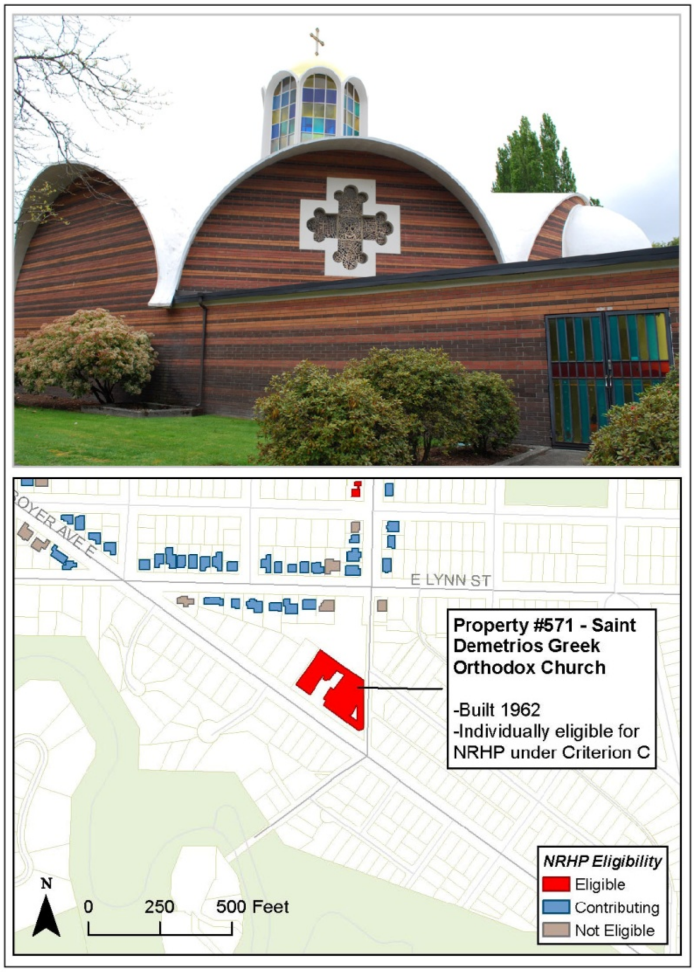
The Canal Reserve Land has lost integrity of setting, feeling, and association resulting from the introduction of SR 520, which cut it off from the Arboretum in the 1960s, severing the connection, physically and visually, between this parcel and the neighboring park property. It maintains some integrity of design and materials because the remaining original trees retain their original locations, but it has lost significant acreage to transportation uses and is accessible on only one side. Because of these losses of integrity, the Canal Reserve Land is not individually eligible for listing in the NRHP under any criteria. However, the Canal Reserve Land is a contributing element to the Montlake Historic District, as it is from the period of significance of the district and maintains 24 original specimen plantings from the historic period. This parcel is not a contributing element to the Arboretum as it is not within the boundaries of the park, is separated from it by SR 520, and was not originally a part of the park. SHPO concurred with the eligibility determination on July 29, 2010.

St. Demetrios Greek Orthodox Church

2100 Boyer Avenue
Property ID# 571 – Built 1962
Individually eligible for listing in the NRHP under Criterion C

St. Demetrios Greek Orthodox Church (Exhibit 6-31) was constructed in 1962 in the Modern style. It was designed by architect Paul Thiry, one of the principal architects of the Century 21 Exposition, Seattle's 1962 World's Fair, and designer of MOHAI (Ochsner 1998). The landscape architect was Richard Haag, who later designed Gas Works Park. The building is a two-story facility that includes the church and an attached school. The school building has a flat roof and bands of windows divided by thick metal mullions. The church is multi-sided with an arched concrete roof and is clad in brick and mosaic tile. The most dominant feature of the church building is its multi-colored glass cupola. The building has good architectural integrity and embodies the distinctive characteristics of the Modern style in an Eastern Orthodox church. It is a singular example of this style and type of architecture in Seattle, possesses high artistic value, and was designed by a master architect.

Exhibit 6-31. St. Demetrios Greek Orthodox Church, 2100 Boyer Avenue East



The St. Demetrios Greek Orthodox Church will be 50 years old in 2012. At that time, it will be eligible for listing in the NRHP under Criterion C for its distinctive architectural design and as the work of a master architect. Although it is within the boundaries of the Montlake Historic District, the church was built after the end of the historic district's period of significance, so it is not a contributing element to the historic district.

West Approach Segment

The historic resources survey identified three built environment properties constructed prior to 1972 in the West Approach segment of the Seattle study area. These properties include a segment of Lake Washington Boulevard (described in the previous section), the Edgewater Condominiums at 2411 42nd Avenue East, and the Arboretum. Located within the Arboretum, the Seattle Japanese Garden at 1075 Lake Washington Boulevard East and the Arboretum Aqueduct

(Arboretum Sewer Trestle) are both designated Seattle Landmarks. The Arboretum Aqueduct is also listed in the NRHP and the WHR.

The identified properties were evaluated to determine their eligibility for listing in the NRHP. Based on NRHP evaluation criteria (36 CFR 60.4), all three properties were determined to be individually eligible for listing in the NRHP. The properties' locations and NRHP eligibility are presented in Exhibits 6-2f, 6-2g, and 6-2h. Attachment 1 provides a complete list of the properties surveyed in this segment. Attachment 3 contains copies of the nomination forms for the previously recorded resources. Attachment 4 includes the HPI forms for those resources surveyed as a part of this project.

Washington Park Arboretum

2300 Arboretum Drive East
Property ID# 200 – Designed in 1903, built 1904–1907
Individually eligible for listing in the NRHP under Criteria A and C

The Arboretum is a public facility that was developed as part of the Olmsted Plan for Seattle Parks, Boulevards, and Playgrounds (Exhibit 6-32). Stretching across approximately 230 acres, the Arboretum is governed by the Arboretum Botanical Garden Committee, composed of the City of Seattle Parks and Recreation and the UW. It contains one NRHP-listed property, the Arboretum Aqueduct (as part of the Historic Bridges/Tunnels in Washington State), which is also a designated Seattle Landmark, and the Seattle Japanese Garden, another designated Seattle Landmark.

Foster Island, located at the northern end of the Arboretum, contains marshes and natural shorelines that provide valuable wildlife habitat. In 1963, SR 520 constructed a bridge across the center of the island. In 1968, the Waterfront Trail was constructed, which links Foster, Marsh, and Bamboo islands to a terminus just east of MOHAI. The Arboretum Waterfront Trail passes under SR 520 on Foster Island.

Exhibit 6-32. Washington Park Arboretum

The Arboretum was first known as Washington Park and was one of Seattle's first parks. In 1903, the Olmsted brothers came to Seattle and prepared a plan for the city's park system, including Washington Park. By 1916, the park totaled 165.22 acres (BOLA and Kiest 2003). The City largely completed its acquisition of land for Washington Park by 1921. In March 1924, Washington Park was officially set aside as a botanical garden and Arboretum. The Olmsted brothers drew up the first formal plan for the Arboretum in March 1936. J. Frederick Dawson, the chief designer, worked closely with the Seattle Parks and Recreation Department's staff landscape architect, Frederick Leissler.

In the early 1960s, the construction of SR 520 and the Evergreen Point Bridge severely compromised the integrity of the northern area of the Arboretum (BOLA and Kiest 2003). In 1963, the State Department of Highways condemned approximately 47 acres of Arboretum property for SR 520. After SR 520 was constructed through the Foster Island area, landscape architect Hideo Sasaki was hired in 1964 to salvage what was left of the northern section of the Arboretum. However, few elements of his plan were implemented except for the Waterfront Trail.

After the Olmsted plan of 1936, the next master plan adopted for the park was in 1978 (BOLA and Kiest 2003). In May 2001, the Seattle City Council approved a new long-range master plan for the Arboretum. Seattle Parks and Recreation, the UW, and the Arboretum Foundation developed a plan to ensure that the Arboretum could effectively fulfill three primary purposes, which together form the mission of the Arboretum: conservation, recreation, and education.

As a public park, teaching and research institution, and outdoor recreation area, the Arboretum has changed and evolved to meet changing demands, to accommodate differing financial climates, and to adapt to new challenges and desires from varied stakeholders. The extensive plantings and landscape improvements have matured. The plan has been altered to fit SR 520 and the Evergreen Point Bridge west approach. Portions of the Arboretum have also adapted and changed over time, with renewed plantings, new signage and lighting, and new paving. Nevertheless, the Arboretum retains its basic design and feeling, and continues to fulfill its mission (BOLA and Kiest 2003). As a historic designed landscape meant to educate and provide public beautification, it is considered an icon of the Seattle Parks and Recreation system.

Although the northern section of the Arboretum was heavily affected by the construction of SR 520 and has suffered a loss of integrity, the rest of the Arboretum remains intact. Taken as a whole, the Arboretum retains good integrity in all seven aspects. It is eligible for listing in the NRHP under Criterion A for its association with events that have made a significant contribution to the broad patterns of our history, including the Alaska-Yukon-Pacific Exposition, the development of the UW, and the development of the parks system in Seattle; and under Criterion C as the work of a master for its design by the noted Olmsted Brothers' firm, as well as the many talented designers and architects who contributed to its designed features.

The northern section of the park near SR 520 is a WSDOT right-of-way, but also is used as open space with trails passing through it. Research was conducted on this piece of land in June 2010 to determine its historical affiliation with the Arboretum and to evaluate its NRHP eligibility within the larger historic property. Research indicated that this northern area of the park near SR 520, referred to as the WSDOT peninsula, was used as parkland between 1939, when the landfill on the site was covered with dredge and graded, and 1961, when it was acquired from the City of Seattle for construction and operation of SR 520 (Blukis Onat and Kiers 2007). Before construction of SR 520, the WSDOT peninsula was never fully developed as an integral part of the Arboretum, but it was within the boundaries of the park. This land is currently owned by WSDOT and has been a transportation facility for the last 49 years.

Although the WSDOT-owned area was historically a part of the Arboretum, it has lost considerable integrity resulting from the conversion to transportation right-of-way and the physical impacts from the bridge, such as the dredging and filling during construction and the columns that support the existing bridge, associated ramps, and the approach. The WSDOT right-of-way area is now surrounded by major roadways, including the SR 520 main line to the north, entrance and exit ramps on the east and west, and Lake Washington Boulevard on the south. It is accessible to pedestrians via several trails under the elevated roadways. A parking lot has been added east of Lake Washington Boulevard that is the trailhead for the loop trail onto the WSDOT-owned area.

The WSDOT-owned property is no longer within the park boundaries, is owned by the State of Washington, and is a transportation right-of-way. This area between the various roadway features has lost integrity of design, feeling, association, and setting. The integrity has been compromised by the introduction of the bridge structure and associated ramps, the change in land use, and the loss of land and changes to the landscape caused by dredging.

The area around Foster Island and along the shoreline was included in both the 1904 and 1936 Olmsted plans as an area of lagoons. The plan proposed the introduction of waterways labeled “lagoons” to be developed through dredging of the marshland. A future Alpine collection could expand into the area surrounding Foster Island, from the primary Alpine garden proposed west of the nursery (BOLA and Kiest 2003). To implement the lagoon plan, extensive dredging was done in 1938–1939, dredging out 1¼ miles of lagoons. In 1939, 16 species of bamboo and 3,500 Japanese iris were planted; however, few of these plants survived the neglect during World War II.

Exhibit 6-32 shows the boundaries of the historic Arboretum (in red), and the WSDOT right-of-way area (cross hatched).

Edgewater Condominiums

2411 42nd Avenue East
Property ID# 226 – Built in 1938–1940
Eligible for listing in the NRHP under the Seattle Apartment Buildings 1900–1957 multiple property nomination

The Edgewater Condominiums (Exhibit 6-33) were built between 1938 and 1940 as the Edgewater Park Apartments. Designed by noted architect John Graham, Jr. and built by local businessmen organized as the Madison Park Corporation, this building is the earliest known local example of a privately owned apartment complex (Sheridan 2008). Apartment complexes “consisted of a grouping of multi-unit, multi-story buildings arranged in a landscaped setting. They extended the bungalow court’s concept of a setting apart from the street, but they were larger in scale, with higher densities and larger buildings....”

Exhibit 6-33. Seattle Apartment Buildings (1900–1957)—Edgewater Condominiums, 2411 42nd Avenue East

(Sheridan 2008). The property is eligible for listing in the NRHP under Criterion C as part of the Seattle Apartment Buildings 1900-1957 multiple property nomination. It is considered historically significant because of its architectural design and association with a master architect.

Lake Washington Study Area

The historic resources survey of the Lake Washington Study Area identified four properties in the APE constructed prior to 1972: the Evergreen Point Bridge and three properties along Rainier Avenue South. The Rainier Avenue South properties, which were considered as potential Section 6(f) replacement sites, are discussed in a subsequent section regarding potential Section (f) replacement properties.

Governor Albert D. Rosellini Bridge (Evergreen Point Bridge)

Property ID# 202 – Built in 1968
Eligible for listing in the NRHP under Criteria A and C and under Criteria Consideration G for exceptional importance

Construction of the Evergreen Point Bridge began in 1960 and in August of 1963, it was ceremoniously opened (Reynolds 1988). At the time, the Evergreen Point Bridge was the largest floating span in the world at 1.4 miles long. Exemplifying an engineering feat of outstanding proportions, the bridge was considered by some to be a "modern wonder of the world" (*Seattle Times* 1966).

The Evergreen Point Bridge (Exhibit 6-34) was previously determined eligible for listing in the NRHP on December 22, 2008. The bridge has been determined NRHP eligible under Criteria A and C, with Criteria Consideration G for its exceptional importance. The SHPO concurred with this eligibility determination on January 26, 2009. The bridge's location is noted in Exhibits 6 2f, 6-2g, and 6-2j. For more detailed information on this historic property, see the previous HPI form prepared for the property provided in Attachment 4.

Exhibit 6-34. Evergreen Point Bridge

Eastside Transition Study Area

The historic resources survey of the Eastside transition study area identified 10 properties in the APE constructed prior to 1972. Two of these properties were previously recorded: the Arntson House and the Pierce House.

The Arntson House at 2851 Evergreen Point Road was previously determined individually eligible for listing in the NRHP under Criterion C for its architectural design. The Pierce House at 2857 Evergreen Point Road was previously determined eligible for listing in the WHR, but not eligible for listing in the NRHP. Both of these properties are located in Medina and were surveyed as part of the SR 520, Medina to SR 202 project. Exhibit 6-2j shows the locations of these properties and indicates their eligibility status. For more detailed information, see the previous documentation completed for the properties provided in Attachment 3.

The identified properties were evaluated to determine their eligibility for listing in the NRHP. Based on NRHP evaluation criteria (36 CFR 60.4), only one of the newly identified properties was determined to be individually eligible for listing in the NRHP—the Dixon House at 3267 Evergreen Point Road. The locations of the properties identified in the Eastside transition study area and their NRHP eligibility determinations are presented in Exhibit 6-2j. No other identified properties in the Eastside transition study area are considered eligible for listing in the NRHP individually or as contributors to a potential historic district.

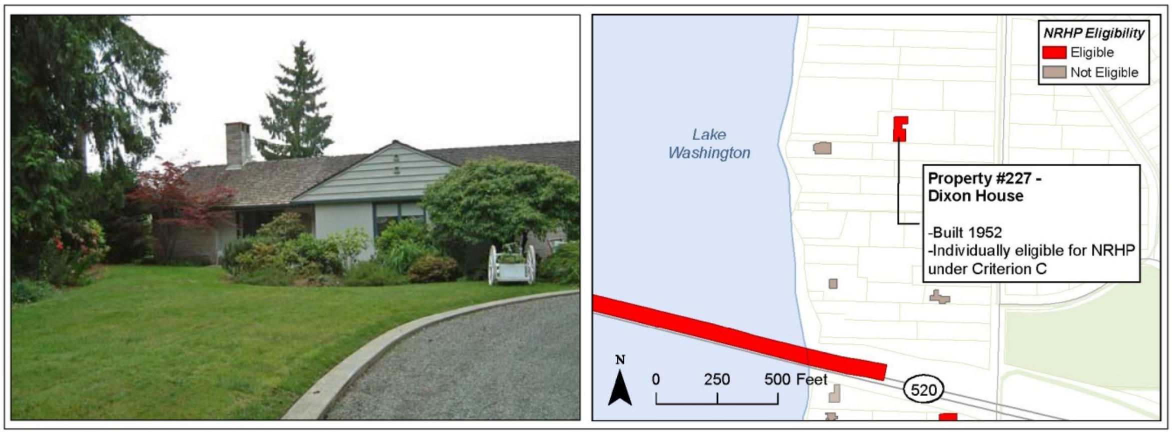
Attachment 1 provides a complete list of the properties surveyed in this study area. Attachment 3 contains copies of the nomination forms for the previously recorded resources. Attachment 4 includes the HPI forms for those resources surveyed as a part of this project.

The Dixon House

3267 Evergreen Point Road
Property ID# 227—Built 1952
Individually Eligible for listing in the NRHP under Criterion C

The Dixon House (Exhibit 6-35) is a Ranch-style residence with good integrity. It is eligible for listing in the NRHP under Criterion C for its distinctive characteristics of the Ranch style.

Exhibit 6-35. Dixon House, 3267 Evergreen Point Road



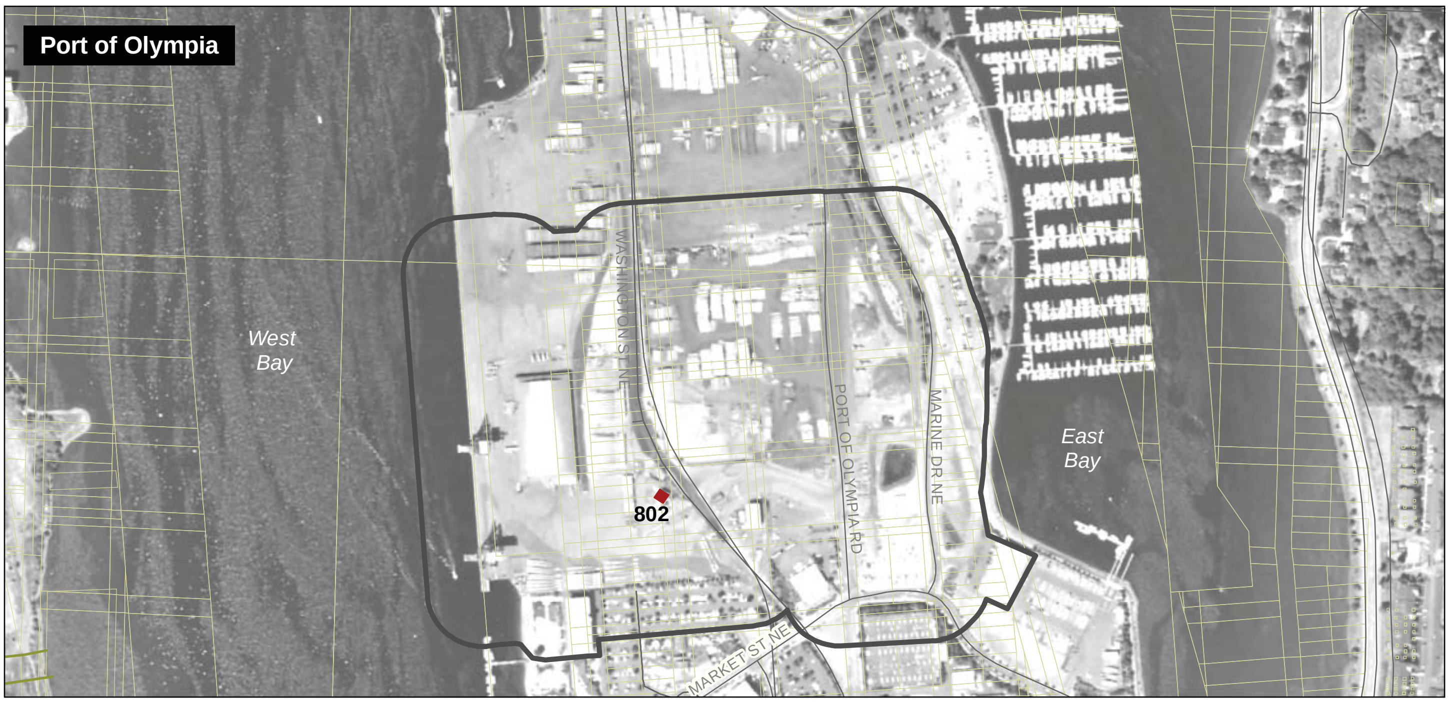
Pontoon Production Sites

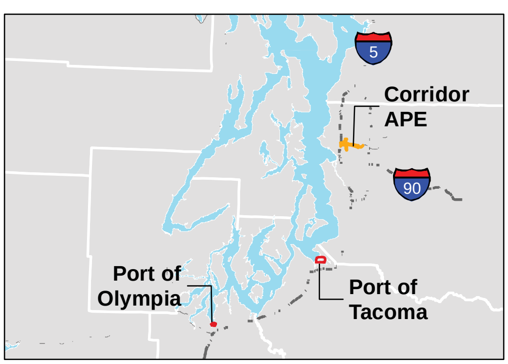
The historic resources survey identified 14 properties in the vicinity of the potential pontoon production sites within the APE at the Port of Tacoma and the Port of Olympia constructed prior to 1972. Twelve of these properties are located at the Port of Tacoma and two are located at the Port of Olympia. Exhibit 6-36 shows the historic properties located within the project APE at each potential pontoon production site.

Six of the properties at the Port of Tacoma were previously recorded (Exhibit 3-7). These properties include Fire Station #15 at 3510 East 11th Street, which was individually listed in the NRHP in 1985, and four properties at the CTC facility, which were determined eligible for listing in the NRHP under Criteria A and C, and as a historic district during investigations for the SR 520 Pontoon Construction Project (WSDOT 2010b). The Hylebos Bridge was determined not eligible for listing in the NRHP, but is eligible for the WHR.

Two identified properties at the Port of Olympia were previously recorded. In 2009, a WSDOT survey identified the main office building for the Port of Olympia, located at 915 Washington Street NE, as eligible for listing in the NRHP. An adjacent railroad spur was determined ineligible for listing in the NRHP.

The six newly identified properties at the Port of Tacoma and Port of Olympia sites were evaluated to determine their eligibility for listing in the NRHP. Based on NRHP evaluation criteria (36 CFR 60.4), none of





NRHP Eligibility

NRHP Eligible

NRHP Listed

WHR Eligible/Not NRHP Eligible

Area of Potential Effects

Source: USDA-FSA (2006) Aerial Photo, NAIP (2009) Aerial Photo. Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 500 1,000 Feet

Exhibit 6-36. **Historic Properties at Pontoon Production Sites**

SR520, I-5 to Medina: Bridge Replacement and HOV Project

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the newly identified properties were determined to be eligible for listing in the NRHP individually or as contributors to a potential historic district. The HPI forms for the previously recorded properties are provided in Attachment 4.

Section 6(f) Replacement Sites

Properties identified on potential Section 6(f) replacement sites are counted in their respective study areas, but are discussed in detail below. The survey identified one NRHP-eligible property in the Seattle study area and three in the Lake Washington study area.

Seattle Study Area

Portage Bay Segment

Bryant's Marina

1139-1299 NE Boat Street
Property ID# 594 – Built 1935
Individually eligible for the NRHP under Criteria A and C

Bryant's Marina (Exhibit 6-2a) is a waterfront complex of structures containing warehouse areas, commercial office space, and docks (Venno 2010). Originally constructed in 1935, it had subsequent building phases through 1950. Seattle Boat Marina, Inc.—which distributed a variety of maritime goods, including boats, motors, marine supplies, and hardware—originally occupied the property (Crimmin 1978). In the mid-1940s it was the largest Chris-Craft Boat distributorship (by volume) in the world and had the Chris-Craft distributor's franchise for western Washington and Alaska.

The Chris-Craft Boat Company opened in the late nineteenth century and gained prominence for its mahogany-hulled powerboats in the 1920s (Chris-Craft 2010). It was the first company to standardize boat designs, eventually branching out to market boats to the middle class, and became one of the first companies to mass-produce civilian pleasure boats. The company continued to produce boats through the Great Depression, provided small patrol boats for the Navy during World War II, and produced 10,000 landing craft for the war. Post-World War II, the company offered more than 150 models of pleasure boats, and their powerboats became cultural icons, representing the leisurely lifestyle newly available to the American middle class (Chris-Craft 2010).

The building at 1139-1299 NE Boat Street is eligible for listing in the NRHP under Criterion A for its association with the development of the Seattle waterfront and the commercial and maritime history of the region. It is also significant for its association with the Chris-Craft Boat Company. This nationally recognized company played an integral role in the maritime history of the United States, and essentially created the pleasure power-boating culture in the United States. Under Criterion C, it is eligible for listing in the NRHP as an intact example of a mid-twentieth century boat building, warehouse, and showroom. Few intact examples of this once-common architectural type remain intact.

The Bryant's Marina property has been identified as a potential replacement property to comply with Section 6(f) of the LWCF Act. For additional information about the Preferred Alternative's Section 6(f) compliance, please see Chapter 10 of the Final EIS and the *Section 6(f) Environmental Evaluation* (Attachment 15 to the Final EIS).

Lake Washington Study Area

Rainier Avenue Properties

Three properties located at 10034, 10036, and 10038 Rainier Avenue South were identified as potential replacement properties to comply with Section 6(f) of the LWCF Act and were, therefore, evaluated for NRHP eligibility under Section 106. Constructed in 1955, 1952, and 1953, respectively, each property contains a one-story single-family residence situated on the shoreline of south Lake Washington. All three residences were designed in the Modern style and are eligible for listing in the NRHP under Criterion C. These properties are no longer under consideration as replacement properties.

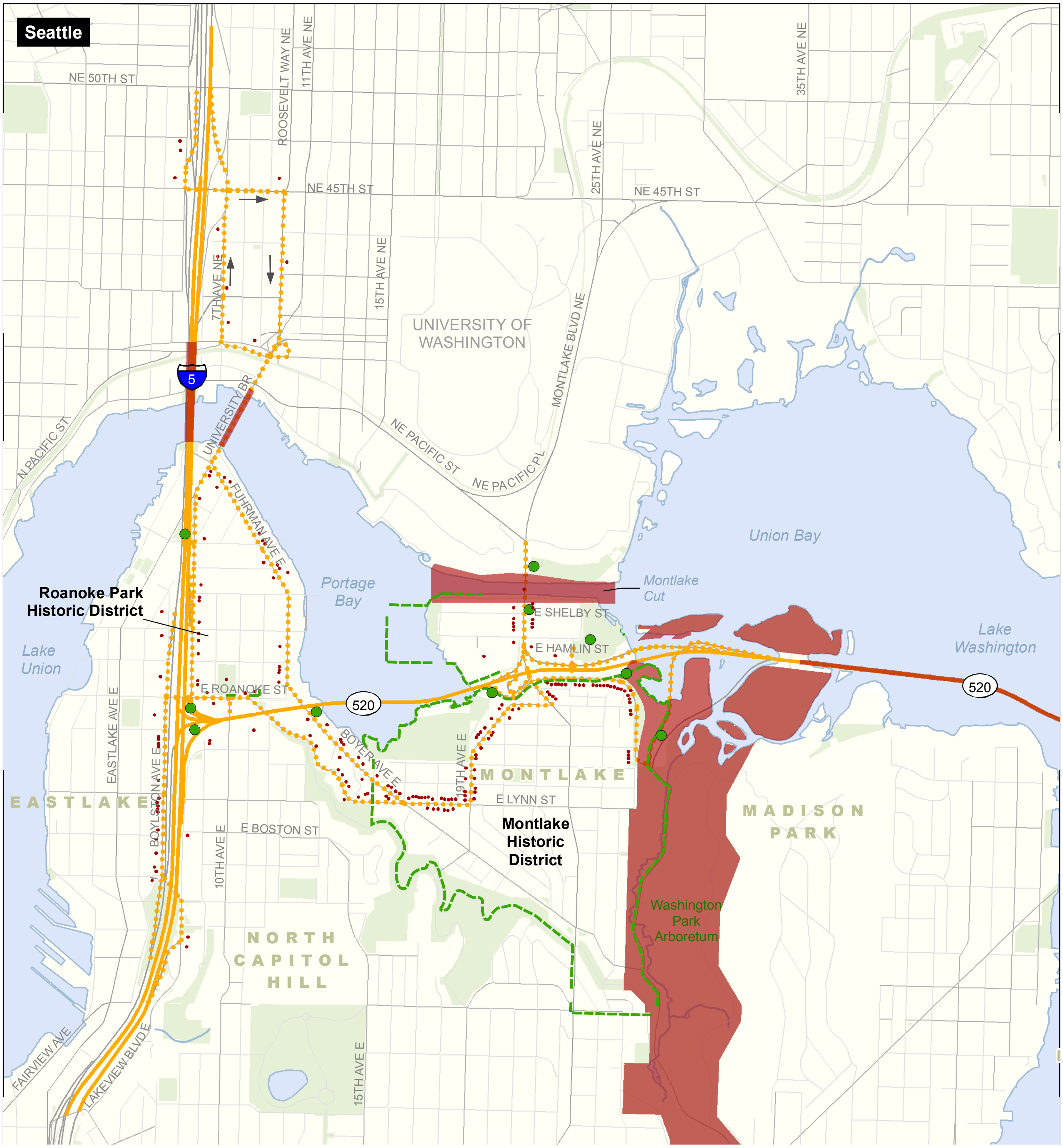
For additional information about the Preferred Alternative's Section 6(f) compliance, please see Chapter 10 of the Final EIS and the *Section 6(f) Environmental Evaluation* (Attachment 15 to the Final EIS).

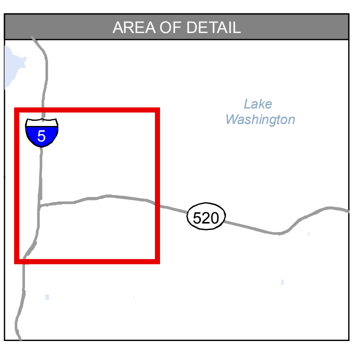
Potential Haul Routes

In response to comments and concerns raised by the Section 106 consulting parties, including the SHPO, WSDOT expanded the APE to include potential haul routes that are anticipated to be used during construction of the Preferred Alternative. Table 1C in Attachment 1 provides a complete list of historic properties along the haul routes. Exhibit 6-37 shows the potential haul routes for the Preferred

Alternative. Refer to Exhibits 6-2a through 6-2j for the locations of the individual historic properties.

The methods for identifying historic properties along potential haul routes were identical to those used throughout the rest of the APE, and the survey results are presented above with the other results in this chapter. The cultural resources surveys along haul routes identified 198 properties as eligible for listing in the NRHP individually or as contributors to the Roanoke Park and Montlake historic districts.





Potential Staging Area

Primary Haul Route

Potential Secondary Haul Route

NRHP-Listed, NRHP-Eligible and Contributing Historic Properties Located Adjacent to Haul Routes

Historic District Boundary

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 500 1,000 2,000 Feet

Exhibit 6-37. **Historic Properties along Potential Haul Routes**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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7. Effects Analysis

This chapter provides a detailed analysis of how the Preferred Alternative would affect historic properties within the APE. This chapter applies the criteria of adverse effect to analyze how different aspects of the No Build Alternative and the Preferred Alternative would alter or diminish the integrity of historic properties.

Application of Criteria of Adverse Effect

Section 106 of the NHPA and the implementing regulations require federal agencies to take into account the effects that a proposed undertaking may have on historic properties in the APE. This analysis includes the application of criteria of effect as outlined in 36 CFR 800.5.

In accordance with 36 CFR 800.5(a)(1), an adverse effect is found when an undertaking alters, directly or indirectly, any of the characteristics of a historic property that qualify the property for listing in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Direct effects are caused by the action and occur at the same time and place. For historic properties, these can include the physical destruction or modification of all or part of a resource, as well as proximity effects, which are typically characterized as the introduction of audible, visual, and atmospheric elements that alter the qualities that make a property eligible for listing in the NRHP.

Adverse effects may also include reasonably foreseeable effects caused by the undertaking that may occur later in time or be farther removed in distance (defined as "indirect" under NEPA), or may be cumulative. These effects are discussed in greater detail in the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Indirect and Cumulative Effects Discipline Report* (see Attachment 7 to the Final EIS). When analyzing effects on historic properties, the combined impact of all effects— direct physical effects, proximity effects, and indirect effects— are considered. As defined by NEPA (40 CFR 1508.8), the terms *effect* and *impact* are used synonymously throughout this section. Adverse effect, however, is used only in a manner consistent with the definition provided in 36 CFR 800.5(a)(1), when an undertaking alters the characteristics that qualify a historic property for listing in the NRHP.

Potential adverse effects on cultural resources include, but are not limited to, the following (36 CFR 800.5):

- Physical destruction of or damage to all or part of the property,
- Alteration of a property (including restoration, rehabilitation, or repair that is not consistent with the Secretary of the Interior's standards for the treatment of historic properties),
- Removal of the property from its historic location,
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance, and
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.

WSDOT, on behalf of FHWA, has evaluated each historic property within the APE and assessed the Preferred Alternative's effects on each property's seven aspects of integrity. The assessment resulted in one of four potential findings:

- **Does Not Alter Integrity:** Either no historic properties are present, or there is no effect of any kind, neither harmful nor beneficial, on historic properties.
- **Alters Integrity:** The undertaking affects historic properties, but does not diminish the characteristics that qualify the property for listing in the NRHP.
- **Diminishes Integrity:** There is an effect from the undertaking which alters the characteristics that qualify the property for listing in the NRHP in a way that diminishes the integrity of the historic property. This includes diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.
- **Temporarily Diminishes Integrity:** There is an effect from the undertaking, and that effect temporarily (during construction of the project) alters the characteristics that qualify the property for listing in the NRHP in a way that diminishes the integrity of the historic property. This includes diminishing the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

The Preferred Alternative was reviewed to determine if aspects of the project would affect historic properties through construction or operation of the project. The Preferred Alternative would affect historic properties located in the APE. This chapter identifies and describes the potential effects of the Preferred Alternative on historic properties in accordance with Section 106 of the NHPA. Attachment 1 provides tables that list all of the historic properties in the APE; Exhibits 7-1a through 7-1j show the historic properties' locations in relation to project elements to illustrate the potential for effects. No NRHP-eligible archaeological sites were identified, so effects on archaeological sites are not discussed in this chapter.

Some properties would experience more than one type of effect and these are noted in all applicable categories, as appropriate. Exhibit 7-14, which is located at the end of this chapter, summarizes historic properties whose integrity would be diminished by the Preferred Alternative.

The Preferred Alternative's construction-related impacts and permanent alterations of setting and feeling constitute an adverse effect on historic properties. This effect will be resolved through the implementation of the Programmatic Agreement, developed by WSDOT, DAHP, ACHP, affected tribes, and other consulting parties (see Attachment 9 to the Final EIS).

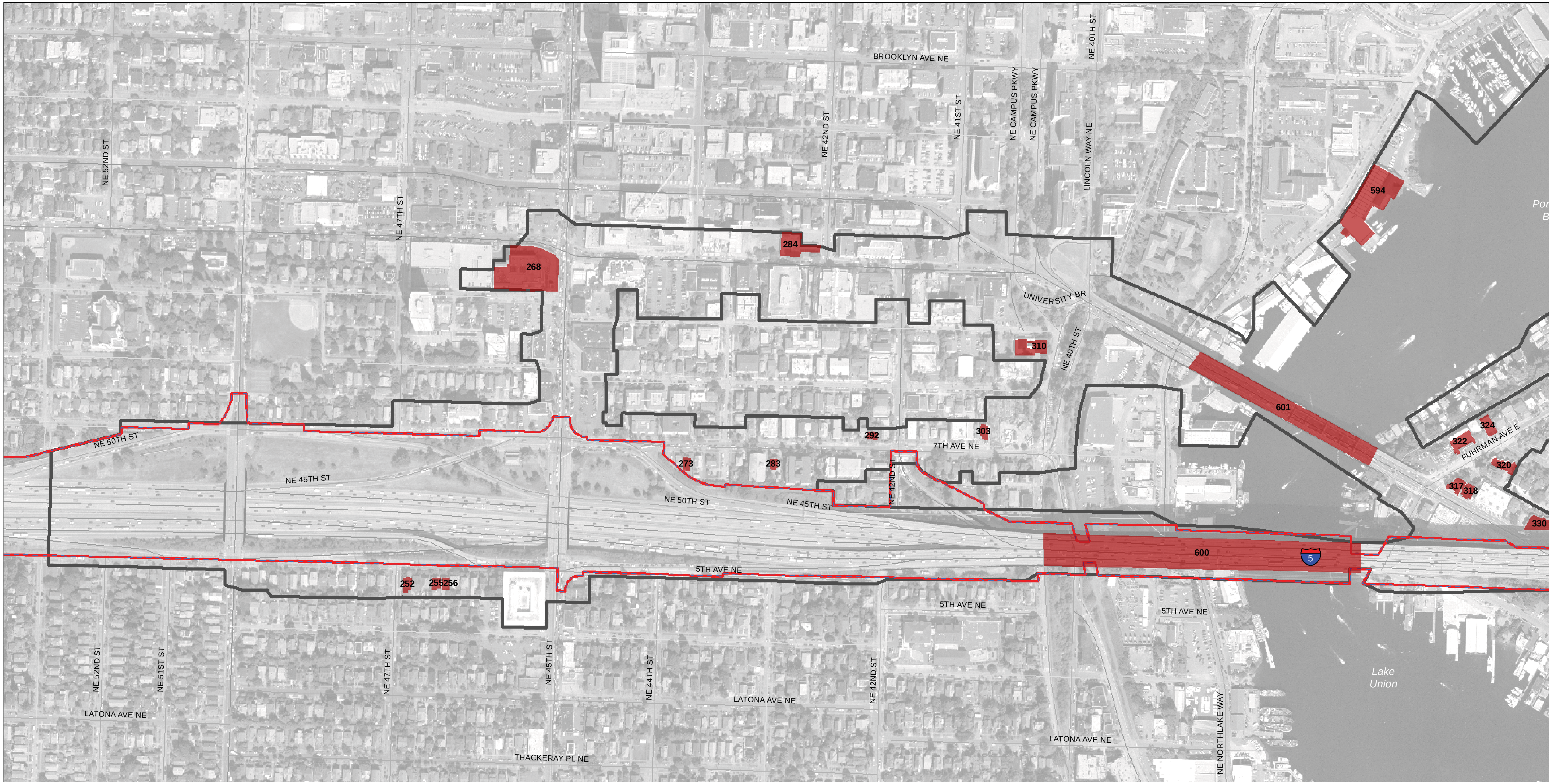
Methods for Identifying Potential Effects

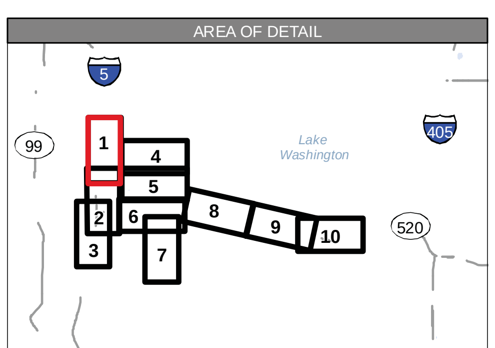
To assess the scope of effects on historic properties during construction and operation of the Preferred Alternative, technical reports in the Final EIS (see Attachment 7 to the Final EIS) were consulted. These technical studies, summarized in the Final EIS, provided extensive information regarding myriad factors that could affect historic properties. Some of the disciplines that provided information include Transportation; Land Use, Economics, and Relocations; Social Elements; Visual Quality and Aesthetics; Noise; Air Quality; Geology and Soils; and Navigable Waterways (the discipline reports and addenda and errata are provided in Attachment 7 to the Final EIS). Many effects on historic properties are associated with changes in setting and feeling from noise and visual impacts.

The noise analysis for historic properties uses the noise data provided in the Noise Discipline Report Addendum and Errata (see Attachment 7 to the Final EIS) to evaluate whether the introduction of audible elements or changes in noise levels would diminish the qualities of significance of historic properties. FHWA and WSDOT have developed guidelines regarding noise levels, which are referenced in the effects analysis for historic properties where appropriate (see Attachment 7 to the Final EIS). The guidelines indicate that a change in noise levels of 3 A-weighted decibels (dBA) is the smallest change audible to humans, a 5 dBA change is readily perceptible, and a change of 10 dBA is perceived as either halving or doubling the relative loudness. These measurements are used only to gauge the relative changes in noise and evaluate whether introducing noise or changes to existing noise levels would diminish the qualities of significance of historic properties, which vary by property. Noise modeling completed for the project indicates that where recommended along the SR 520 corridor, noise walls would meet all FHWA and WSDOT requirements for avoidance and minimization of negative noise effects. In areas where noise walls are warranted, they would only be constructed if approved by the affected communities. These measures are taken into account when analyzing noise effects on historic properties.

Evaluating visual impacts on historic properties involves an understanding of the aspects of the property which render it eligible for inclusion in the NRHP under specific criteria, and how introducing visual elements or changes to the existing visual setting would affect the qualities of significance of the property. Visual effects could include removing structures and vegetation in the immediate property vicinity, introducing new visual elements, or other viewshed interruptions that could alter the significance of the historic property. Information from and visualizations developed for the *Visual Quality and Aesthetics Discipline Report* (see Attachment 7 to the Final EIS) aided in assessing the effects of the Preferred Alternative.

This analysis of effects from the Preferred Alternative is organized by the three study areas along the project corridor: Seattle, Lake Washington, and the Eastside transition area. Within the Seattle study area, project elements are described by geographic segments (I-5/Roanoke, Portage Bay, Montlake, and West Approach), as illustrated in Exhibit 1-1. In the case of effects caused by construction truck hauling, effects are analyzed by geographic segment, when appropriate, but are also evaluated specifically, as discussed below.





NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible

- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

N

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Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 7-1a. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 1**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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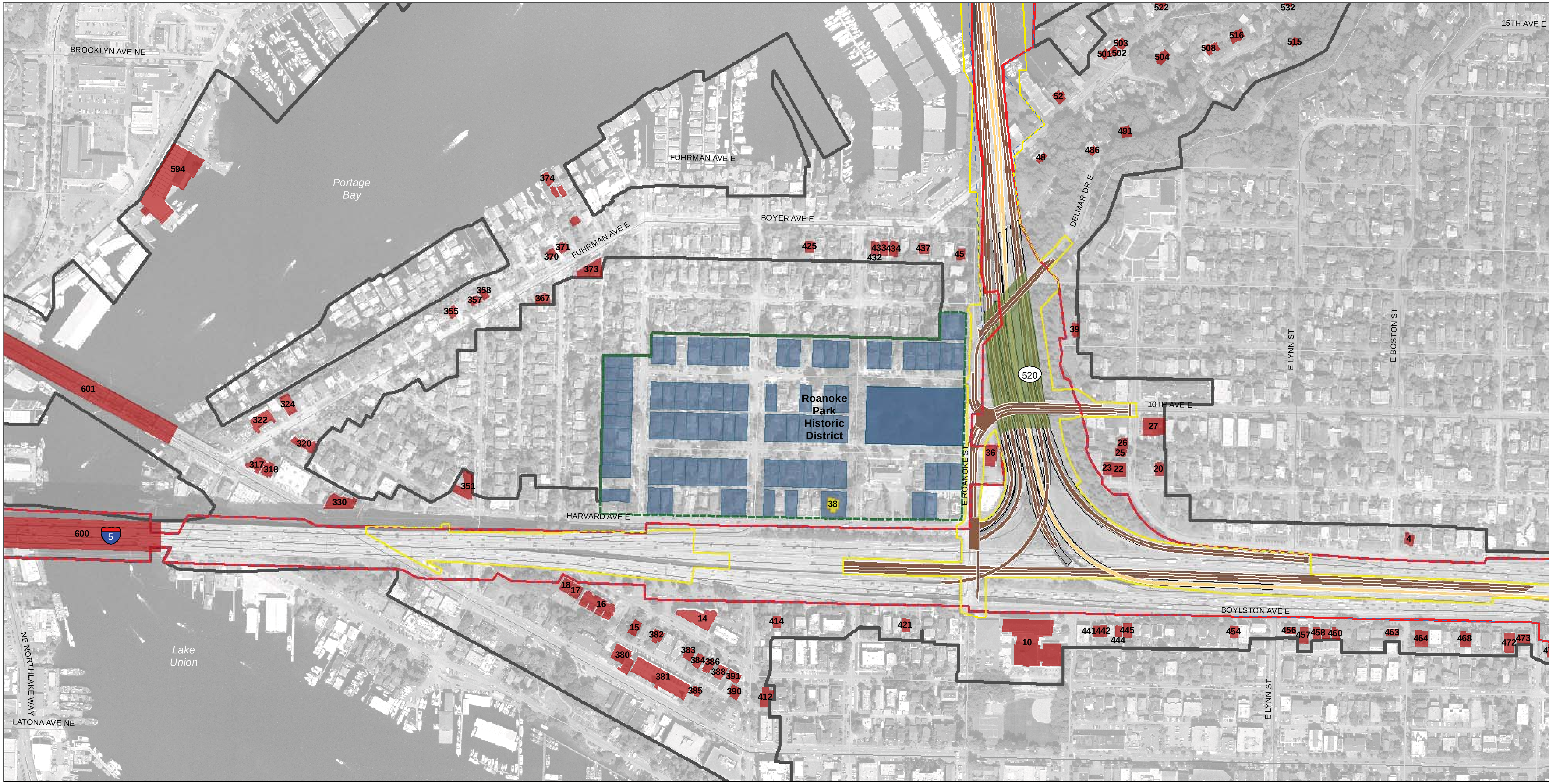

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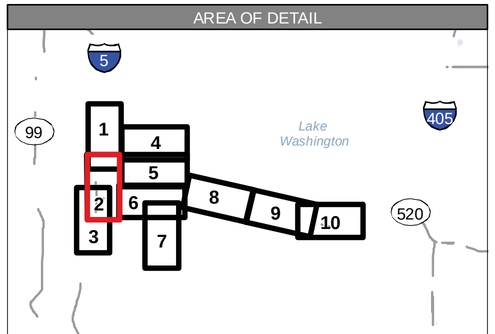

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 7-1b. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 2**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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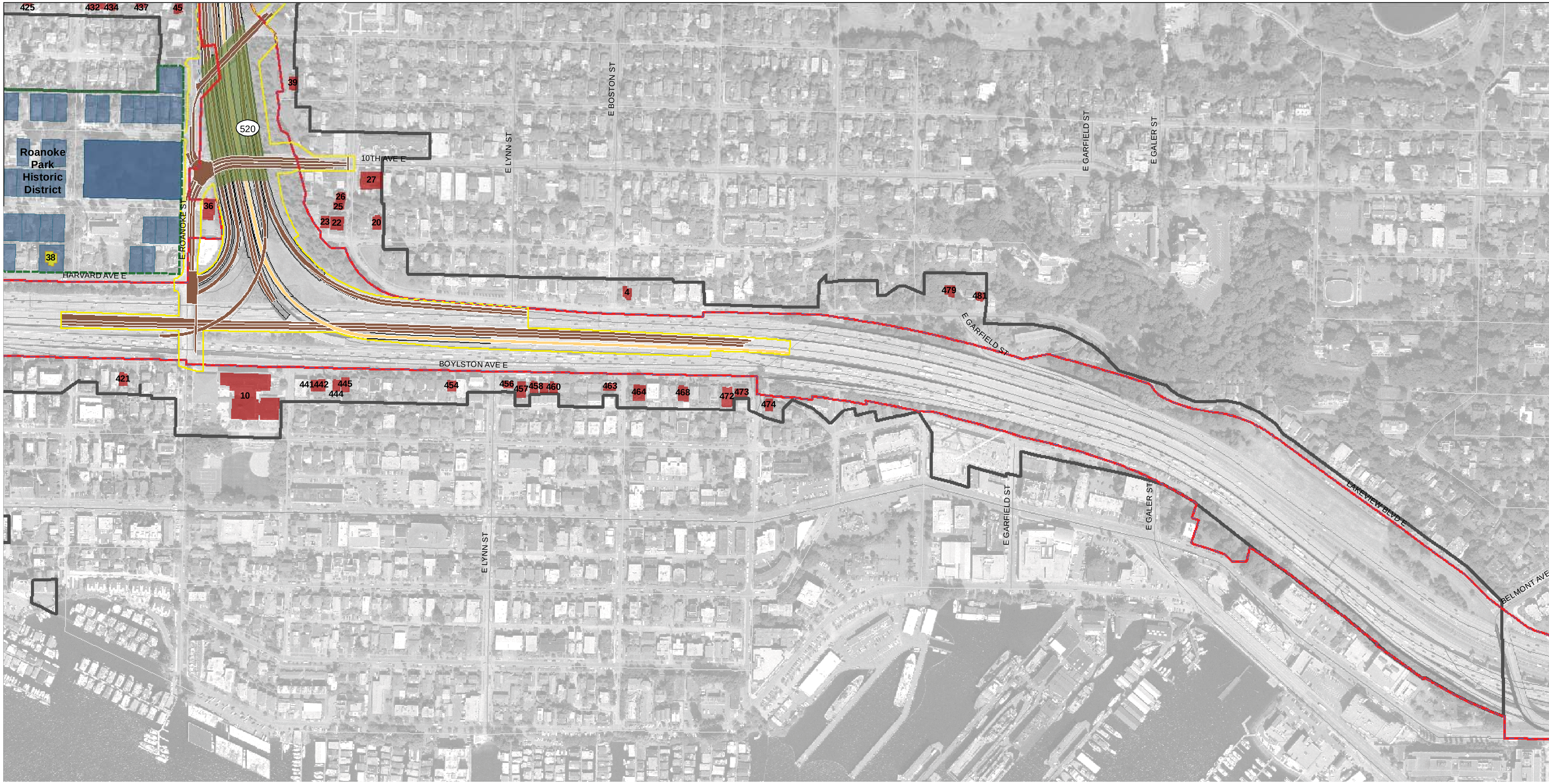

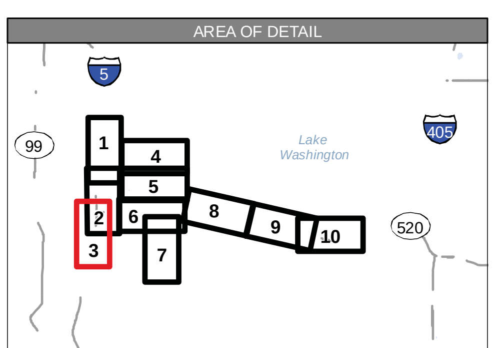

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 7-1c. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 3**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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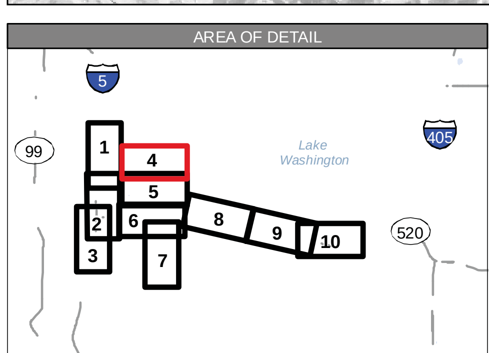

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible

- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

N

0 250 500 1,000 Feet

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 7-1d. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 4**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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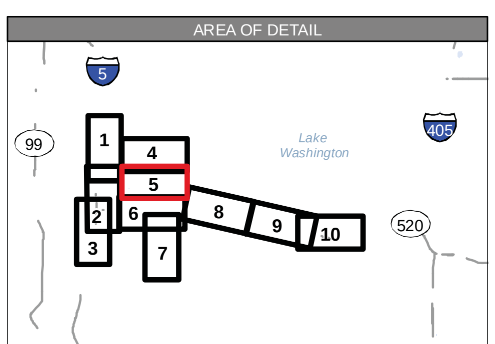

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible

- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 7-1e. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 5**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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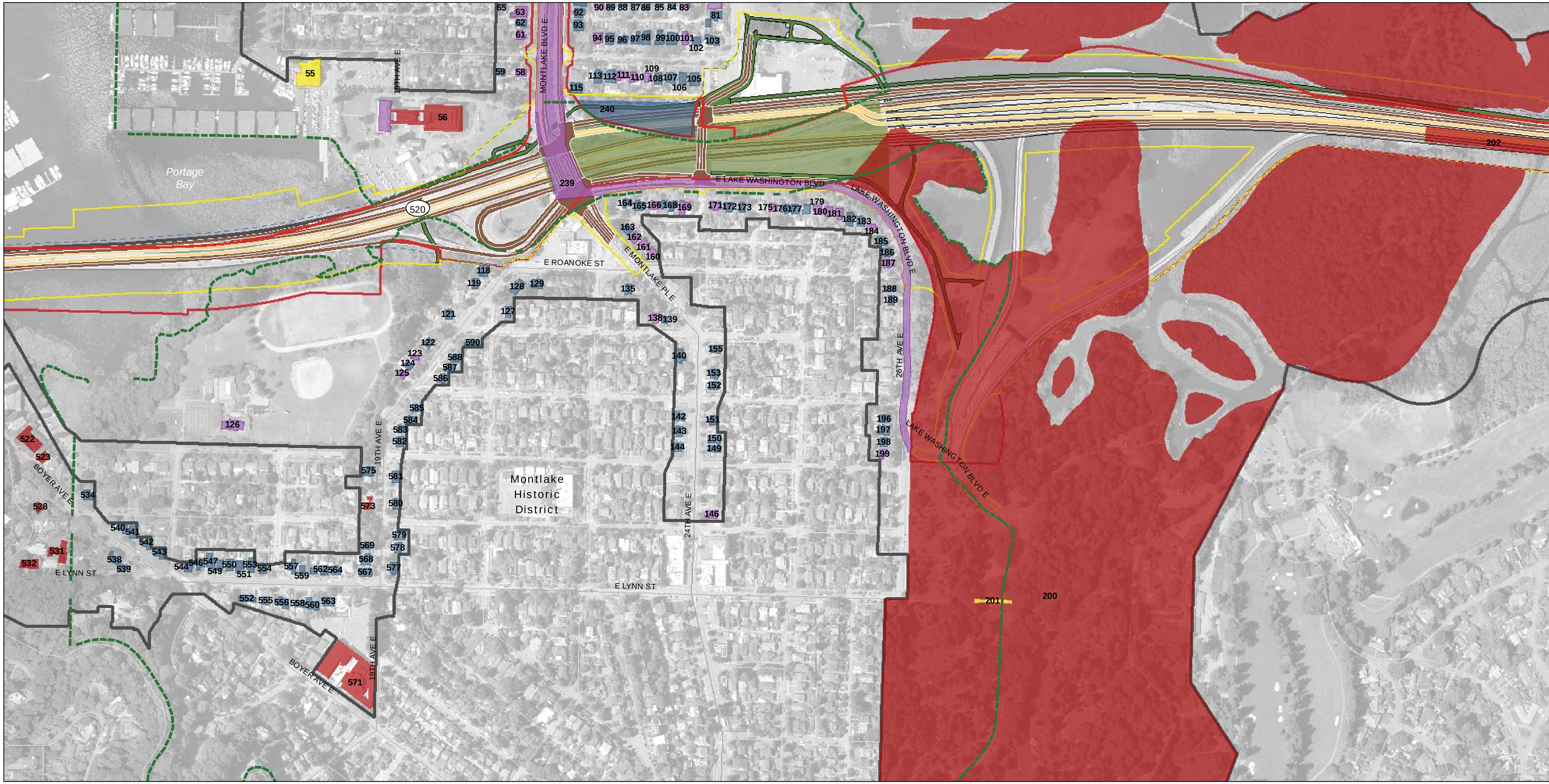

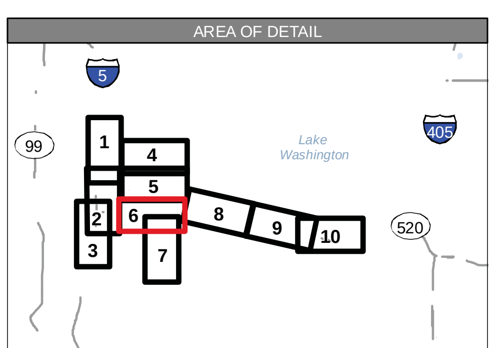

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible

- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

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Exhibit 7-1f. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 6**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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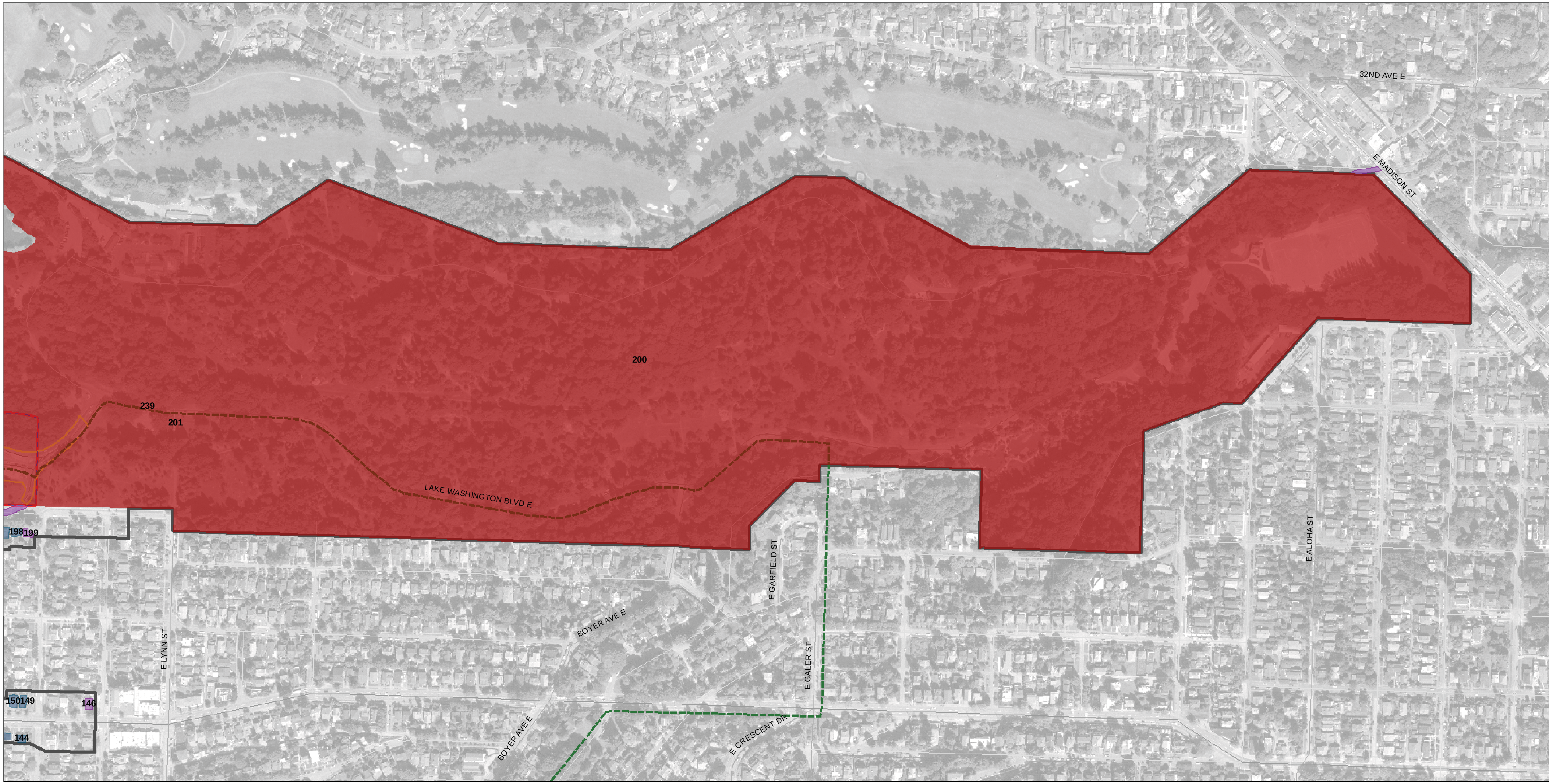

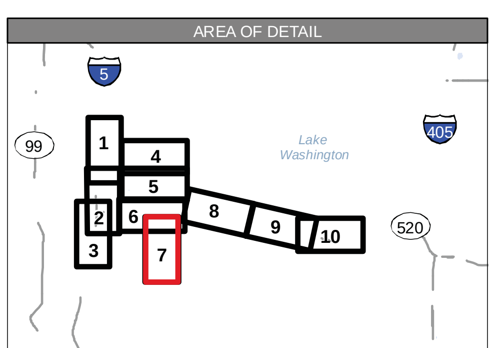

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible

- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 7-1g. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 7**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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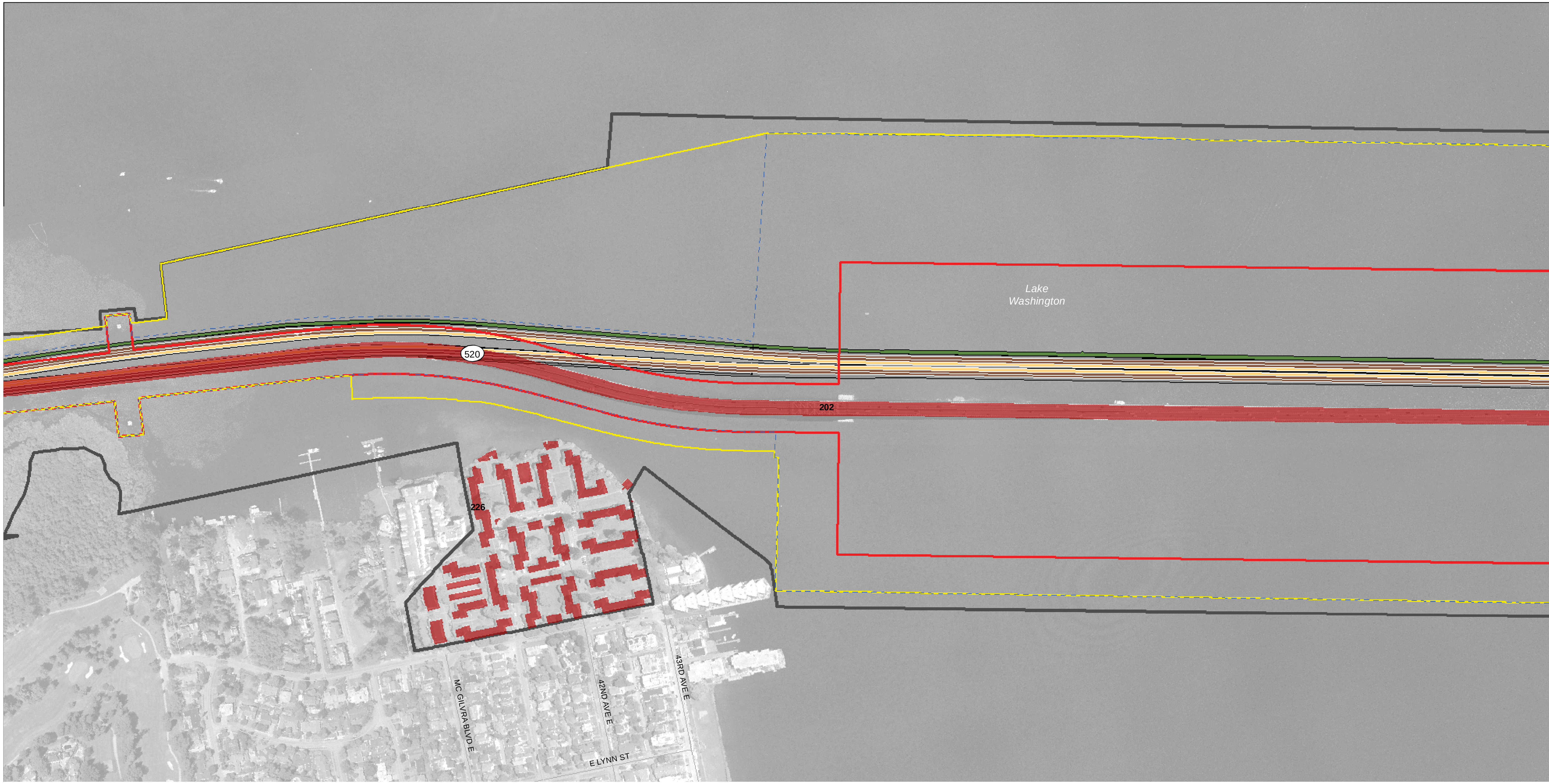

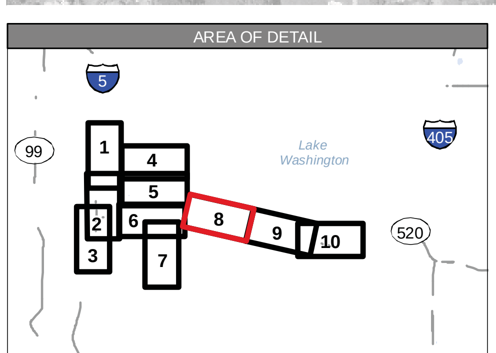

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

N

0 250 500 1,000 Feet

Exhibit 7-1h. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 8**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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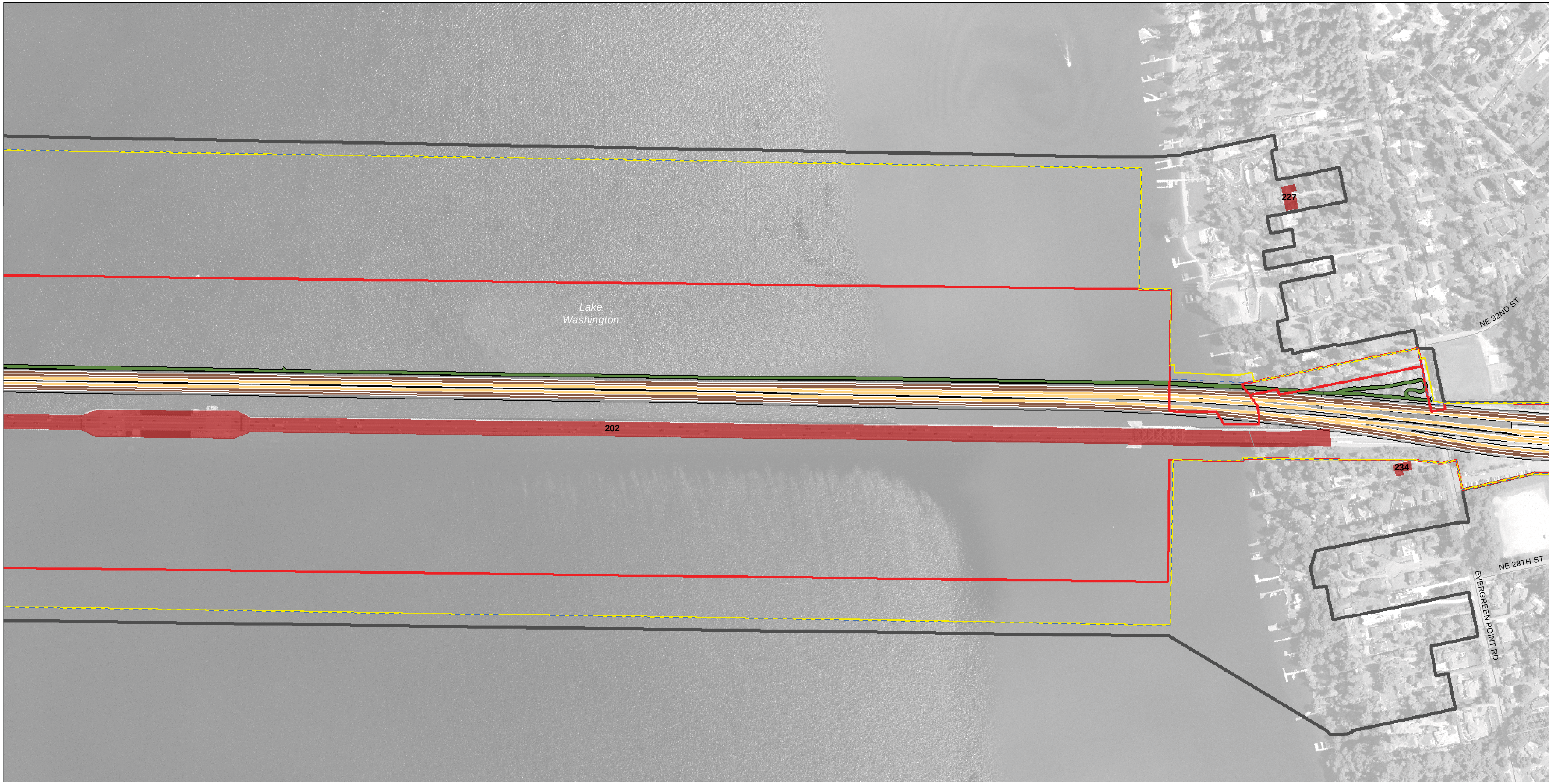

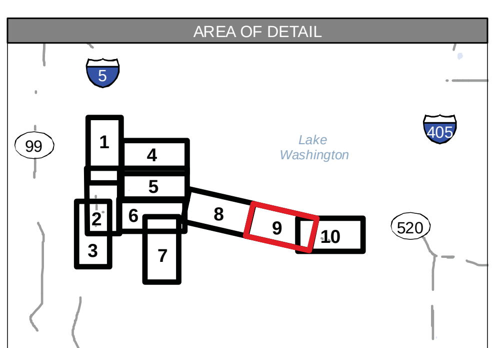

NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible

- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction

- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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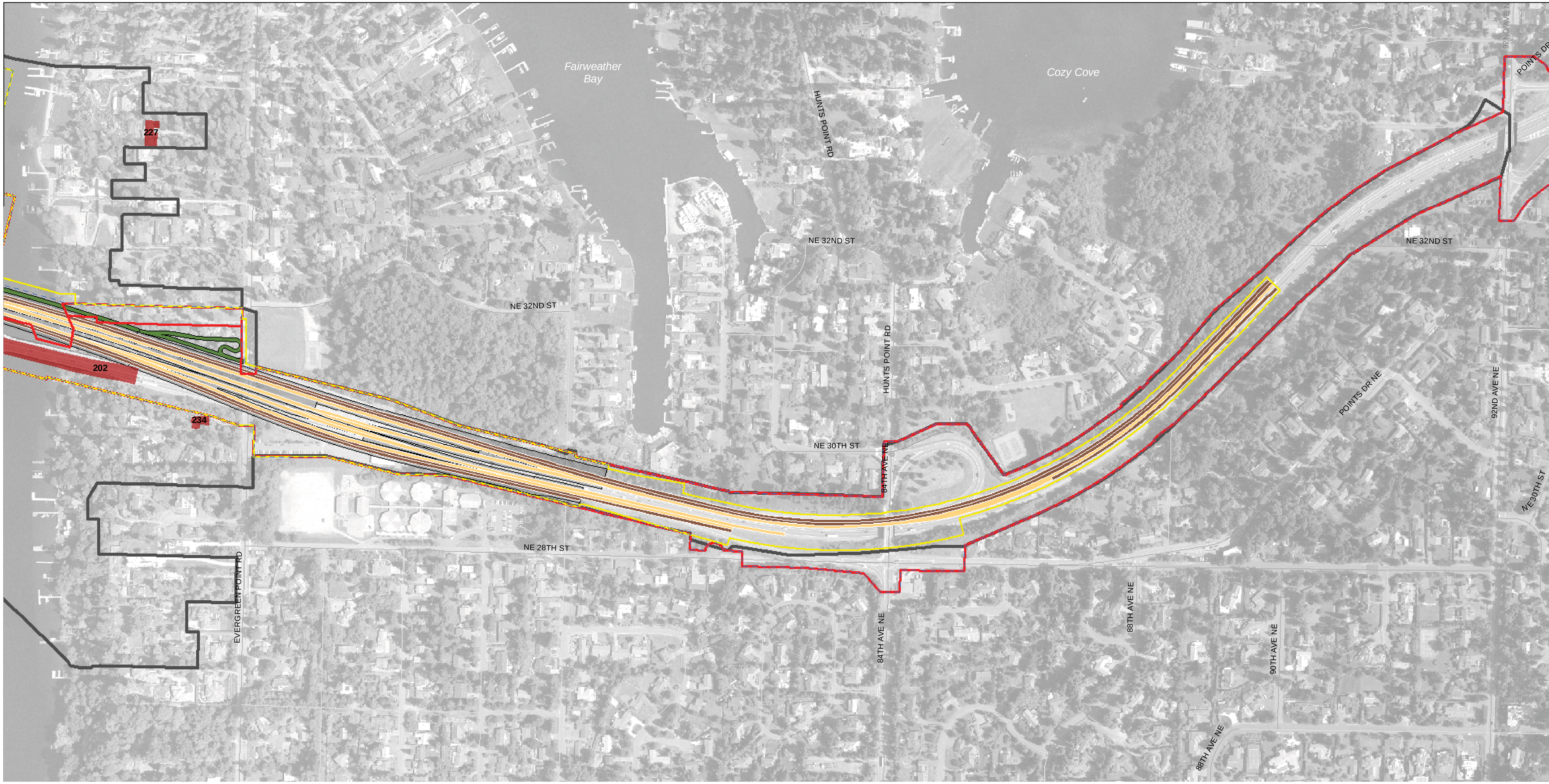
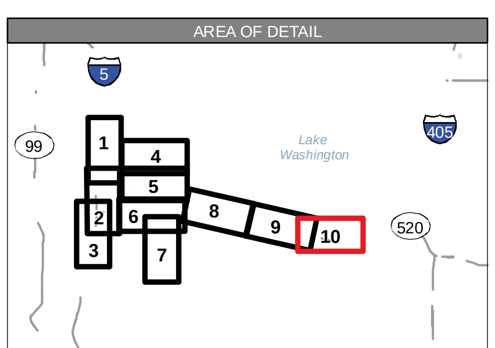
0 250 500 1,000 Feet

Exhibit 7-1i. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 9**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project





NRHP Eligibility

- NRHP Listed
- NRHP Eligible
- Contributing
- Contributing and Eligible
- Historic District Boundary
- Area of Potential Effects
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Lid
- Proposed Bicycle/Pedestrian Path

NOTE: Property ID Numbers displayed on the map correspond to those in the tables in Attachment 1 - "Master Lists of Identified Properties for the SR 520, I-5 to Medina Project"

N

0 250 500 1,000 Feet

Source: King County (2005) GIS Data (Streams and Streets), King County (2007) GIS Data (Water Bodies), King County (2008) GIS Data (Parcel), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 7-1j. **Project Elements of the Preferred Alternative and Historic Properties, Sheet 10**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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Construction Haul Routes

During construction, the Preferred Alternative would temporarily diminish the integrity of feeling and setting of historic properties along construction haul routes. Construction haul routes (Exhibit 6-37) would expose historic properties to temporary increases in truck traffic, with accompanying potential for increases in fugitive dust, vehicle emissions, and noise. Haul truck volumes estimated for each potential haul route are intended to characterize truck activity anticipated during a typical average day of construction for the duration of use as a haul route. For potential routes where haul truck volumes may vary substantially over the construction period, peak daily volumes are also estimated.

Construction materials would be transported to and from the construction work areas by trucks and barges. Barges would provide access to offshore work areas. Trucks would travel over identified haul routes through Seattle to SR 520, I-5, and I-405. Since publication of the SDEIS (WSDOT 2010a; see Attachment 10 to the Final EIS), construction staging areas and haul routes have been revised to account for the design of the Preferred Alternative, improve traffic management, respond to comments received on the SDEIS about haul routes, and accommodate changes in the construction schedule. See the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Transportation Discipline Report* (Attachment 7 to the Final EIS) for more detailed information about truck traffic, the construction schedule, and other data pertaining to the potential haul routes.

Construction assumptions developed for this project identify major freeways such as I-5, SR 520, and I-405 as primary haul routes intended to carry the majority of project truck traffic. However, there would be times when city streets will need to be used as secondary haul routes. Secondary haul routes for the SR 520, I 5 to Medina project were identified based on criteria such as shortest off-highway mileage, providing access to locations needed for construction where direct highway access is unavailable, and the ability to accommodate truck traffic. Potential construction haul routes described here include both local and regional roadways. Local jurisdictions can limit the use of nonarterial streets for truck traffic; therefore, efforts were made to identify designated arterial streets for potential use as haul routes. Final haul routes will be determined by local jurisdictions for those actions and activities that require a street use or other jurisdictional permit. The permit process typically takes place during the final design phase, and prior to construction.

Integrity of setting and feeling of the historic properties along these construction haul routes would be intermittently diminished by the trucks passing the buildings. The properties would maintain integrity of materials, design, workmanship, location, and association and would retain the ability to demonstrate their architectural significance, which is the criterion that makes each of them eligible for listing in the NRHP. In addition, some properties, such as Fire Station #22 and the Seward School, are also eligible under Criterion A for their association with area history. Fire Station #22 is associated with the development of the Seattle Fire Department. WSDOT committed to ensure that the fire station would remain open and that the project would not affect emergency services during construction. The Denny-Fuhrman School is eligible for listing in the NRHP because of its association with public education in Seattle and the development of the Eastlake neighborhood. The ability of the school to fulfill its educational mission and its involvement in the community would not be impaired by hauling activities.

The estimated truck peaks and averages represent a worst-case condition for each study location. To generate these estimates, program analysts assumed that all truck trips servicing each work site would need to use more than one haul route. Work sites could be accessed by more than one potential route, which could result in lower actual truck volumes during construction at some locations. To best represent how truck traffic would be experienced by a single observer, the number of trucks per day reported for this analysis is equal to twice the number of loads delivered. For example, the delivery of one load of concrete is estimated as two trucks per day because the truck is counted both when arriving and when leaving the site.

In general, the estimated number of truck trips along arterials would be relatively low compared to overall arterial volumes. The truck volume estimates would continue to be updated as construction planning and scheduling are finalized, and WSDOT will work with affected communities through the CCMP to avoid and minimize impacts. The *Transportation Discipline Report* (see Attachment 7 to the Final EIS) includes more specific discussion about haul routes, effects on traffic volumes, and scheduling. More detailed information about construction haul routes in specific geographic segments and their potential effects on historic properties is provided below.

Effects from Construction

No Build Alternative

The No Build Alternative, described in Chapter 1, would result in no construction effects on cultural resources because the project would not be built and the Evergreen Point Bridge would not be replaced. SR 520 would continue to operate as it does today, as a four-lane highway with nonstandard shoulders and without a bicycle/pedestrian path. The No Build Alternative is the baseline to which the Preferred Alternative is compared.

Preferred Alternative

Construction of the Preferred Alternative would result in some impacts on properties in the vicinity of the project, including historic properties. These impacts could include, but are not limited to, the following:

- Fugitive dust from demolition, haul trucks, and other activities
- Nighttime glare from lighted work areas at night
- Visual effects from vegetation removal, temporary structures, construction staging and equipment, and active construction operations
- Temporary disruptions in access to homes and businesses
- Increased traffic along detour and haul routes, including truck traffic

Because the engineering design for the project is not yet final and a contractor has not been hired, specifics of some construction details are not yet defined. The analysis of construction effects is based on all currently available knowledge for the project.

Given its extent and duration, construction would have notable impacts in the vicinity of active construction areas, defined on the exhibits in this report as the limits of construction. NEPA requires WSDOT to mitigate these impacts if they cannot be avoided or minimized.

Preferred Alternative effects from construction will include, but are not limited to, construction hauling, detours, construction staging, and temporary work bridges. Construction of the SR 520, I-5 to Medina project would occur over a period of years and would result in increased noise, dust, and traffic; visual effects; and disruptions to access to some areas near construction sites.

Seattle Study Area

Traditional Cultural Properties and Archaeological Resources

The Preferred Alternative would cross Foster Island with a pier and span bridge that would require acquisition of 0.5 acre of land on Foster Island and expansion of the right-of-way to the north of the existing alignment. Construction effects would include a construction work bridge located on the island, which would be removed after the permanent structure was completed (Exhibit 7-2).

Construction activities would generate dust and construction-related noise and vibration on Foster Island; during construction, access to the north part of the island would be restricted. Construction in this area is scheduled to take approximately 5 years (60 months). Once construction is completed, construction easements on Foster Island would be returned to park use.

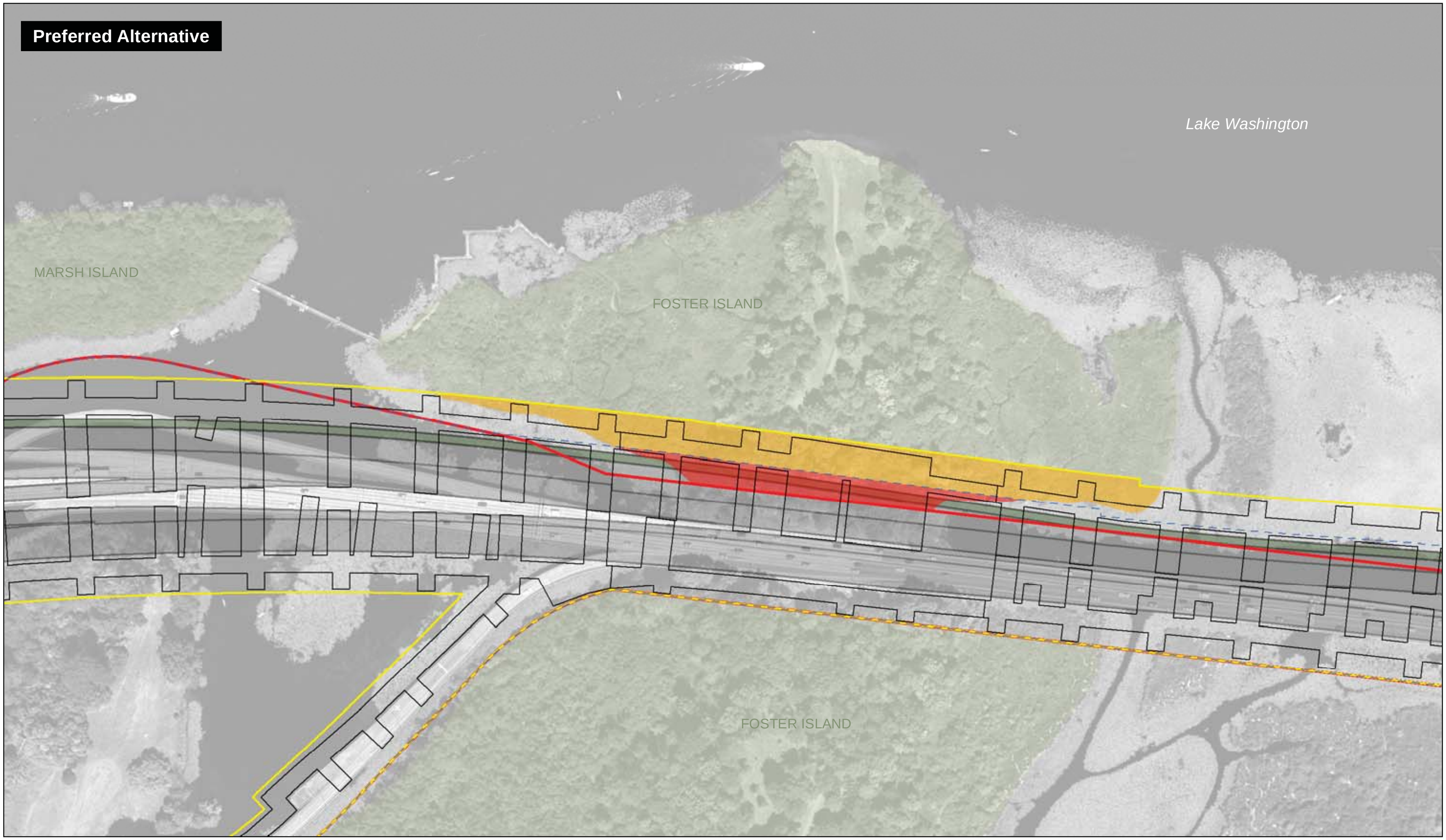
In consultation with interested and affected tribes, WSDOT has determined that the construction of the Preferred Alternative would diminish the integrity of the Foster Island TCP and contribute to the project's adverse effect on historic properties.

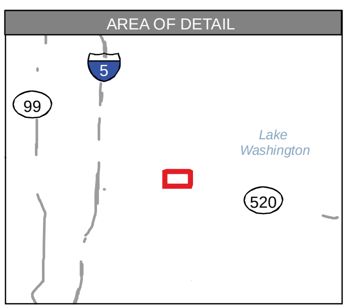
Although no archaeological sites eligible for listing in the NRHP were found in any of the studies conducted to date, study results indicate that there is the potential for the project to affect unknown and potentially significant archaeological resources within the limits of construction. Several specific areas within the limits of construction were called out as sensitive for intact archaeological sites (or were inaccessible during the initial investigations), and were flagged for additional investigation prior to construction or monitoring during construction. Details for this monitoring or investigation will be in the project Archaeological Treatment Plan, committed to being developed in the Programmatic Agreement.

Historic Built Environment Properties

I-5/Roanoke and Portage Bay Segments

The Preferred Alternative would affect historic properties in the I-5/Roanoke segment of the Seattle study area, largely as a result of the extended project construction period. Historic properties within the





- Permanent Acquisition
- Construction Easement
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- Pavement
- Work Bridge
- Proposed Bicycle/Pedestrian Path

N

0 50 100 200 Feet

Source: King County (2006) Aerial Photo, CH2M HILL (2008) GIS Data (Park and Trails). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 7-2. **Project Elements of the Preferred Alternative on Foster Island**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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APE adjacent to SR 520 have the potential to experience effects that would alter their integrity of setting and feeling during construction. These effects will be discussed by project element and by historic property, as appropriate, in subsequent sections.

Construction of the 10th Avenue East and Delmar Drive East lid (10th and Delmar lid) over SR 520 could cause the following effects on historic properties:

- Increased vibration from demolition, heavy equipment operation, material hauling, and pile-driving
- Fugitive dust from areas where soils are exposed or stockpiled
- Visual effects from vegetation removal, temporary structures, construction staging and equipment, and active construction operations
- Temporary disruptions in access to homes and businesses
- Increased traffic along detour and haul routes

Although construction of the 10th and Delmar lid would take approximately 26 months, the noise and other effects would vary in intensity during that period, depending on which activities were occurring. Glare from nighttime construction lighting would also be experienced intermittently. Increased noise, fugitive dust, and possible vibration from demolishing and removing the 10th Avenue East and Delmar Drive East bridges over SR 520 and constructing the new 10th and Delmar lid would also affect historic properties. The following properties would experience these effects during construction to varying degrees. These properties' integrity of feeling and setting would be diminished by construction of the Preferred Alternative:

- Fire Station #22 (ID# 36)
- Seward School campus (ID# 10)
- Chung House (ID# 4)
- Talder House (ID# 20)
- Sugamura House (ID# 23)
- East Miller Condominium (ID# 22)
- Wicklund-Jarr House (ID# 25)
- Glover Homes Building (ID# 26)
- Keuss Building (ID# 27)
- Boyd House (ID# 39)

- Gunby House (ID# 45)
- Mason House (ID# 48)
- Kelley House (ID# 52)

Some of the vegetative buffer between SR 520 and historic properties (the Gunby House on the north; the Sugamura, Boyd, and Mason houses on the south) would be entirely or partially removed during construction. Although the buffer area contains a variety of mature trees, it also has several invasive species. WSDOT would retain mature trees where possible. During construction of the new roadway and lids, mature vegetation would be protected and retained to the maximum extent feasible. Although some existing buffer might be reduced, adding the 10th and Delmar lid would provide for a new type of buffer from the roadway that would be more extensive than the existing vegetative buffer. After construction is completed, permanent erosion control measures for areas affected by construction of the project would be implemented, and those areas where invasive species were cleared would be replanted with native plant materials, as appropriate, in accordance with WSDOT policy (WSDOT 2010d) and in consultation with the neighborhood. Removal of this vegetation would alter integrity of setting for the properties listed above.

The most likely travel route to access the 10th and Delmar lid construction area would be from I-5 to East Roanoke Street. Delmar Drive East is likely to experience truck traffic as a secondary travel route, mostly for egress from the lid construction area to eastbound SR 520. This potential haul route would use Delmar Drive South from SR 520 and continue east onto East Lynn Street, then north on 19th Avenue East (Exhibit 6-37). A haul route along Delmar Drive East as it nears 14th Avenue East could average 20 haul trucks per day during active construction. Estimated peak volume of 160 haul trucks per day could occur intermittently for as many as 30 nonconsecutive days over a period of roughly 21 months.

A potential haul route along Fuhrman Avenue East could be used throughout the construction period (Exhibit 6-37). This route may average 20 trucks per day when in use and may experience peak volumes up to 230 trucks per day intermittently throughout construction. To provide some context for this volume of truck traffic, more than 170 trucks and buses per day pass along Fuhrman Avenue East at Eastlake Avenue East. A potential haul route along Boyer Avenue East at East Shelby Street could also have the same typical average volume from construction truck hauling as the route along Fuhrman Avenue East.

The Boylston Avenue East haul route would likely be used intermittently for the duration of construction, and could average approximately 25 trucks per day. Integrity of setting and feeling of all historic properties along construction haul routes would be temporarily diminished as a result of the Preferred Alternative.

There are no construction haul routes within the Roanoke Park Historic District. However, haul routes are located on the edges (outside of) the district boundaries. More discussion on potential effects on the Roanoke Park Historic District as a result of haul routes is provided later in this chapter.

Project elements of the construction of the Portage Bay Bridge would affect historic properties. The Mason and Kelley houses (both on Boyer Avenue East) and the Gunby and Boyd houses (both adjacent to SR 520) would be affected by fugitive dust and possible vibration during demolition and reconstruction of the Portage Bay Bridge and erecting of the work bridges, including pile-driving for new piers. The Mason and Kelley houses would likely also experience glare from nighttime construction lighting because they are closer to the bridge and, thus, closer to construction activities.

The following properties are farther away from the Portage Bay Bridge construction activities than the four described above, but could experience some increased noise during demolition and reconstruction of the bridge, erecting the work bridges, and possibly by some nighttime glare, due to the topography. Their integrity of setting and feeling would be altered during construction.

- Fire Station #22 (ID# 36)
- Seward School (ID# 10)
- Wicklund-Jarr House (ID# 25)
- Glover Homes Building (ID# 26)
- Keuss Building (ID# 27)

The work bridges, barges, and heavy equipment used to demolish and construct the Portage Bay Bridge would create new visual effects, particularly due to the topography of the area and the views toward the bridge from the properties on the west side of the bay. The Kelley House would be affected by visual impacts because one of the work bridges is planned to be in the location of the current Portage Bayshore

Condominium docks next door to the house. Some moorage at the Portage Bayshore Condominiums would be relocated during construction. Upon completion, the work bridges would be removed and the moorings would be restored. Portage Bay Bridge construction is anticipated to last for 5 years.

These construction impacts, such as increased noise and visual intrusions, would not permanently alter the integrity of the historic properties discussed above. The significance of these properties lies in their distinctive architectural characteristics of type, construction, period, or style, and—for Fire Station #22 and the Seward School—their association with area history. These properties also exhibit a high level of historic and architectural integrity. The construction impacts would alter the integrity of the setting and feeling of these properties, but the effects on the historic properties would not be permanent. The properties would maintain integrity of materials, design, workmanship, association, and location throughout the construction period.

Roanoke Park Historic District (ID# 37)

Construction of the Preferred Alternative would result in a number of effects on the Roanoke Park Historic District, and would diminish the district's integrity of setting and feeling. These effects include the following:

- Change to setting at times during the construction period from increased traffic on the haul routes along East Roanoke Street and Harvard Avenue East.
- Noise, fugitive dust, and possible vibration effects from construction of the reconfigured intersection at East Roanoke Street and10th Avenue East.
- Noise, fugitive dust, and vibration from construction of the work bridges flanking the Portage Bay Bridge, demolition of the existing bridge, and construction of the new bridge.
- Noise, fugitive dust, and possible vibrations from demolition of the 10th Avenue East and Delmar Drive East overcrossings and construction of the new lid.
- Noise, fugitive dust, traffic, and possible vibration from construction, and glare from lighting for nighttime construction occurring at the I-5/SR 520 interchange, for the HOV lane crossing over I-5.

- Change in setting and feeling during the construction period from the visual interruptions of the work bridges and construction activity related to Portage Bay Bridge.
- Change in setting and feeling during the construction period from the loss of vegetative buffer between East Roanoke Street and SR 520.

No construction or construction staging would occur within Roanoke Park or the Roanoke Park Historic District. Based on analysis in the *Geology and Soils Discipline Report* (see Attachment 7 to the Final EIS), the probability of landslides in the historic district from project construction in the vicinity is expected to be low.

Detour and Haul Routes

During construction, East Roanoke Street would experience temporary lane closures and detours while the realignment work of the 10th Avenue East and Delmar Drive East intersection occurs. These could include short-term closures during off-peak times, which might require intermittent and brief detours over an approximate 15-month period. This could result in temporarily restricted access along East Roanoke Street. However, at least one lane would be open at all times to allow local traffic access on East Roanoke Street. During construction, Fire Station #22—located on East Roanoke Street and immediately adjacent to the Roanoke Park Historic District—would be fully operational, and access for emergency response would not be affected.

Harvard Avenue East and East Roanoke Street are potential haul routes that border the Roanoke Park Historic District. Because these streets could provide the most direct access to portions of the project construction sites, they are likely to experience construction truck traffic (Exhibit 6-37). As previously noted, the main travel route to access the 10th and Delmar lid construction area would likely be from I-5 to East Roanoke Street, and Delmar Drive East could operate as a secondary route for egress from the lid to eastbound SR 520. Most trucks coming from westbound SR 520 would likely use the Harvard/Roanoke exit. On East Roanoke Street at Delmar Drive East, the potential route could average as many as 30 trucks per day intermittently for approximately 21 months. Worst-case peak levels could reach as many as 170 trucks per day, which could occur periodically over 21 months.

On Harvard Avenue East, north of East Roanoke Street, haul route volumes could average 15 trucks per day for the duration of construction (approximately 66 months). The existing truck and bus count at this location is more than 690 per day, so an additional 15 trucks per day would not be a significant change. Worst-case peak volumes could reach up to 70 trucks per day, occurring for 60 nonconsecutive days throughout the active construction period. This means approximately 3 percent of total construction days could experience peak volume levels. As noted above, average haul truck volumes are estimates meant to approximate construction truck activity during a typical day for the duration of a potential haul route's use; these estimates would be updated as construction planning and scheduling progress.

These potential haul routes would temporarily diminish the integrity of setting and feeling of the Roanoke Park Historic District and its contributing elements, including the William H. Parsons House, located on Harvard Avenue East. These properties could experience higher traffic volume, fugitive dust, and increased noise from the intermittent truck traffic along these potential haul routes.

Vegetation Removal and Replanting

Some of the vegetative buffer between SR 520 and the Roanoke Park Historic District would be entirely or partially removed during construction. During construction of the new roadway and lids, mature vegetation would be protected and retained to the maximum extent feasible. As noted above, although the buffer area contains a variety of mature trees, it also has several invasive species that would be cleared and replaced with native vegetation, in accordance with WSDOT policy (WSDOT 2010d). Although some existing buffer might be reduced, adding the lid at 10th Avenue East and Delmar Drive East would provide for a new type of buffer from the roadway that would be more extensive than the existing vegetative buffer. After construction is completed, permanent erosion control measures for areas affected by construction of the project would be implemented, and those areas where invasive species were cleared would be replanted with native plant materials, as appropriate. During replanting, WSDOT would consult with members of the Roanoke Park Historic District to identify and select plantings compatible with the historic character of the area to the extent feasible. Vegetation removal and replanting would alter the district's integrity of setting.

Montlake Segment

Montlake Community Center (ID# 126)

The Montlake Community Center Tudor Building, located at the Montlake Playfield within the boundaries of the Montlake Historic District, could be affected by fugitive dust and possible vibration during demolition and reconstruction of the Portage Bay Bridge and during erection of the work bridges.

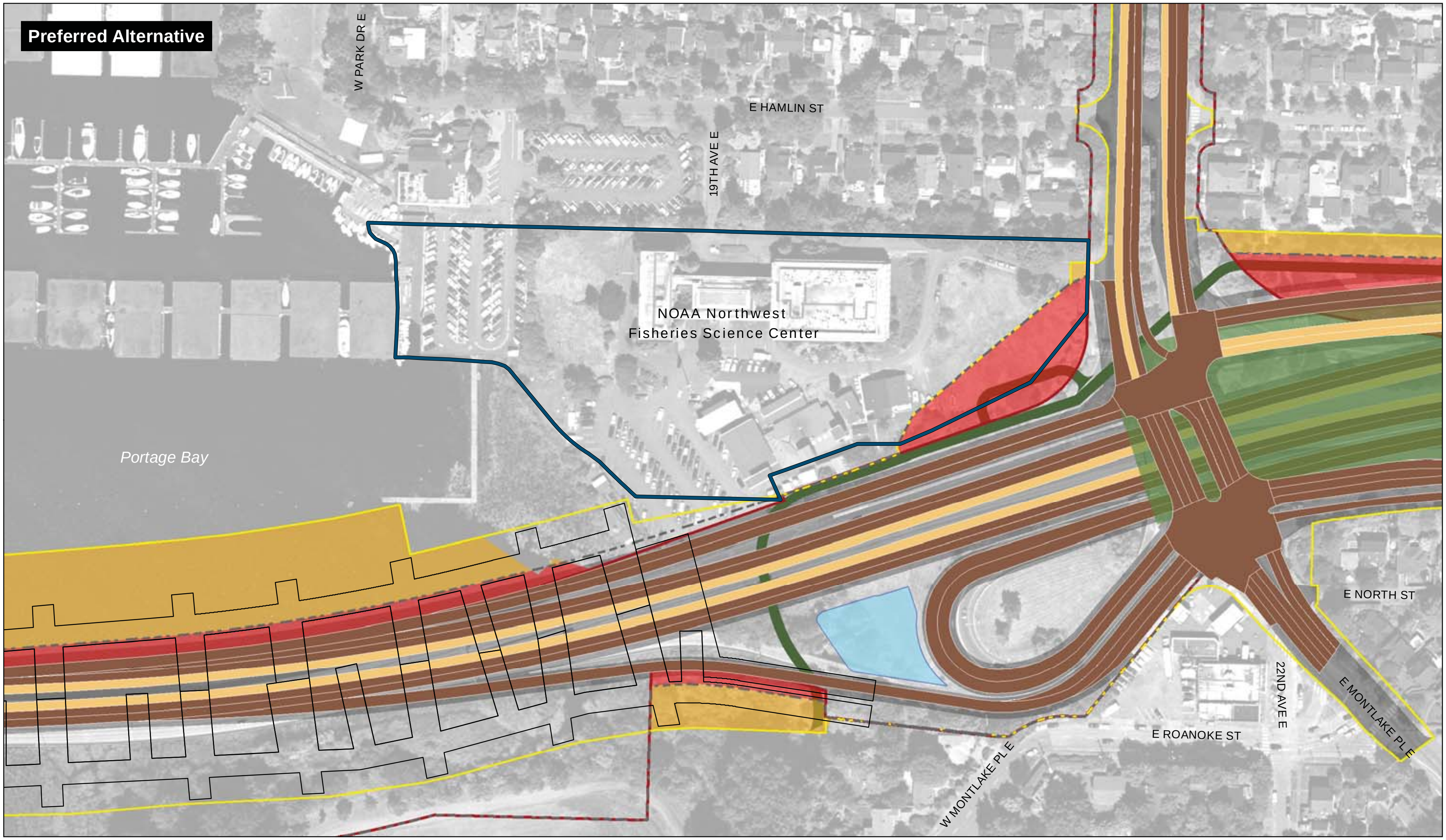
Although the Montlake Community Center Tudor Building would experience effects from project construction, the existing gymnasium building and park vegetation would visually screen the building from most of these effects. The building's integrity of setting would be altered during construction, but the facility would still be able to function as an active community center. The character-defining architectural elements of the Tudor building would not be diminished, as it is significant in terms of architectural design and for its associations with area history.

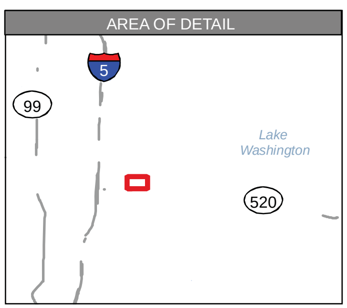
NOAA Northwest Fisheries Science Center (ID# 56)

The NOAA facility's three historic buildings house functions for the NOAA Northwest Fisheries Science Center campus. Construction of the Preferred Alternative would diminish this property's integrity of setting, feeling, and association (Exhibit 7-3).

Demolition of the existing Portage Bay Bridge and construction of the work bridges and the new Portage Bay Bridge immediately adjacent to the NOAA property would generate additional dust and equipment emissions. It would also generate additional noise and create visual effects on the NOAA Northwest Fisheries Science Center buildings. Pile-driving for the construction bridges and use of heavy equipment could cause vibration effects on the property. If not adequately mitigated, these impacts have the potential to disrupt the biological experiments underway in the NOAA fish-rearing facilities and to affect sensitive equipment used for measurement and monitoring.

The construction impacts could create an acoustic environment that makes it more difficult to validate analytical results. Discussions are ongoing with NOAA officials to determine monitoring, construction management, and other measures to minimize construction effects on marine experiments and scientific activities.





- NOAA Property
- Permanent Acquisition
- Construction Easement
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- Pavement
- Proposed Bicycle/Pedestrian Path
- General Purpose Lane
- HOV Lane
- Work Bridge
- Stormwater Facility
- Lid

N

0 50 100 200 Feet

Source: King County (2006) Aerial Photo, CH2M HILL (2008) GIS Data (Park and Trails). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Exhibit 7-3. **Project Elements of the Preferred Alternative at NOAA Northwest Fisheries Science Center**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

To minimize potential effects disclosed in the SDEIS (WSDOT 2010a; see Attachment 10 to the Final EIS), the Preferred Alternative has narrowed the width of the Portage Bay Bridge and shifted its alignment to the south to avoid a direct impact on the structures at the NOAA facility. The Preferred Alternative would acquire 0.5 acre from the NOAA property, which does not contain any structures. There would also be a small construction easement on the northeast side of the NOAA property. Construction would also require use of a portion of the area currently used as parking for the NOAA facility. This area is on WSDOT property, so although it could not be used as parking for the NOAA facility during construction, using this portion of the parking area would not be an acquisition of NOAA property and other parking on NOAA property would not be affected. The driveway that encircles the North Campus on three sides would remain intact, so access within the property would not be altered. Exhibit 7-3 illustrates the effects on the NOAA Northwest Fisheries Science Center from construction of the Preferred Alternative.

Despite WSDOT's continuing efforts to minimize construction effects, the setting, feeling, and association of the property would be diminished during construction as a result of visual, noise, dust, and vibration effects, and the permanent loss of land. It is also likely that some aspects of the ongoing scientific activities of NOAA would be affected, which would diminish the integrity of association with the important research conducted there.

Seattle Yacht Club (ID# 55)

The Seattle Yacht Club, listed in the NRHP under Criterion A for its association with the social and maritime history of Seattle, traditionally holds Opening Day ceremonies through the Montlake Cut and on Portage Bay at the beginning of May each year. Increased noise, fugitive dust, glare from nighttime construction lighting, and possible vibration from demolition of the existing Portage Bay Bridge and construction of work bridges and the new Portage Bay Bridge would diminish the Seattle Yacht Club's integrity of setting, feeling, and association.

Work bridges and barges used to demolish and construct the Portage Bay Bridge could occasionally interfere with the club's marine activities in Portage Bay; similarly, temporary supports and barges used to construct the new bascule bridge adjacent to the historic Montlake Bridge could occasionally interfere with the club's activities on the Montlake Cut. WSDOT has committed to not transport pontoons through these areas during Opening Day events, including the week before and the week after the ceremonies.

Although access to the Seattle Yacht Club would be maintained at all times, there could be periods during construction when some limitations on access to the Seattle Yacht Club and Portage Bay could be necessary. Access to Seattle Yacht Club facilities, both by land and by water, is critical for the continued operation of this historic property. The ability to maintain the historic structure depends on the economic and operational viability of the Club; its operational and economic viability depends on the revenues generated by members and guests having unimpeded access to the facility. Access and usage limitations could impair the Seattle Yacht Club's ability to manage its historic structure and conduct its traditional activities.

For the reasons described above, construction of the Preferred Alternative would diminish the Seattle Yacht Club's integrity of setting, feeling and association and may affect the historic maritime activities there, which are a character-defining feature under Criterion A. If not mitigated, these effects on the setting, feeling and association could also result in economic effects on the facility if reduced patronage were to occur as a result of the proximity of construction activities. These economic effects could impair the ability of the club to fulfill its historic maritime role. Because the association with the social and maritime history of Seattle is the sole reason for the NRHP listing of the Seattle Yacht Club, these activities are the primary character-defining feature of the club, and diminution of the ability to perform these activities would affect the club's integrity of association.

Montlake Bridge (ID# 54)

Montlake Bridge is listed in the NRHP under Criterion C for its engineering and architectural design. The Preferred Alternative includes a new bascule bridge immediately east of the existing historic Montlake Bridge. Because of the close physical proximity, constructing a new bascule bridge immediately adjacent to the historic Montlake Bridge would diminish the historic bridge's integrity of setting and feeling.

Montlake Cut (ID# 53)

The Montlake Cut is a navigable waterway with an existing bascule bridge crossing. The new bascule bridge would span the official navigation channel in the Montlake Cut. The cut must be open to ship traffic year-round, and bridge construction would not be allowed to interfere with marine navigation. The only exception would be a few short periods of time when the spans are being erected, requiring the Montlake Cut to be temporarily closed to marine traffic. This would involve brief closures (estimated at up to six total), ranging from several hours to 2 days. None of these closures would occur during traditional Opening Day ceremonies for boating season. As an active navigational channel listed in the NRHP for engineering significance, the integrity of the Montlake Cut would not be altered by building a new bascule bridge across it or by towing pontoons through it.

Canoe House (ID# 203)
The Canoe House is listed in the NRHP under Criterion C for its architectural significance. Its integrity of setting and feeling would be altered during construction.

Construction of the new bascule bridge, which is expected to last approximately 29 months, would introduce fugitive dust and possible vibration to the Canoe House.

It would also introduce increased noise and glare from nighttime construction. Construction of the Preferred Alternative would also have a visual effect on the Canoe House because construction of the new bascule bridge, the new floating bridge, and the west approach to the floating bridge would all be visible from the Canoe House for the duration of the construction period. Construction of the Preferred Alternative would not diminish the architectural features that make the Canoe House significant. However, the integrity of setting and feeling would be altered, particularly to the west, in the direction of the new bascule bridge, but overall, the integrity of association, materials, workmanship, location, and design would remain intact.

Lake Washington Boulevard (ID# 239)
The segment of Lake Washington Boulevard within the APE is eligible for listing in the NRHP under Criterion A for its association with the citywide Olmsted Brothers' plan for parks and parkways in Seattle. The boulevard also is eligible for listing in the NRHP under Criterion C as a noted work of the master landscape architects John Charles Olmsted and Frederick Law Olmsted, Jr. Where it falls within the boundaries of the Montlake Historic District, it is a contributing element to that district. The Preferred Alternative would affect the integrity of setting and feeling of historic Lake Washington Boulevard.

Construction of the Preferred Alternative could include using portions of Lake Washington Boulevard from 26th Avenue East to Montlake Boulevard East as a potential haul route and detour route after the Lake Washington Boulevard and R. H. Thomson ramps are closed. The setting and feeling of the boulevard could be affected during times of higher traffic use for construction. Traffic increases from these project activities on Lake Washington Boulevard, however, would not alter the significance of this linear resource.

There would be a construction staging area located on the WSDOT right-of-way near the Arboretum, just south of the existing SR 520 (for more information about the staging area, see the *Washington Park Arboretum (ID# 200)* section below). This staging area would be adjacent to Lake Washington Boulevard and could alter the setting and feeling of the roadway for the duration of construction because of continuous use of the area by heavy construction vehicles and machinery. The viewshed in this area near the Arboretum would be affected by the presence of the staging area to the northeast of the boulevard, even though the current viewshed includes the SR 520 exit and entrance ramps. The setting and feeling of Lake Washington Boulevard would be altered during construction by the use of the adjacent staging area.

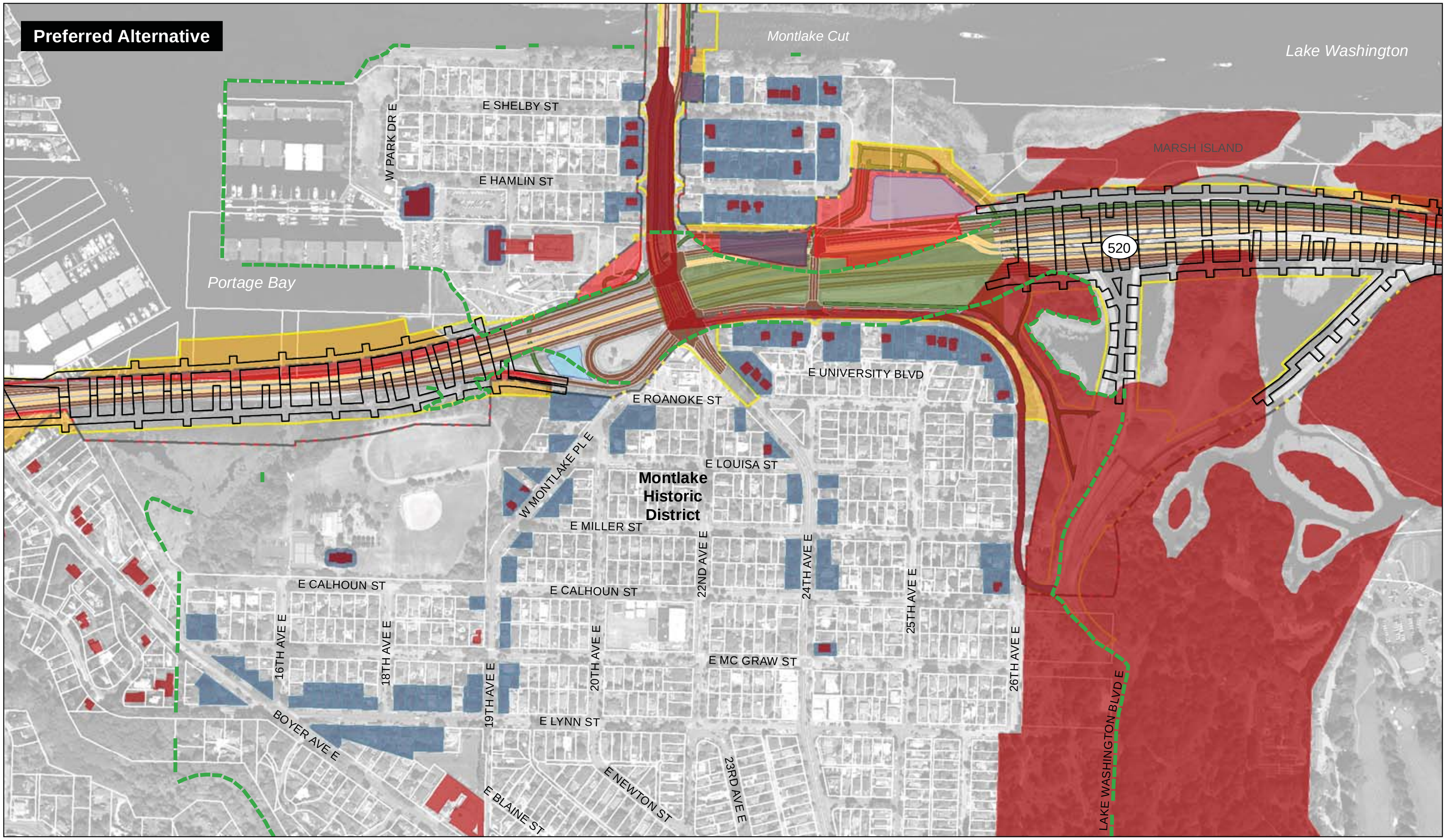
The Preferred Alternative makes physical changes to Lake Washington Boulevard. It requires the removal of all or part of one of the Montlake Boulevard medians between East Hamlin Street and SR 520. It also includes the addition of a new planted median and the widening of Lake Washington Boulevard in the section between Montlake Boulevard and where Lake Washington Boulevard curves to the south. This area would be south of the new Montlake lid and the northern edge of the boulevard would be extended to the north to accommodate the new median. The existing south curb of the eastbound lane would remain in place, and the westbound lane would move to the north side of the new planted median. At the intersection with East Montlake Boulevard, a right-turn lane would be added to the north of the westbound lane. Although construction activities would take place on the roadway to make these changes, the historic alignment of Lake Washington Boulevard would be maintained. The roadway materials, sidewalks, light standards, and other features have been replaced or upgraded as a part of regular maintenance, so the primary physical integrity of the property lies in the location and alignment of the roadway. Integrity of workmanship and materials has already been lost.

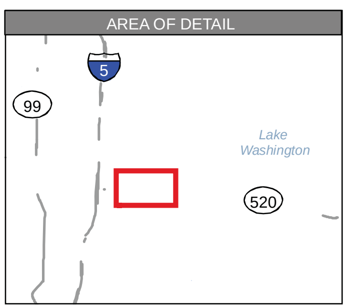
Construction of the Preferred Alternative would introduce periods of increased traffic from haul and detour routes, visual effects from the adjacent staging area and construction activities, and physical construction to make median and lane changes to the roadway. The setting and feeling of Lake Washington Boulevard would be altered by project construction. The historic alignment and transportation purpose of the road would remain intact, and its association with the Olmsted brothers and with Seattle's Olmsted legacy of parks and park boulevards would not be diminished. Because Lake Washington Boulevard is a transportation facility, its integrity of setting and feeling would be altered, but not diminished, during construction.

Montlake Historic District (ID# 238)

The Montlake Historic District is eligible for listing in the NRHP under Criterion C as a significant, cohesive collection of primarily residential architecture typical of the early twentieth century. It also contains the individually listed Seattle Yacht Club and several individually eligible properties as contributing elements. Construction of the Preferred Alternative would result in numerous effects on the Montlake Historic District (Exhibit 7-4), which are described below.

- Increased dust, possible vibration, increased noise, and visual effects from demolition of MOHAI, the Portage Bay Bridge, the west approach, the SR 520 overpasses, and the Lake Washington Boulevard and R. H. Thomson ramps.
- Construction on Lake Washington Boulevard to add a new planted median and a right-turn lane at East Montlake Boulevard.
- Increased dust and possible vibration from construction of the Portage Bay Bridge, west approach, and Montlake lid.
- Increased noise, visual effects, and possible glare from lighting for nighttime construction of the Portage Bay Bridge, west approach, and Montlake lid.
- Possible increased dust and noise, possible vibration, visual effects, and glare from lighting for nighttime construction at the staging areas, which could be used around the clock.
- Intermittent increases in noise, traffic, dust, and possible vibration from haul routes on East Lynn Street, 19th Avenue East, Montlake Place, East Roanoke Street, and 24th Avenue from East Roanoke Street to SR 520.





- Permanent Acquisition
- Construction Easement
- Montlake Historic District
- Proposed Right-of-way
- Existing Right-of-way
- Limits of Construction
- Contributing Resource
- Eligible or Listed Property
- General-Purpose Lane
- HOV, Direct Access, and/or Transit-Only Lane
- Work Bridge
- Stormwater Treatment Facility
- Lid
- Proposed Bicycle/ Pedestrian Path
- Pavement
- Parcel

Source: King County (2006) Aerial Photo, CH2M HILL (2008) GIS Data (Park and Trails). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

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Exhibit 7-4. **Project Elements of the Preferred Alternative in the Montlake Historic District**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

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- Intermittent increases in noise, traffic, dust, and possible vibration from use of Lake Washington Boulevard as a potential secondary haul route and detour route.
- Temporary traffic detours, congestion, and intermittent restricted access to selected areas in the district.
- Visual effects from construction of the new bascule bridge parallel to the Montlake Bridge for properties on the north side of the district; the view of the historic bridge would be impeded during construction.
- Effects on Seattle Yacht Club resulting from the proximity of construction and related effects on boating or social activities.
- Removal of 2904 Montlake Boulevard NE, a contributing element to the district.
- Removal of 2908 Montlake Boulevard NE, a contributing element to the district.
- Permanent acquisition of 1.4 acres of McCurdy Park, 2.8 acres of East Montlake Park, and 1.2 acres of Montlake Playfield.
- Permanent acquisition of land in the southeast corner of the NOAA Northwest Fisheries Science Center parcel.
- Potential effects on ongoing research at the NOAA Northwest Fisheries Science Center as a result of the proximity of construction activities.
- Permanent acquisition of Canal Reserve Land for construction of the Montlake lid, resulting in the loss of mature trees.
- Removal of a portion of the planted median on Montlake Boulevard.
- Change to the district boundaries due to the various property acquisitions.

A constructed wetland for stormwater treatment would be built on most of the site currently occupied by MOHAI, necessitating removal of the MOHAI building and acquisition of McCurdy Park. This project element would also have permanent effects, to be discussed later in this analysis, but construction-related effects are discussed here. The demolition of MOHAI would bring additional noise, and possibly dust and vibration, to the properties along the east end of East Shelby and

East Hamlin streets, and to some properties along Lake Washington Boulevard East. This area would also be used as a staging area, which would be active for the duration of the construction period. This staging area would be available for use 24 hours per day to support mobilization and demobilization of construction. It would house construction vehicles, equipment, materials, and related construction activities. These construction activities would generate dust, noise, and visual interruptions in the district for the duration of construction. The visual and audible impacts associated with the construction staging area would diminish the district's integrity of setting and feeling.

Properties that are contributing elements of the Montlake Historic District and are located near SR 520, including those along Lake Washington Boulevard East and 26th Avenue East, would experience increased noise, fugitive dust, possible vibration, visual effects, and possible glare from lighting for nighttime construction. Actions during which this could occur include, but are not limited to, demolition and construction of the new Portage Bay Bridge, demolition of the 24th Avenue East Bridge over SR 520, demolition of the Montlake Boulevard Bridge over SR 520, construction of the Montlake lid, demolition and removal of the Lake Washington Boulevard ramps and R. H. Thomson Expressway ramps, and demolition and reconstruction of the west approach to the floating bridge. Throughout the construction of the Montlake interchange and lid, lasting approximately 56 months, areas of the historic district would experience increased traffic congestion, along with detours and brief and intermittent restricted access to selected areas. These disruptions would alter the district's integrity of setting.

The Preferred Alternative would convert 6.3 acres of land within the historic district boundaries to transportation right-of-way. These acquisitions would expand the WSDOT right-of-way into the boundaries of the district and reduce the amount of property included in the district. The expanded right-of-way would alter the footprint of the historic district's boundaries. This change in the district boundaries would diminish the integrity of design, setting, and materials of the overall district.

The Preferred Alternative design requires the removal of all or part of one Montlake Boulevard median planting strip between East Hamlin Street and SR 520. Some portion of the median may be replaced with another median of context-sensitive design. Design is ongoing, so the precise actions at this location are not certain. Alteration of the

Montlake Boulevard median would contribute to the overall diminishment of the integrity of setting, feeling, and materials for the Montlake Historic District.

Detour and Haul Routes

Efforts were made to identify designated arterial streets for potential use as haul routes, although final haul routes will be determined by local jurisdictions for those actions and activities that require a street use or other jurisdictional permit. A potential secondary haul route from Delmar Drive would pass along East Lynn Street, north on 19th Avenue East to Montlake Place to East Roanoke Street, and along the northernmost portion of 24th Avenue from East Roanoke Street to SR 520 (Exhibit 6-37). Average haul truck volume along East Lynn Street could be 15 trips per day when used, while the peak number of haul trucks could range up to 120 trucks per day. These peak truck trips could occur over a total of approximately 60 nonconsecutive days, spread intermittently over the construction duration (70 months). Haul route traffic on East Roanoke Street at Montlake Place East could average up to 20 trucks per day for the duration of construction in the area (66 months). Construction activity would likely peak for 60 nonconsecutive days, and could result in peak haul route volumes as high as 290 trucks per day.

Lake Washington Boulevard from the SR 520 exit ramps north and west to the intersection with Montlake Boulevard East could be used as a potential haul route. Construction could also include using portions of Lake Washington Boulevard from 26th Avenue East to Montlake Boulevard East as a potential detour route after the Lake Washington Boulevard and R.H. Thomson ramps are closed.

As described earlier, the integrity of setting and feeling of historic properties along haul routes in the Montlake Historic District would be temporarily diminished during construction. Hauling could diminish the setting and feeling of the historic district by exposing the contributing elements of the district and individually eligible properties along Montlake Boulevard East, West Montlake Place East, East Roanoke Street, East Lynn Street, 19th Avenue East, Lake Washington Boulevard, and a small part of Boyer Avenue East to increased traffic, noise, and fugitive dust from the haul trucks. Construction effects would occur intermittently, and none would be permanent.

Conclusion

In summary, there would be effects on the Montlake Historic District from construction of the Preferred Alternative. The combined construction effects on the historic district as a whole would exert considerable pressure on the district. Construction staging would occur both within and immediately adjacent to the historic district. The district would experience effects from construction activities in Lake Washington, Union Bay, and Portage Bay for the duration of construction in these areas (lasting for 5 to 6 years). Despite WSDOT's efforts to avoid and minimize effects from construction, the overall construction effects of the Preferred Alternative on the Montlake Historic District would diminish the integrity of the characteristics that qualify the historic district for listing in the NRHP, including setting and feeling.

West Approach Segment

Washington Park Arboretum (ID# 200)

The Arboretum is eligible for listing in the NRHP as a historic designed landscape under Criterion A for its association with the Alaska-Yukon-Pacific Exposition, the UW, the WPA, and the Olmsted Brothers' parks and parkways system of Seattle, and under Criterion C for its design by the Olmsted Brothers as well as the many other talented designers and architects who have contributed to it.

In the Arboretum, the Preferred Alternative would cross Foster Island with a pier and span bridge that would require acquisition of 0.5 acre of land on Foster Island. Construction activities would include a work bridge located on the island that would be removed after the permanent structure is completed. There would also be 1.6 acres of construction easements on Foster and Marsh islands for the duration of construction. Construction in the west approach area in and adjacent to the Arboretum is planned to take approximately 5 years.

Potential impacts on the Arboretum include dust and vibration from demolition of the Lake Washington Boulevard and R.H. Thomson ramps and visual intrusion from the construction staging area to be located in the area after the ramps are removed.

Demolition of the Lake Washington Boulevard and R.H. Thomson ramps would occur entirely on WSDOT-owned property, but adjacent park areas could experience fugitive dust, noise, visual effects, and vibration. This construction activity would affect the setting and feeling of the northern portion of the Arboretum. Construction effects from the demolition of the ramps would not diminish the significance for the historic property because the existing visual and audible intrusion of the existing ramps and elevated SR 520 bridge already affects the setting in this area.

The WSDOT right-of-way area south of SR 520 between the ramps and Lake Washington Boulevard was historically part of the Arboretum and is part of the historic property, but it lacks integrity due to intrusions since the construction of SR 520 in the 1960s. During construction, part of this area would be a construction staging area. The staging area would be active for the duration of the construction period in the Seattle study area. This would be the largest of the project staging areas and would be heavily used because of its proximity to all major project elements and because it is located on WSDOT right-of-way. This staging area would be available for use 24 hours per day to support mobilization and demobilization of construction. It would house construction vehicles, equipment, materials, and related construction activities. These construction activities would generate dust, noise, and visual interruptions near active park areas for the duration of construction. No staging would occur outside of the WSDOT right-of-way in this area, but the construction activity would be near some park activities in the northern part of the Arboretum. The construction staging area would cause a visual and audible effect on the setting and feeling of the park during construction, but it would not diminish these, or other, aspects of integrity.

During construction of the Preferred Alternative, the Lake Washington Boulevard ramps to and from SR 520 would be closed and traffic would use the Montlake interchange instead. When the ramps are closed, more traffic would travel through the Montlake/SR 520 interchange during periods of construction, instead of through the Arboretum.

Effects from construction may alter the Arboretum's integrity of setting and feeling during construction, but the Preferred Alternative would not diminish any aspect of this property's integrity. The features of this designed landscape were created to provide education and public beautification. The construction effects would not reduce the Arboretum's historic associations or the design features that make the Arboretum significant.

Edgewater Condominiums (ID# 226)

The Edgewater Condominiums in the West Approach segment of the Seattle study area are eligible for listing in the NRHP under Criterion C as part of a multiple property nomination for Seattle apartment buildings. They are recognized as a distinctive architectural type and as the work of master architect John Graham, Jr. The property is located on the shoreline south of the existing floating bridge and east of the Arboretum, and has a clear view of the bridge (Exhibit 7-1g). The Edgewater Condominiums would experience increased noise from demolition and construction of the west approach to the Evergreen Point Bridge, as well as potential glare from nighttime construction activities. These construction impacts would occur during demolition and reconstruction of the west approach, as well as construction of the work bridges and the replacement floating bridge. Furthermore, WSDOT has determined that to most efficiently construct the replacement floating bridge, an additional barge or barges may be needed in this location for construction staging, and they may be anchored there temporarily during construction. The duration such a barge would be needed is unknown at this time.

These actions would alter the Edgewater Condominiums' integrity of setting and feeling during construction of the Preferred Alternative. Integrity of setting and feeling of the historic property would also be altered by increased noise and glare during construction, but these effects would not diminish the integrity of this historic property.

Lake Washington Study Area

Archaeological Resources and Traditional Cultural Properties

There are no known NRHP-eligible archaeological resources or TCPs in the Lake Washington study area.

Historic Built Environment

The Preferred Alternative would remove the existing Evergreen Point Bridge (ID# 202) and construct a new floating bridge across Lake Washington. This would necessitate the demolition and removal of the current structure, which has been determined eligible for listing in the NRHP. The physical destruction of the Evergreen Point Bridge meets the criteria of adverse effect, defined in 36 CFR 800.5(a)2(i) as "[p]hysical destruction of or damage to all or part of the property."

Eastside Transition Study Area

Archaeological Resources and Traditional Cultural Properties

No NRHP-eligible archaeological resources or TCPs were identified through research and subsurface archaeological testing in the Eastside transition study area.

Historic Built Environment

The NRHP-eligible Arntson (ID# 234) and Dixon (ID# 227) houses, and the WHR-eligible Pierce House (ID# 231) would experience moderately increased noise levels, fugitive dust, and possible vibration associated with demolishing the east approach of the Evergreen Point Bridge and construction of the new east approach structure (Exhibit 7-1g). Both the Arntson and Dixon houses could experience fugitive dust and noise increases associated with construction of the bridge operations facility and dock located under the approach area. Most of these effects would occur intermittently, and none would be permanent. These resources' integrity would not be altered during construction.

Pontoon Production Sites

Construction of the pontoons would not affect any known historic properties within the APE for this project. The types of activities required for pontoon production are similar to the current activities and uses of the buildings at the CTC facility. Because the four NRHP-eligible buildings at CTC function as part of an industrial zone, the activities required by this project would not alter or diminish any aspect of these historic properties' integrity. Additionally, the NRHP-listed Fire Station # 15, also part of this industrial zone, would not be used or directly impacted by this project, and no aspect of integrity would be altered or diminished.

The Port of Olympia is no longer being considered as a potential site for pontoon production, so the NRHP-eligible main office would not be affected by this project.

Section 6(f) Replacement Properties

Selected properties that are protected under Section 6(f) of the LWCF Act would be converted by the project from public outdoor recreation land to transportation right-of-way. This includes a portion of Foster Island; a portion of the Arboretum; and a portion of East Montlake Park and the Ship Canal Waterside Trail, which are within the Montlake Historic District. Four historic properties were identified on sites that were considered for replacement property to fulfill the requirements of Section 6(f): the Bryant Building site at 1139–1299 NE Boat Street in the Seattle study area, and 10034 Rainier Avenue, 10036 Rainier Avenue, and 10038 Rainier Avenue in the Lake Washington study area. This undertaking identified and evaluated those historic properties to help inform the decision by the Section 6(f) grantees—the UW and the City of Seattle—of which sites they would select to serve as replacement properties for park and recreation lands converted to transportation use as part of the Preferred Alternative.

As of publication of this document, the Section 6(f) replacement site selected by the UW and the City of Seattle is the Bryant Building site, a multicomponent warehouse and commercial building with several docks. As discussed in Chapter 5 of this report, the Bryant Building is eligible for listing in the NRHP under Criteria A and C.

To comply with Section 6(f), the Bryant Building would need to be converted to recreational use, an action that would likely result in full or partial demolition of the property. If this were to occur, the removal of the building would result in an adverse effect on this historic property. However, if these or other future actions taken to develop the property result in an adverse effect, the U.S. National Park Service (NPS), as the responsible federal agency, would initiate Section 106 consultation for that undertaking and would resolve any adverse effects through the Section 106 process. FHWA and WSDOT are not responsible for the development of the property for recreational use; therefore, the Preferred Alternative would have no effect on this historic property.

Further, the conversion of portions of Foster Island, a portion of the Arboretum, and a portion of East Montlake Park and the Ship Canal Waterside Trail from public recreation land could result in an adverse effect. According to 36 CFR 800.5(a)(2)(vii), the transfer of property out of federal control, and the resulting removal of restrictions that serve to protect its historic significance, constitute an adverse effect. Therefore, the approval of conversion of this property to transportation right-of-way, removing it from NPS protection, could be an adverse effect. The NPS, as the federal agency that would be relinquishing the protection, would be responsible for determining this adverse effect in consultation with the SHPO.

For more information on the Section 6(f) process, see Chapter 10 of the Final EIS and the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Section 6(f) Environmental Evaluation* (Attachment 15 to the Final EIS).

Summary of Preferred Alternative Construction Effects

The prolonged construction period, as well as some effects during construction, would affect historic properties within the APE. As described, construction of the Preferred Alternative would have an adverse effect on historic properties.

A Programmatic Agreement has been developed, in consultation with the SHPO, ACHP, and other Section 106 consulting parties, which identifies means to avoid, minimize, and mitigate this adverse effect from construction of the project. Measures included in the Programmatic Agreement are presented in Chapter 8 of this Cultural Resources Assessment Discipline Report. A copy of the Section 106 Programmatic Agreement is provided in Attachment 9 to the Final EIS.

Effects from Operation

No Build Alternative

Under the No Build Alternative, SR 520 would continue to operate as it does today, as a four-lane highway with nonstandard shoulders and without a bicycle/pedestrian path. Under this alternative, the beneficial effects of the Preferred Alternative that are described below would not be realized. The No Build Alternative provides the baseline for analyzing effects on historic properties.

Archaeological Resources and Traditional Cultural Properties

The No Build Alternative and the continued use of SR 520 and the existing Evergreen Point Bridge would not generate any additional effects on archaeological resources or TCPs in the APE.

Historic Built Environment

Under the No Build Alternative, current conditions would remain, most notably visual intrusion from I-5, SR 520, and the Portage Bay Bridge. Air pollution and noise from vehicles traveling on the freeways would continue to affect surrounding properties.

The Chung House is immediately adjacent to I-5 and experiences highway-related noise, air pollution, and visual intrusion. To a lesser degree, as they are somewhat buffered from I-5 by surrounding parcels, the following properties could experience the same effects:

- Talder House (ID# 20)
- Sugamura House (ID# 23)
- Wicklund-Jarr House (ID# 25)
- East Miller Condominium (ID# 22)
- Glover Homes Building (ID# 26)
- Keuss Building (ID# 27)

The following are all adjacent to I-5 and experience similar highway-related noise, vibration, air pollution, and visual intrusion on the historic setting and feeling of the properties:

- Seward School (ID#10)
- Gilmore House (ID# 15)
- Shelby Apartments (ID# 14)
- L'Amourita Apartments (ID# 16)
- Franklin Apartments (ID# 17, 18)

The existing I-5 and SR 520 are immediately adjacent to the Roanoke Park Historic District, which experiences highway-related noise and air pollution, as well as the visual intrusion of the freeways and, to a lesser degree, the Portage Bay Bridge. The physical presence of the freeways, and emissions and noise from vehicles traveling on them, affect the historic feeling and setting of the district. The William H. Parsons House is immediately adjacent to I-5 and experiences highway-related noise and air pollution, as well as the visual intrusion of the freeway.

The following are adjacent to SR 520 and experience highway-related noise and air pollution, as well as the visual intrusion of the freeways and the Portage Bay Bridge:

- Fire Station #22 (ID# 36)
- Boyd House (ID# 39)
- Gunby House (ID# 45)
- Mason House (ID# 48)
- Kelley House (ID# 52)

The Mason, Gunby, and Kelley houses are close to the base of the Portage Bay Bridge, so the bridge is very visible, constituting a high degree of visual intrusion.

The existing SR 520 bisects the Montlake Historic District, so the district is exposed to highway-related noise, vibration, and air emissions, as well as the visual intrusion. The highway forms a physical barrier that isolates one side of the neighborhood from the other and interrupts the connection between the north and south portions of the neighborhood. The northern section of the Arboretum was also heavily affected by the initial construction of SR 520, and current effects would continue under the No Build Alternative. These effects include noise, air pollution, vibration, and visual intrusion, plus the physical presence of SR 520 and the R.H. Thomson Expressway ramps, and SR 520 dividing Foster Island.

Lake Washington Boulevard, the Edgewater Condominiums, and the 13 NRHP-eligible structures on the UW campus would not be affected under the No Build Alternative. The Edgewater Condominiums experience visual intrusion and some noise from the Evergreen Point Bridge because the property is located on the shoreline, and many units have a view north to the lake and the Evergreen Point Bridge. Those effects would not change under the No Build Alternative. The No Build Alternative assumes that continued maintenance would allow the Evergreen Point Bridge and Lake Washington Boulevard to operate as they do currently. They would experience continued transportation use and routine maintenance, with no increased effects on historic properties.

On the Eastside, the No Build Alternative would not have any additional effects on historic properties. Conditions would remain as they are currently. The most notable current effects are visual intrusion from SR 520 and the bridge approach, and noise from vehicles traveling on them. The existing SR 520 is adjacent to the Arntson and Pierce houses. These properties experience highway noise, air pollution, and visual intrusion from the highway. The historic setting of the Pierce House, which is located at the base of the Evergreen Point Bridge, is strongly affected by the physical, visual, and audible presence of the bridge. The Dixon House is further removed from the existing bridge and approach, but is exposed to some visual intrusion from these structures.

Preferred Alternative

Seattle Study Area

Archaeological Resources and Traditional Cultural Properties

Foster Island

The Preferred Alternative would cross Foster Island with a pier and span bridge that would require acquisition of 0.5 acre of land on Foster Island and require expanding the right-of-way to the north of the existing alignment.

The visualization in Exhibit 7-5 shows the existing and proposed view looking south from the northern portion of Foster Island along the trail toward SR 520 during operation of the highway. Exhibit 7-6 shows the view looking northwest toward the south entrance of Foster Island. Operation of SR 520 would include maintenance activities on Foster Island, possibly including ground-disturbing work such as utilities trenching or sign installation. In consultation with interested and affected tribes, WSDOT has determined that operation of the Preferred Alternative would diminish the integrity of the Foster Island TCP.

Historic Built Environment

I-5/Roanoke and Portage Bay Segments

Operation of the Preferred Alternative could create effects on historic properties from changes in the noise levels. Just east of the Roanoke Park Historic District at the Gunby House, the current sound level is 64 dBA. Under the Preferred Alternative, the sound level would decrease here by 4 dBA, from 64 dBA to 60 dBA.

Noise modeling shows that current sound levels range from 65 to 73 dBA at the following locations (see the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Noise Discipline Report Addendum and Errata* in Attachment 7 to the Final EIS):

- Talder House (ID# 20)
- Sugamura House (ID# 23)
- Wicklund-Jarr House (ID# 25)
- East Miller Condominium (ID# 22)
- Glover Homes Building (ID# 26)
- Keuss Building (ID# 27)

Under the Preferred Alternative, noise levels at the above locations would continue to exceed the noise abatement criterion (NAC) of 66 dBA, although noise levels would generally decrease by 1 to 2 dBA, a change not perceptible to the human ear. In one location, noise models demonstrate that noise would increase by 2 dBA, but again, this change would be imperceptible.

To the north of SR 520, at the Boyd House, the current average sound level is 64 dBA. Under the Preferred Alternative, the level would drop by 3 dBA. In the vicinity of the Mason and Kelley houses, the current sound level is between 67 and 70 dBA, and the Preferred Alternative would potentially reduce noise in this area by 4 to 9 dBA. For more information on the projected noise levels, see the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Noise Discipline Report* and the *Noise Discipline Report Addendum and Errata* (both reports are provided in Attachment 7 to the Final EIS).

Existing View

- SR 520 screened by roadside trees and shrubs
- Mature woods

Preferred Alternative

- Roadside plantings still young; will screen part of the bridge when mature
- Improved connections between north and south Foster Island

Exhibit 7-5. **Visualization Looking South from Foster Island along the Trail toward SR 520**

Existing View

- Approach to pedestrian tunnel under west side of bridge
- Chain link fence marking right-of-way boundary

Preferred Alternative

- New west approach bridge
- Increased clearance and open space

Exhibit 7-6. **Visualization Looking toward the Northwest at Foster Island**

In summary, noise effects of the Preferred Alternative would not alter the integrity of the above-listed historic properties because overall noise in this segment would be reduced compared to existing conditions.

Operation of the Preferred Alternative could cause effects on historic properties from the HOV ramp and the 10th and Delmar lid. The proposed HOV ramp over I-5 would be roughly 30 feet wide and approximately the same height as the existing ramp on the east end. It would be approximately 15 feet higher than the existing ramp at the west end as it turns and heads south. The new HOV ramp could be visible from the following historic property locations and would have a minor permanent effect, altering the integrity of setting of these properties:

- Seward School (ID# 10)
- Talder House (ID# 20)
- Sugamura House (ID# 23)
- East Miller Condominiums (ID# 22)
- Fire Station #22 (ID# 36)

This new HOV ramp would be adjacent to the existing ramp and would be consistent with the visual quality of the existing interchange. Exhibit 7-7 shows the view looking northwest toward Lake Union, Queen Anne, and the Aurora Bridge under existing conditions and under the Preferred Alternative.

Under the Preferred Alternative, an enhanced bicycle and pedestrian path would be added to the south side of the existing East Roanoke Street Bridge over I-5, which would be visible from the properties with a view of the existing overpass. This would be a visual change for the historic properties in the area, but would be a positive effect in comparison to existing conditions.

The existing bridges at 10th Avenue East and Delmar Drive East would be replaced by a single lid that would accommodate both streets and would be landscaped to create a visual link with Roanoke Park. It would provide a pedestrian passageway between the North Capitol Hill and the Portage Bay/Roanoke Park neighborhoods currently separated by SR 520, increase landscaped green space in the area, and reduce noise levels for some properties. The lid would serve to visually shield many of the historic properties from the effects of the wider SR 520 roadway.

Existing View

- I-5 and existing ramp
- View toward Lake Union, Queen Anne and Aurora Bridge

Preferred Alternative

- New HOV ramp to SR 520
- View toward Lake Union, Queen Anne and Aurora Bridge

Exhibit 7-7. **Visualization Showing the HOV Ramp over I-5, Facing West**

To a lesser extent, because they are located farther from the lid, the following properties could experience some reduced noise and visual effects from the landscaped lid over SR 520:

- Wicklund-Jarr House (ID# 25)
- Glover Building (ID# 26)
- Keuss Building (ID# 27)

Operation of the new Portage Bay Bridge element of the Preferred Alternative could affect historic properties. The new Portage Bay Bridge profile would match the existing profile for the western half of the bridge with a 5 percent grade. To remove a low point on the eastern half of the existing bridge, the grade would be adjusted to 0.5 percent beginning at approximately the midpoint of the bridge and continuing to the east. As a result, the new bridge would be less than 15 feet higher than the existing bridge at the lowest existing point of the bridge. The new bridge would not block views from the properties on the east bank to other notable buildings or natural resources within the existing viewshed, including, but not limited to, Portage Bay, Montlake Cut, Seattle Yacht Club, NOAA Northwest Fisheries Science Center buildings, UW, or Queen City Yacht Club.

Compared to the existing bridge, the new Portage Bay Bridge would be approximately 40 to 60 feet wider, less than 15 feet higher at the lowest point of the existing bridge, and would have 60 fewer columns. Although it would be wider, it would visually seem less dense because of the smaller number of columns. Speed limits on the bridge would be reduced from 60 to 45 mph, and a planted median would be added down the center to make it similar to a park boulevard. Typically a speed reduction of 10 mph can result in a reduction in traffic noise of up to 3 dBA; a change that is perceptible to the human ear. Construction of the new Portage Bay Bridge would alter the integrity of setting of all historic properties with a view of the bridge.

Roanoke Park Historic District (ID# 37)

There would be no land acquisition or physical impacts on any part of the Roanoke Park Historic District, its sidewalks, or other street features outside the WSDOT right-of-way on East Roanoke Street. The 10th and Delmar lid has been redesigned to avoid the district. The lid would shift to the south, leaving room to reconfigure the 10th Avenue East and East Roanoke Street intersection without changing the sidewalks in the district.

Operation of the Preferred Alternative would alter the Roanoke Park Historic District's integrity of setting because of the following project elements:

- Visual change to the setting from the new HOV ramp on I-5 for selected properties on the western edge of the district
- Visual change to the setting from the new Portage Bay Bridge and the possibility of noise walls on the bridge
- Decreased noise from lowering the speed limit to 45 mph on the Portage Bay Bridge, and from using 4-foot concrete traffic barriers with noise-absorptive coating
- New physical and visual connections to the adjacent neighborhoods as a result of the 10th and Delmar lid over SR 520
- Visual change to the setting from the new bascule bridge over the Montlake Cut from properties on the eastern edge of the district

Under the Preferred Alternative, an enhanced bicycle and pedestrian path would be added to the south side of the existing East Roanoke Street Bridge over I-5, which would be visible from some contributing properties near this intersection. Also, the existing bridges at 10th Avenue East and Delmar Drive East would be replaced by a single lid that would accommodate both streets and would be landscaped to create a visual link with Roanoke Park. The lid would provide a pedestrian passageway between the North Capitol Hill and the Portage Bay/Roanoke Park neighborhoods, which are currently separated by SR 520; would increase landscaped green space in the area; and would reduce noise levels for some properties. The lid would also serve to visually shield many of the historic properties from the effects of the wider SR 520 roadway.

The new Portage Bay Bridge would have a visual effect on portions of the Roanoke Park Historic District. The new bridge would be less than 15 feet taller than the existing bridge on the eastern end, but would have the same profile on the western end, closest to the district and would be approximately 40 to 60 feet wider than the existing bridge. Exhibit 7-8 shows the views of Portage Bay Bridge looking southeast from Edgar Street under existing conditions and under the Preferred Alternative. The visual effect from the new bridge would be most pronounced for houses on the east side of 10th Avenue East between

Existing View

- 4-lane Portage Bay Bridge
- Mature residential landscapes

Preferred Alternative

- 6-lane Portage Bay Bridge
- Design of aesthetic bridge treatment to be determined

Exhibit 7-8. **Visualization Looking Southeast toward Portage Bay Bridge from Edgar Street near the Roanoke Park Historic District**

East Roanoke Street on the south and just north of East Shelby Street on the north. Those houses currently have direct views of the existing Portage Bay Bridge.

The bridge's wider profile and increased height on the western end would have a visual effect on the setting and feeling of the Roanoke Park Historic District and the contributing elements that have a view of the bridge. A wider west end of the bridge would affect views from the houses next to the bridge on the north side, which would make the bridge more dominant in eastward views. However, the new Portage Bay Bridge would not alter the integrity of design, materials, workmanship, location, or association of the district, which is listed in the NRHP for its association with the broad patterns of history and for its intact architectural features. The new bridge would alter the integrity of setting and feeling of the Roanoke Park Historic District. Approximately a third of the contributing properties in the district (roughly 30 to 35 properties, depending on the season) would have views of the replacement bridge.

The historic Montlake Bridge is also part of the distant viewshed of the Roanoke Park Historic District. The new bascule bridge on the east side of the historic bridge would be visible primarily from the rear of houses on 10th Avenue East between East Hamlin and East Shelby streets. The new bascule bridge would not obscure the view of the original Montlake Bridge from these houses, and would be only slightly visible beyond the historic bridge from this vantage point. The new bridge would not block views from the district of any other notable buildings or natural resources, including, but not limited to, the Montlake Cut, the Seattle Yacht Club, or the NOAA Northwest Fisheries Science Center buildings. Although it alters the setting and feeling of some contributing properties, the visual effect of the new bascule bridge would be minor because of the distance of the historic bridge from the district, and the location of the new bridge on the east side of the existing bridge.

The noise levels for the Preferred Alternative would be substantially the same in the Roanoke Park Historic District, as analyzed in the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Noise Discipline Report Addendum and Errata* (see Attachment 7 to the Final EIS). That report states:

> With the Preferred Alternative fewer receivers [in the Portage Bay/Roanoke neighborhood] would exceed the NAC compared

to the No Build Alternative noise levels due to noise-reducing effects of the 10th Avenue East/Delmar Drive East lid, the 4-foot noise-absorptive traffic barriers, and the lower posted speed limit of 45 mph across the Portage Bay structure. Twenty-two residences would exceed the NAC under the Preferred Alternative compared to 24 residences with the No Build Alternative.

In summary, operation of the Preferred Alternative would alter the Roanoke Park Historic District's integrity of setting and feeling as a result of the new Portage Bay Bridge, Montlake Bridge, and the 10th and Delmar Drive lid, but would not diminish any of the defining characteristics of the district.

Montlake Segment

Montlake Community Center (ID# 126)

The new Portage Bay Bridge would be visible from the Montlake Community Center Tudor Building in the Montlake Playfield, but it would be a minor change from the view under existing conditions. The existing Portage Bay Bridge is partially screened from the historic Montlake Community Center by the adjacent gymnasium building and existing park vegetation. The lower speed limit on the new bridge and the addition of 4-foot concrete traffic barriers with noise-absorptive coating could reduce the noise levels at the Montlake Community Center Tudor Building.

The integrity of the historic Montlake Community Center would not be altered by operation of the Preferred Alternative.

NOAA Northwest Fisheries Science Center (ID# 56)

The existing Portage Bay Bridge is roughly 280 feet from the southwest corner of the NOAA Northwest Fisheries Science Center West Wing building, which is the corner closest to SR 520. The new bridge would be approximately 170 feet from the southwest corner of this building. Therefore, the new Portage Bay Bridge would be about 110 feet closer to the historic NOAA buildings than the current bridge. Also, the Bill Dawson bicycle and pedestrian trail would be relocated along part of the south and east perimeter of the NOAA property. These elements of the Preferred Alternative would alter the NOAA property's integrity of setting and feeling during operation.

The new Portage Bay Bridge would be less than 15 feet taller on the eastern end, but would have the same profile on the western end and would be approximately 40 to 60 feet wider than the existing bridge, increasing the visual effect of the bridge from this viewpoint. Although there would be a visual effect on the setting and feeling of the historic NOAA buildings, it would not be a significant change from the existing condition. There would be no anticipated increase in vibration from operation of the new bridge; vibration levels would be substantially the same as the current levels from traffic on the existing bridge and this is not anticipated to interfere with scientific activities at the center. The current noise level at the NOAA property is between approximately 66 and 69 dBA. Under the Preferred Alternative, the noise level would decrease to between approximately 62 and 64 dBA (see the *Noise Discipline Report Addendum and Errata* provided in Attachment 7 to the Final EIS). The 1931 Fisheries Building, which is individually NRHP-eligible under Criteria A and C, and also is a contributing element to the Montlake Historic District, would maintain its view north to Portage Bay. The property would retain its shoreline on the bay, and all of the property immediately surrounding the historic building would be retained. The setting of the two buildings connected to the 1931 Fisheries Building, which were built in 1965 and 1966 and are also eligible for listing in the NRHP under Criteria A and C, would be affected by the view of the new Portage Bay Bridge.

The integrity of setting and feeling of the NOAA Northwest Fisheries Science Center would be altered by operation of the Preferred Alternative by the new Portage Bay Bridge and by the relocation of the bicycle and pedestrian path along part of the south and east perimeter of the NOAA property. It would retain integrity of location, association, design, workmanship, and materials. In summary, operation of the Preferred Alternative would not diminish the integrity of NOAA Northwest Fisheries Science Center.

Seattle Yacht Club (ID# 55)

As stated previously, the new Portage Bay Bridge would operate approximately 110 feet north of the current bridge, which makes the bridge closer to the Seattle Yacht Club. Although the setting of the Seattle Yacht Club would be affected by this closer location, the visual effect would not be significant. See Exhibit 7-9 for a visualization of the view of the bridge from the Seattle Yacht Club under the Preferred Alternative. The current noise level at the Seattle Yacht Club is approximately 66 dBA. Under the Preferred Alternative, noise levels would decrease by approximately 5 dBA (see the *Noise Discipline Report Addendum and Errata* provided in Attachment 7 to the Final EIS), a change that would be noticeable to the human ear.

Existing View

- 4-lane Portage Bay Bridge in distance
- Seattle Yacht Club marina (middle ground) and lawn

Preferred Alternative

- 6-lane bridge with westbound managed shoulder
- 4-foot concrete traffic barriers
- Bridge design and aesthetic treatments to be determined

Exhibit 7-9. **Visualization of the View from the Seattle Yacht Club toward the Portage Bay Bridge**

The Seattle Yacht Club's integrity of setting would be altered during operation of the Preferred Alternative by the larger, closer bridge, but the property would retain integrity of feeling, location, association, design, workmanship, and materials.

Montlake Bridge (ID# 54)
A new bascule bridge would be constructed parallel and to the east of the historic Montlake Bridge, diminishing the historic bridge's integrity of setting and feeling. Other aspects of integrity—location, design, materials, workmanship, and association— would not be altered or diminished. There currently is a clear view of the historic bridge from many vantage points east and west of the bridge on the north and south sides of the Montlake Cut, as well as from the cut itself and from Lake Washington.

The bridge is primarily a part of the viewshed of the UW, the Canoe House, the Montlake Historic District, and the Montlake Cut, but is also visible as far away as the Roanoke Park Historic District. This is an iconic bridge that is a part of the community's viewscape. Views from the bridge for those crossing it would also be affected by an adjacent bridge. The Montlake Bridge is shown under existing conditions and under the Preferred Alternative in Exhibit 7-10, as seen from the northeast corner East Montlake Park looking west along the Montlake Cut.

Operation of the Preferred Alternative would diminish the integrity of setting and feeling of the historic Montlake Bridge due to the changes from the adjacent new bascule bridge.

Canoe House (ID# 203)
The new bascule bridge over the Montlake Cut would have a visual effect on the Canoe House, which is listed in the NRHP. The Canoe House currently has a clear, unobstructed view of the historic Montlake Bridge. The new bridge would be constructed on the east side of the historic bridge, so the view of the historic bridge from the Canoe House would be at least somewhat obstructed by the new bridge structure. The Canoe House would also have an open view of the west approach to the floating bridge and the floating bridge itself. These structures would be up to 20 feet higher than they are currently. The current sound level near the Canoe House is approximately 55 dBA, and would increase to 58 dBA under the Preferred Alternative (see the *Noise Discipline Report Addendum and Errata* provided in Attachment 7 to the Final EIS).

Existing View

- Historic Montlake Bridge
- Mature vegetation on both sides of the channel

Preferred Alternative

- New bascule bridge in front of the Historic Montlake Bridge
- Design and aesthetic treatments to be determined

Exhibit 7-10. **Visualization of the Montlake Bridge Looking West along the Montlake Cut from East Montlake Park**

Operation of the Preferred Alternative would diminish the Canoe House's integrity of feeling and setting, but would not alter other aspects of integrity.

Montlake Cut (ID# 53)

The Montlake Cut is a navigable waterway with an existing bascule bridge crossing, listed under Criterion C for its engineering significance. The cut would be permanently affected because the view of the historic Montlake Bridge from the east end of the cut would be partially blocked by the new bascule bridge, which would alter its integrity of setting and feeling. Also, a small portion of the shores of the Montlake Cut would be acquired for placement of the second bascule bridge.

Although the presence of an additional bascule bridge of similar size adjacent to the existing bridge would alter the integrity of setting and feeling of the Montlake Cut, it would continue to operate as a navigable waterway as designed, which would not be impeded in any way by operation of the SR 520, I-5 to Medina project. The integrity of design, materials, location, workmanship, and association would remain intact. Operation of the Preferred Alternative would not diminish the qualities that make the Montlake Cut significant.

Lake Washington Boulevard (ID# 239)

The segment of Lake Washington Boulevard surveyed for this project extends from Madison Street on the south to the edge of the UW campus at NE Pacific Avenue on the north. The Preferred Alternative makes permanent physical changes to Lake Washington Boulevard, but it would remain in the same alignment as when it was designed from 1904–1907. As described below, under the Preferred Alternative, Lake Washington Boulevard would be adjacent to the new landscaped lid instead of the current grade-separated SR 520, which would reduce noise overall and alter the setting. The design of the new lid is intended to be sympathetic to the original conditions of the park boulevard. The changes to Lake Washington Boulevard would alter its integrity of feeling, setting, and design, but would not alter the integrity of association or location of the linear property, which would continue its original purpose as a transportation facility. Integrity of workmanship and materials has already been diminished.

The Preferred Alternative also includes the addition of a new planted median on Lake Washington Boulevard in the section between

Montlake Boulevard and where Lake Washington Boulevard curves to the south. This area would be south of the new Montlake lid.

The existing south curb of the eastbound lane of Lake Washington Boulevard would remain in place, and the westbound lane would move to the north side of the new planted median. At the intersection with East Montlake Boulevard, there would be an added right-turn lane to the north of the westbound lane. The historic alignment of Lake Washington Boulevard would be maintained. The roadway materials, sidewalks, light standards, and other features have been previously replaced or upgraded as a part of regular maintenance, so the primary physical integrity lies in the location and alignment of the roadway.

The addition of a planted median on East Lake Washington Boulevard would provide an enhancement to the park boulevard that incorporates visual screening, in keeping with the Olmsted Brothers' philosophy of blending pragmatic and picturesque design, and of providing visually appealing parkway transportation corridors (Takami and Keith 2003; Levee 2000). Exhibit 7-11 shows existing conditions and a visualization of the Preferred Alternative with the planted median on Lake Washington Boulevard. To accommodate the median, the westbound lane would be extended to the north, toward the new landscaped lid.

Removal of the SR 520 Lake Washington Boulevard ramps and R.H. Thomson Expressway ramps would eliminate a large intersection that was not part of the original boulevard plan. As a result of the ramp removal and other design features, the average daily trip volume on Lake Washington Boulevard in the Arboretum would be reduced compared to existing conditions (see the *Transportation Discipline Report* in Attachment 7 to the Final EIS).

Under the Preferred Alternative, the boulevard would be adjacent to the new landscaped lid instead of the current grade-separated SR 520, which would enhance the setting, reduce noise, and be more in keeping with the original conditions of the park boulevard. As described above, all or part of a median in the Montlake Boulevard section would be removed; a new planted median would be added to a section of East Lake Washington Boulevard; and a turn lane would be added where East Lake Washington Boulevard intersects with Montlake Boulevard. These changes would alter the setting and feeling of this segment of historic Lake Washington Boulevard in the APE. Operation of the Preferred Alternative would not diminish the integrity of Lake

Existing View

- West terminus of Lake Washington Boulevard at Montlake Boulevard
- Established planter along the north side of the Park Boulevard

Preferred Alternative

- New plantings in medians
- Montlake lid in background

Exhibit 7-11. **Visualization Showing the Lake Washington Boulevard Planted Median Looking Northeast**

Washington Boulevard, which would continue its original purpose as a park boulevard and transportation facility.

Montlake Historic District (ID# 238)

Operation of the Preferred Alternative would alter the integrity of setting and feeling of the Montlake Historic District. The following is a listing of effects on the district from operation:

- Change to setting and feeling of the district caused by the wider and higher profile of the eastern section of the Portage Bay Bridge
- Change to setting and feeling of the district caused by the presence of the additional bascule bridge immediately adjacent to the historic Montlake Bridge
- Change to setting and feeling from adding a planted median on Lake Washington Boulevard south of the lid
- Change to setting and feeling of the district as a result of the new Montlake lid

After the two historic properties on Montlake Boulevard NE are removed for bascule bridge construction and the new bascule bridge is completed, this change in view and use of the land would alter the setting of the northern portion of the district, particularly for three adjacent contributing properties at 2111 East Shelby Street, 2112 East Shelby Street, and 2818 Montlake Boulevard NE. Because of the location of the new bascule bridge, there would no longer be an adjacent property to buffer 2112 East Shelby Street from Montlake Boulevard NE. The bridge approach would be adjacent to the west side of this property, and the new bridge would be approximately 70 feet from the northwest corner of the property. There is already a shared driveway/alley on the west side of this property, which would remain, as well as a side yard, which serves as a partial buffer. WSDOT would also install landscaping or a buffer between the contributing properties and the new bascule bridge. Unlike the houses being removed for bridge construction, the house at 2112 East Shelby Street would not face the bridge approach, but it would be exposed to traffic and the roadway, resulting in an alteration of setting and feeling.

Across the street, the property at 2111 East Shelby Street would still be partially buffered from Montlake Boulevard NE by the adjacent property at 2818 Montlake Boulevard NE. Both bascule bridges would be visible from the house once 2904 Montlake Boulevard NE, the property on the corner, is removed. It, too, would be exposed to traffic and the roadway, resulting in an alteration of setting and feeling. The 2818 Montlake Boulevard NE property also would be more exposed than it is currently, becoming the last house on the east side of Montlake Boulevard NE before the bascule bridges. It would be open to the view toward both bridges from the front and north side of the property, leaving it more exposed to the roadway and immediately adjacent to the bridge approach. The combined changes to these contributing properties in the historic district would alter the Montlake Historic District's integrity of setting and feeling.

The Montlake lid would be built over the main line of SR 520, from Montlake Boulevard to the Union Bay shoreline. The lid would be landscaped, with pedestrian pathways and open green space. Adding the lid would reduce visual intrusion and noise from SR 520. In addition, the lid would partially reunite the north and south sides of the Montlake Historic District that are currently separated by SR 520 and thus would increase connectivity between these two sides of the district. Exhibit 7-12 shows existing and proposed aerial views of the Montlake lid and interchange over SR 520. The length of the lid would require the use of ventilation fans and specialized fire and safety equipment under the lid. At this stage of design, an above-grade ventilation station is not anticipated to be necessary.

All or part of a Montlake Boulevard median between East Hamlin Street and SR 520 would be removed. Removing the planted median would alter the integrity of setting and feeling of the boulevard, and the loss of vegetation would alter the viewshed of the properties on both sides of the street. The final design for Montlake Boulevard is not complete, so the exact portion of the median to be removed has not yet been defined.

The Preferred Alternative includes the removal of the SR 520 Lake Washington Boulevard and R.H. Thomson Expressway ramps, which would affect the viewshed from the Montlake Historic District. A new planted median on Lake Washington Boulevard in this area would add green space to the viewshed of the contributing properties south of the Montlake lid and the view from the boulevard itself.

Existing View

- View of MOHAI, and portions of East Montlake Park, Montlake Historic District and the Washington Park Arboretum
- SR 520 corridor and R. H. Thomson Ramps

Preferred Alternative

- New Montlake lid and interchange over SR 520
- Stormwater facility at MOHAI location

Exhibit 7-12. **Aerial Visualization of the Montlake Lid in the Montlake Historic District**

After construction, the Canal Reserve Land would no longer be a secluded green space with mature specimen trees, but would be part of the Montlake lid, including SR 520 ramps and a bicycle and pedestrian path. Buildings located on the south side of East Hamlin Street would lose the landscaped buffer provided by the Canal Reserve Land south of the alleyway behind them. Currently, the SR 520 ramp is 135 to 195 feet from the rear of the properties along East Hamlin Street. Under the Preferred Alternative, the ramp would be approximately 65 to 130 feet from the rear of these properties. The new bicycle and pedestrian path would be north of the ramp and below grade with retaining walls on each side. An approximate 45- to 100-foot buffer would remain between the rear yards of the houses and the north retaining wall of the new bicycle and pedestrian path. Although the Canal Reserve Land and the mature specimen trees would be lost, the land would become part of the landscaped lid, so open green space would remain in the area. The integrity of setting and feeling of this part of the district would be altered by the loss of this green space and the large-specimen trees.

With the Preferred Alternative, fewer residential equivalents in the Montlake Historic District would exceed the NAC compared to the No Build Alternative. To the north of SR 520, 28 residences would exceed the NAC under the Preferred Alternative compared to 42 residences under the No Build Alternative. To the south of SR 520, 39 residences would exceed the NAC under the Preferred Alternative compared to 67 residences under the No Build Alternative. The reduced noise levels are due to noise-reducing effects of the Montlake lid, shifts in the project roadway alignments, and the 4-foot noise-absorptive traffic barriers (see the *Noise Discipline Report Addendum and Errata* in Attachment 7 to the Final EIS).

In summary, operation of the Preferred Alternative would alter the Montlake Historic District's integrity of setting and feeling, but would not alter the district's integrity of design, materials, workmanship, location, or association. Operation of the Preferred Alternative would not diminish the integrity of the Montlake Historic District.

West Approach Segment

Washington Park Arboretum (ID# 200)

In the Arboretum, the highway main line would be elevated, rising from its existing clearance of approximately 8 feet over the Arboretum Waterfront Trail on Foster Island to a clearance of approximately 16 to 20 feet at this location. Because the main line would be higher than the existing roadway, the highway would become a more dominant and noticeable feature, causing a visual effect in the northern portion of the Arboretum. The new SR 520 structure would also allow the trail to pass between columns of an elevated structure, replacing the current low and narrow pedestrian underpass and improving the user experience by opening views at ground level. The columns would be spaced wider than the existing bridge to support the elevated structure.

Removing the Lake Washington Boulevard and R.H. Thomson Expressway ramps in the Arboretum would open views for park users and would enhance the recreational experience of the land and water in this area. Exhibit 7-13 shows the existing ramps and the proposed views of the landscape without the ramps, looking northeast and east across the WSDOT peninsula. The new west approach would originate from the shoreline near East Montlake Park and maintain a low profile through the Arboretum. The height of SR 520 at the west transition span would be similar to the existing west transition span. Because of the similarity to the existing condition, this visual change would not alter any aspect of the Arboretum's integrity.

The segment of Lake Washington Boulevard in the Arboretum would be affected by the closure and removal of the Lake Washington Boulevard and R.H. Thomson Expressway ramps. Traffic to and from SR 520 would no longer exit and enter directly to and from Lake Washington Boulevard. Removal of these ramps would reduce traffic on Lake Washington Boulevard in the Arboretum.

Current noise levels on Foster Island range from approximately 63 to 72 dBA. Under the Preferred Alternative, these sound levels would be reduced by as much as 11 dBA due to shifts in the project roadway alignment, elimination of the Lake Washington Boulevard ramps, and inclusion of the 4-foot concrete traffic barriers with noise-absorptive coating. There would be visual effects on the Arboretum from the new bridge and approach, which would alter the property's integrity of setting and feeling.

In summary, as a result of the project changes described above, operation of the Preferred Alternative would alter the Arboretum's integrity of setting and feeling.

Existing View

- R.H. Thomson Ramps
- Informal trail to shoreline

Preferred Alternative

- Ramps removed
- Mature trees protected

Exhibit 7-13. **Visualization in the Washington Park Arboretum Looking Northeast toward the Former Ramps**

Edgewater Condominiums (ID# 226)

The Edgewater Condominiums would experience an alteration of setting and feeling from the new west approach of the Preferred Alternative. The west high-rise would be shifted westward and the west approach would be higher, but it would also be approximately 70 feet farther north than the existing structures. The alignment shift would reveal more open water views in Union Bay from this residential property. At midspan, the height of the floating bridge would rise approximately 20 feet above the water surface, which is 10 to 12 feet higher than the existing bridge deck. This change to the viewshed would alter the integrity of setting and feeling of the property to some degree, but it would not be a significant change from existing conditions. The existing and proposed viewshed from the Edgewater Condominiums toward the northwest at the SR 520 west approach are shown in Exhibit 7-14.

The current sound level at this property ranges from approximately 63 to 69 dBA. Under the Preferred Alternative, the sound level would decrease to approximately 61 to 63 dBA. The setting and feeling of the Edgewater Condominiums would be altered by these changes, but the changes would be minor. The viewshed from this property currently includes a bridge approach and a floating bridge, so the changes would not be significant. This multi-unit residential complex would maintain integrity of design, materials, workmanship, association, and location.

Lake Washington Study Area

Archaeological Resources and Traditional Cultural Properties

There are no known NRHP-eligible archaeological sites in the Lake Washington study area. No TCPs were identified in the Lake Washington study area.

Historic Built Environment

The Preferred Alternative would require the demolition and removal of the Evergreen Point Bridge and construction of a new floating bridge across Lake Washington. There would be no effects on the historic Evergreen Point Bridge from operation of the Preferred Alternative due to the demolition.

Existing View

- 4-lane bridge
- Column spacing at 100 feet on center

Preferred Alternative

- Wider and higher 6-lane bridge
- Column spacing at 250 feet on center

Exhibit 7-14. **Visualization Looking Northwest from the Edgewater Condominium toward the SR 520 West Approach Bridge**

Eastside Transition Study Area

Archaeological Resources and Traditional Cultural Properties

There are no known NRHP-eligible archaeological properties in the Eastside transition study area. No TCPs were identified in the Eastside transition study area.

Historic Built Environment Properties

The Dixon House is located approximately 1,000 feet north of the existing east approach to the Evergreen Point Bridge. The new bridge and the approach would be about 160 feet closer to the Dixon House, but still far enough away that operation of SR 520 would not diminish the setting and feeling of this property (see Exhibit 7-1g for details on the location of the bridge and the maintenance facility). Once completed, the floating portion of the Evergreen Point Bridge would be located approximately 160 feet north of its present location at the east end, and the east approach structure would be approximately 80 feet to the north.

The intersection of SR 520 and Evergreen Point Road, near the Arntson House, would be several lanes wider than the existing intersection. This could raise the traffic noise level at this property, but the house would retain the vegetative buffer between it and the roadway. The new floating portion of the bridge would be slightly higher than the existing floating portion, but this additional height would be a minimal visual change to the setting of historic properties in the Eastside transition study area. The integrity of feeling and setting of the Dixon and Arntson houses would be altered slightly, but no other aspects of integrity would be compromised.

Operation of the Preferred Alternative would alter the integrity of setting and feeling of the Dixon and Arntson houses, but would not diminish the integrity of the historic properties.

Pontoon Production Sites

Production and transport of pontoons would only occur during construction of the Preferred Alternative. Historic properties at the potential pontoon construction sites would not be affected by operation of the Preferred Alternative.

Section 6(f) Replacement Properties

Operation of the Preferred Alternative would not affect the properties investigated as Section 6(f) replacement sites.

Cumulative Effects

Cumulative effects are not defined under 36 CFR 800, but NEPA provides guidance on assessing these incremental effects. Cumulative effects are defined under NEPA as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). These effects are discussed more thoroughly in the *Indirect and Cumulative Effects Discipline Report* (see Attachment 7 to the Final EIS), which concluded that the Preferred Alternative would make a minor contribution to the cumulative effect on cultural resources of the central Puget Sound region. Some historic properties would be removed by the project or experience other physical impacts. Other historic properties would experience proximity impacts, such as alterations to the viewshed or other changes to the setting. The project would make a minor contribution to the cumulative effect on TCPs due to its impacts on Foster Island. The project is not expected to have a cumulative effect on archaeological resources. The analysis of cumulative effects concluded that combining these effects with those from other past or future projects does not result in a significant cumulative effect on cultural resources, and thus there is no adverse effect from cumulative impacts under Section 106.

Summary of Adverse Effect Determination

Pursuant to 36 CFR 800(5)(a), this chapter described how WSDOT, on behalf of FHWA, applied the criteria of adverse effect to historic properties located in the APE. As previously stated, several historic properties would see at least one aspect of integrity diminished as a result of the Preferred Alternative. These changes in integrity have resulted in FHWA's and WSDOT's determination that the Preferred Alternative would have an adverse effect on historic properties. The determination of adverse effect is based on both construction-related impacts and effects from operation that result in diminished integrity of setting and feeling. Exhibit 7-15 summarizes the properties whose integrity would be diminished as a result of the Preferred Alternative.

Exhibit 7-15. Historic Properties Whose Integrity Would Be Diminished by the Preferred Alternative

Property ID#	Historic Property	Description	Project Element responsible for the Diminished Integrity
Multiple	All historic properties in the APE along construction haul routes	The Preferred Alternative would temporarily diminish integrity of setting and feeling during construction of the project.	All construction haul routes
4, 10, 20, 23, 22, 25, 26, 27, 36, 39, 45, 48, 52	Chung House, Seward School, Talder House, Sugamura House, East Miller Condominium, Wicklund-Jarr House, Glover Homes Building, Keuss Building, Fire Station #22, Gunby House, Boyd House, Mason House, and Kelley House	The Preferred Alternative would diminish integrity of setting and feeling during construction of the project.	10th and Delmar lid
37	Roanoke Park Historic District	The Preferred Alternative would diminish integrity of setting and feeling during construction of the project.	10th and Delmar lid Portage Bay Bridge
56	NOAA Northwest Fisheries Science Center	The Preferred Alternative would diminish integrity of setting, feeling, and association during construction of the project.	Portage Bay Bridge Montlake interchange/ Montlake lid
55	Seattle Yacht Club	The Preferred Alternative would diminish integrity of setting, feeling, and association during construction of the project.	Portage Bay Bridge Second bascule bridge Montlake interchange/ Montlake lid
54	Montlake Bridge	The Preferred Alternative would diminish setting and feeling during construction of the project, and would diminish integrity of setting and feeling by placing a new bridge immediately adjacent to the existing bridge.	Second bascule bridge
238	Montlake Historic District (including 2904 and 2908 Montlake Blvd NE; Montlake Blvd Planting Strips; NOAA; Seattle Yacht Club; Canal Reserve Land)	The Preferred Alternative would diminish integrity of setting and feeling during construction of the project, and would diminish integrity of setting, feeling, and materials by removing two properties (2904 and 2908 Montlake Blvd); removal of Montlake Blvd planting strips; permanent acquisition of land in McCurdy and East Montlake parks, and Montlake Playfield; permanent acquisition of land on the NOAA property; permanent acquisition of the Canal Reserve Land.	Montlake interchange/ Montlake lid Second bascule bridge Portage Bay Bridge West approach

Exhibit 7-15. **Historic Properties Whose Integrity Would Be Diminished by the Preferred Alternative**

Property ID#	Historic Property	Description	Project Element responsible for the Diminished Integrity
202	Evergreen Point Bridge	The Preferred Alternative would diminish all aspects of integrity by removing and replacing the bridge.	New floating bridge and landings
203	Canoe House	The Preferred Alternative would diminish integrity of setting and feeling by introducing new visual intrusions in the immediate vicinity of the building.	New bascule bridge West approach/new floating bridge
200	Foster Island TCP	The Preferred Alternative would diminish the integrity of the Foster Island TCP during construction and operation, as activities associated with the project are inconsistent with traditional use of the island.	West approach

Source: Section 106 Programmatic Agreement (see Attachment 9 to the Final EIS).

Impacts from construction of the Preferred Alternative that would diminish one or more aspects of historic properties' integrity include the following:

- Construction of a new bascule bridge over the Montlake Cut would permanently diminish the integrity of setting and feeling of the historic Montlake Bridge.
- Conversion of 6.3 acres of land within the Montlake Historic District's boundaries to transportation right-of-way. The expanded right-of-way would alter the footprint of the historic property's boundaries, which would diminish the integrity of design, setting, and materials of the overall district.
- Construction of a new bascule bridge within the viewshed of the Canoe House and other historic properties would permanently diminish their integrity of setting and feeling.
- Demolition and removal of the existing Evergreen Point Bridge in order to construct a new floating bridge across Lake Washington, which would diminish all aspects of its integrity.

During construction of the Preferred Alternative, some historic properties would see aspects of integrity diminished. Construction of the project would occur over a period of several years and would result in increased noise, dust, and traffic; visual effects; and disruptions in access to some areas near construction sites. Because of its extent and duration, construction would have significant effects in the vicinity of active construction areas. Some of the specific effects of construction activities include, but are not limited to, the following:

- Increased noise and vibration from demolition, heavy equipment operation, material hauling, and pile-driving.
- Fugitive dust from areas where soils are exposed or stockpiled, and from demolition of concrete structures like the Lake Washington Boulevard ramps.
- Visual effects from vegetation removal, temporary structures, construction staging and equipment, glare from nighttime construction lighting, and active construction operations.
- Temporary disruptions in access to homes, businesses, and parks from lane closures and detours.

Because the project area encompasses many historic properties, the impacts described above would be experienced at one level or another by most historic properties in the APE. For some properties, the proximity of construction activities, the intensity and duration of construction in that area, and the nature of the property's historic characteristics would combine to result in an adverse effect under Section 106. Construction effects on other historic properties—even though they might not meet the definition of adverse effect under Section 106—would still have the potential to create substantial disruptions in community activities and residents' quality of life.

One specific effect of the Preferred Alternative—increased traffic along detour and haul routes—would temporarily diminish integrity of setting and feeling of historic properties along the potential haul routes, if used. Construction haul routes would expose historic properties along the route to temporary increases in truck traffic volume, with accompanying potential for increases in fugitive dust, vehicle emissions, and noise. The Preferred Alternative would temporarily diminish integrity of feeling and setting of all historic properties, including both historic districts in the APE, along all construction haul routes.

Additional historic properties whose integrity would be diminished during construction include the following:

- Historic properties near the 10th and Delmar lid
- Roanoke Park Historic District

- Montlake Historic District
- NOAA Northwest Fisheries Science Center
- Seattle Yacht Club

The Foster Island TCP is eligible for listing in the NRHP. Construction and operation of the Preferred Alternative would have an effect on the TCP, which contributes to the projectwide adverse effect determination.

The net impact of considering all historic properties that would experience a diminishment in one or more areas of integrity results in the determination that the Preferred Alternative would have an adverse effect on historic properties. As a result, FWHA and WSDOT continued consultations with ACHP, SHPO, affected tribes, and other Section 106 consulting parties, which resulted in a Programmatic Agreement that records the stipulations agreed upon to resolve the adverse effect from the project. Chapter 8 provides an overview of the agreed-upon measures contained within the Section 106 Programmatic Agreement.

8. Avoidance, Minimization, and Mitigation Measures

The implementing regulations of Section 106 of the NHPA stipulate that the agency official, in consultation with the SHPO and other consulting parties, must "develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties (36 CFR 800.6(a))." This chapter provides an overview of avoidance and minimization of effects on historic properties. Where adverse effects could not be avoided or minimized, they are resolved through mitigation measures in the Programmatic Agreement, pursuant to 36 CFR 800.14(b).

WSDOT and FHWA elected to use a Programmatic Agreement to resolve adverse effects because the specific effects on all historic properties in the corridor may not be fully known prior to project approval. The Programmatic Agreement guides the phased identification of cultural resources after project approval and binds FHWA with responsibility to mitigate known adverse effects on historic properties. It allows for completion of cultural resources investigations and provides a process to govern the actions to be taken if historic properties are discovered during the phased identification.

As provided for in 36 CFR 800.2(b), FHWA invited the ACHP to participate in the consultation process for this project on May 20, 2010. After receiving additional information regarding the project, the ACHP accepted the invitation to participate in developing the Programmatic Agreement on July 22, 2010.

Archaeological Resources

Research and investigations conducted in support of the SR 520, I-5 to Medina project indicate that there is the potential for the project to affect unknown and potentially significant archaeological resources within the limits of construction in the APE. Several specific areas within the limits of construction are sensitive for intact archaeological sites or were inaccessible during the initial investigations. In an effort to minimize the effects on potentially significant resources, additional investigations in specific areas are recommended. This chapter summarizes the regulatory framework within which additional archaeological investigations will occur and recommendations for additional investigations within the limits of construction.

One of the stipulations of the Programmatic Agreement is the preparation and execution of an Archaeological Treatment Plan. The purpose of the treatment plan is to provide a detailed, yet flexible process by which the federal lead agency can comply with the stipulations set out in the Programmatic Agreement to continue to identify and resolve effects. This treatment plan will outline the identification and evaluation program for the portions of the APE within the limits of construction that have not been sufficiently investigated for the presence of intact archaeological resources.

Recommendations

Based on the results of the research and investigations conducted in support of the SR 520, I-5 to Medina project, a series of recommendations for additional archaeological research were provided to guide future work. These recommendations are grouped into three categories:

- No Additional Investigations Recommended
- Additional Archaeological Investigations Recommended
- Archaeological Monitoring Recommended

No Additional Investigations Recommended

No additional archaeological investigations are recommended on all Pleistocene-aged or older landforms where ground surface removal has been confirmed, either through archaeological investigations or visual inspection of the ground surface combined with as-built and LiDAR image analysis.

All Pleistocene-aged landforms within the limits of construction were formed as a result of the advance, and subsequent retreat, of glacial ice into the region. This is a period when there would have been no opportunity for human occupation of the land surface. Since human occupation of the land surface could only occur after the formation of these landforms, the physical remains of these activities would be located at or near the ground surface. Therefore, removal of this ground surface in the 1960s during construction of SR 520 would have also removed all precontact and historic period intact archaeological deposits that may have been present.

In addition to the clearly visible sediment removal associated with the SR 520 corridor, investigations of several BOAS-defined Probability Areas on Pleistocene-aged landforms revealed that the ground surface had been removed and filled over.

No further archaeological investigations are recommended in areas where planned construction activities do not exceed the known depth of fill or are limited to the ground surface of paved areas.

Additional Archaeological Investigations Recommended

Additional archaeological investigations are recommended on Pleistocene-aged or older landforms where the extent of ground surface removal is unknown, either because of lack of previous investigations, obstructions at the ground surface (e.g., pavement, structures), or insufficient information collected from previous investigations.

Additional archaeological investigations should be designed to address whether the pre-development ground surface has been removed. This could be achieved through the excavation of deep archaeological TUs, mechanical trenches, and/or monitoring of pre-construction evaluative work such as geotechnical borings. If stratigraphic information from these studies reveals that the pre-development ground surface has been removed, then no additional investigations are recommended. If an intact pre-development ground surface is present, however, further archaeological investigations are recommended. Areas for additional investigations will be further refined within the Archaeological Treatment Plan.

Proposed field investigations potentially will include the excavation of mechanical trenches and boreholes, as well as hand-excavated units and auger holes if archaeological materials are identified. The purpose of these investigations will be to locate and identify intact surfaces that have the potential to contain intact archaeological resources and, therefore, potentially significant, archaeological resources. In those areas where intact surfaces are identified, trenches and/or hand-excavated units will be excavated to identify the presence of intact archaeological resources.

Archaeological Monitoring Recommended

Archaeological monitoring is recommended for all Holocene-aged landforms and sedimentary deposits, regardless of the results of previous archaeological investigations. Within the limits of construction, all Holocene-aged sediments were deposited in a shallow nearshore lacustrine setting, or at the interface between Lake Washington and tributary streams, and were submerged during and after their deposition.

Additional archaeological deposits may be located at the interface between Holocene-aged lacustrine sediments and Pleistocene-aged sediments. During the Holocene epoch, water levels in Lake Washington slowly transgressed (raised), submerging areas that were previously exposed (see Chapter 4). This previously exposed ground surface has the potential to contain archaeological deposits related to upland resource procurement activities and/or habitation.

Inadvertent Discovery of an Intact Archaeological Site

If a potentially significant resource is identified within the limits of construction, procedures similar to the description below are expected to be included in the Archaeological Treatment Plan currently under development. If archaeological resources are identified in intact sedimentary context (not displaced from the original context), additional investigations will be conducted to delineate the resource and to evaluate the significance of the resource for the NRHP. If the site is recommended eligible for listing in the NRHP, all excavation activities (and project activities) at the location of the discovery will be halted until a determination of eligibility is made by WSDOT, on behalf of FHWA and in consultation with DAHP and the tribes. If the resource is determined eligible for listing in the NRHP, then the appropriate mitigation will be developed and implemented.

If the archaeological resource is determined to be in disturbed sedimentary context (located within fill, area was previously graded, etc.), and is therefore not eligible for listing in the NRHP, the resource will be documented or collected, photographed, and mapped. After the find is documented, a site record or isolate record will be prepared and a recommendation provided by WSDOT, on behalf of FHWA, regarding the resource’s eligibility.

The treatment plan will also provide for newly discovered resources by presenting excavation and analysis procedures, tools for assessing resource significance and eligibility, and curation procedures if archaeological materials are collected.

Historic Built Environment

Throughout the design and planning process, WSDOT and FHWA have taken care to avoid and minimize adverse effects on historic properties. General measures taken through planning and design to avoid and minimize adverse effects on historic properties of the built environment include the following:

- Reducing the footprint and/or shifting the alignment of SR 520 to avoid or minimize effects on historic properties, including the Montlake Historic District and the NOAA Northwest Fisheries Science Center.
- Reducing noise levels in the two historic districts, the Seattle Yacht Club, the NOAA Northwest Fisheries Science Center, Lake Washington Boulevard, the Arboretum, and the Foster Island TCP by incorporating noise reduction strategies including 4-foot concrete traffic barriers with noise-absorptive coating, lid portals with noise-absorptive materials, a reduced speed limit between I-5 and the Montlake lid, noise walls where recommended by the Final EIS noise analysis and approved by affected property owners, and quieter concrete pavement, which WSDOT is evaluating as a noise reduction strategy.
- Adjusting potential construction haul and detour routes to avoid or minimize construction effects on the Montlake Historic District and Roanoke Park Historic District as much as possible.
- Involving the affected communities in context-sensitive design of the new lids and bridges as part of SR 520 design development and under existing processes of the City of Seattle and the Seattle Design Commission, which will help preserve the setting and feeling of the Montlake Historic District and Roanoke Park Historic District, as well as contributing and individually NRHP-eligible properties within those districts.

As described in previous chapters, even with WSDOT and FHWA's ongoing efforts to avoid adverse effects to the greatest extent feasible, it will not be possible to avoid an adverse effect on historic properties from construction or operation of the Preferred Alternative.

Project Modifications That Would Avoid or Minimize Effects

As a result of consultation, WSDOT made alterations to the original project design. As a result of these design changes, the Preferred Alternative will avoid or minimize some effects on historic properties. These measures include the following changes:

- WSDOT has changed the project alignment to avoid direct physical effects on the Roanoke Park Historic District. These changes avoid direct effects on the sidewalk, street, and planted median within the district.

- WSDOT has changed the Portage Bay Bridge width and alignment to avoid demolition of buildings at the NOAA Northwest Fisheries Science Center. As described in the SDEIS (WSDOT 2010a; see Attachment 10 to the Final EIS), these demolitions could have resulted in permanent displacement of the property's historic use.

- WSDOT will post a 45-mph speed limit along the Portage Bay Bridge to help reduce noise levels at nearby properties, including the Roanoke Park Historic District, the Seattle Yacht Club, and the NOAA Northwest Fisheries Science Center.

- WSDOT will develop context-sensitive designs[3] for the Portage Bay Bridge, the new bascule bridge, and the west approach bridge that will maintain or enhance the historic setting and feeling of the Roanoke Park and Montlake historic districts, the Seattle Yacht Club, the NOAA Northwest Fisheries Science Center, and the Arboretum.

- WSDOT has eliminated the construction easement located on the south island of the Foster Island TCP in an effort to reduce effects during construction of the west approach.

- The project will enhance the historic setting of the Arboretum by removing the existing ramps, incorporating noise reduction measures, and providing improved pedestrian and bicyclist connections under the highway.

3 "Context-sensitive solutions is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Context-sensitive solutions is an approach that considers the total context within which a transportation improvement project will exist" (FHWA and Context Sensitive Solutions 2010).

- WSDOT has included a number of noise reduction strategies into the design of the Preferred Alternative, which would result in overall lower corridor noise levels along the project alignment compared to the No Build Alternative.

Measures to Avoid and Minimize Construction Impacts

Construction of the Preferred Alternative would occur over a period of 6 to 7 years and would result in noise, dust, and visual effects on many historic properties in the APE. The proximity of construction activities, the intensity and duration of construction in that area, and the presence of a large number of significant cultural resources all contribute to the effect on historic properties.

A primary minimization element is the development of a CCMP. As a commitment in the Section 106 Programmatic Agreement (see Attachment 9 to the Final EIS), WSDOT will collaborate with DAHP, the Section 106 concurring parties, affected community groups, and the City of Seattle to develop the CCMP. The CCMP, which is incorporated into the Programmatic Agreement by reference, contains specific measures designed to protect historic properties in the APE. The CCMP also provides an ongoing opportunity for the concurring parties to the Programmatic Agreement and the public to provide input on construction management decisions that can help avoid or minimize the effects of construction activities on historic properties and the affected communities. The CCMP was designed as an adaptable plan, so that it can handle potential future changes, as well as unanticipated issues that may arise during construction. Through standard best management practices (BMPs), WSDOT will take precautions to protect historic properties from excessive noise, vibrations, excavations, and damage from heavy equipment. Applicable BMPs also include those for traffic control, glare, vibrations, noise, and fugitive dust management. Although the CCMP is in the early stages of development and is subject to change as the design process continues, the components of the CCMP are expected to include the following:

- A plan for access by emergency service providers to homes and businesses.

- A plan for maintenance of basic services (water, gas, electric, internet, etc.) and for timely response in case of accidental interruptions of service as a result of construction activities.

- A communications plan covering the following:
  - A process for making up-to-date construction information (schedules, schedule changes, potential delays, current work areas, street closures and detours, results of monitoring, etc.) available to the public; potential notification mechanisms could include a Web site, smart phone application, and/or automated traffic management signs;
  - Development and maintenance of an email list to be used to inform communities of upcoming construction information; email notification will include Community Council officers so that timely information can be distributed through community online forums;
  - A single-point communications center established for the duration of construction, which will include a 24/7 contact phone number and an email address to which problems, questions, and concerns can be sent; these communications will be directed to the appropriate jurisdiction or agency for resolution; and
  - Routine construction updates/outlooks to Section 106 consulting parties, as well as notifications of applicable permit conditions such as periods when noise variances will be in place.
- A vegetation management plan to include provisions for the following:
  - Surveying mature trees within and near the limits of construction along the entire corridor; the report of this survey will be made available to the concurring parties to the Programmatic Agreement when it is completed;
  - Protecting trees and other screening vegetation located outside the construction work area from construction effects;
  - Replacing removed trees following City of Seattle street tree standards;
  - Monitoring by WSDOT of contractor adherence to this plan; and
  - Developing and implementing treatment plans for significant or heritage trees, funded by WSDOT.

- A Temporary Erosion and Sediment Control Plan to be implemented throughout the construction period.
- A plan for traffic management during construction to keep traffic flowing, limit detour routes through residential areas, and ensure access for residents, etc.
- A haul route management plan including the following commitments:
  - WSDOT will ensure that, to the maximum feasible extent, the construction contractor uses the main line of I-5 and SR 520 for all material hauling during construction;
  - Construction traffic will be limited to city-designated arterials; and
  - If the haul routes change after execution of the Programmatic Agreement, WSDOT will consult with the SHPO and consulting parties regarding any additional potential effects on historic properties following the Section 106 framework.

In addition, WSDOT has engaged the services of a vibration expert to evaluate the project corridor, including any potential haul routes along city arterial streets, and to identify areas where vibration may be of concern. WSDOT will avoid or minimize vibration effects from construction on historic properties by implementing BMPs for vibration currently being developed by this expert.

Implementation of the CCMP, as determined in the Programmatic Agreement, will avoid and minimize adverse effects on historic properties.

Measures to Mitigate Effects on Historic Properties from the Preferred Alternative

Mitigation measures for adverse effects from the Preferred Alternative have been determined through the development of the Programmatic Agreement among WSDOT, FHWA, ACHP, the SHPO, affected tribes, and other consulting parties. Although properties have been presented throughout the report roughly geographically from west to east, the mitigation measures for specific properties or from specific project elements are listed here in the order they appear in the Programmatic Agreement and under the same headings as in the Programmatic Agreement.

As discussed, WSDOT and FHWA have coordinated with ACHP, SHPO, interested tribes, and other Section 106 consulting parties on mitigation measures to resolve the adverse effect from the Preferred Alternative. In addition, WSDOT and FHWA have included coordination with the City of Seattle Historic Preservation Officer on mitigation measures proposed for historic properties under their jurisdiction within Seattle. The Programmatic Agreement includes a commitment to develop a Foster Island Treatment Plan to resolve the effect on the Foster Island TCP.

Stipulations of the Programmatic Agreement are summarized below. For details and complete measures to resolve project effects stipulated in the Section 106 Programmatic Agreement, see Attachment 9 to the Final EIS:

- WSDOT will develop content for, create, and host an interpretive Web site on the history of the project area. Topics to be presented on the site might include information on the historic properties within the APE, the Olmsted plan, and the Alaska-Yukon-Pacific Exposition; summarized findings of archaeological investigations; a redacted, nonconfidential report on the ethnography of the project area and Lake Washington; and information about the historic districts and other historic properties in the project area.

- If the Final EIS for the SR 520, I-5 to Medina project determines that noise walls are warranted at any locations within the project area, WSDOT will consult with eligible property owners as defined by WSDOT and FHWA policy, the Seattle Landmarks Preservation Board where appropriate, DAHP, and the concurring parties to the Programmatic Agreement to determine the aesthetic treatment of the walls and ensure compatibility with the character of nearby historic properties. Consultations will follow WSDOT and FHWA policy and procedures.

- WSDOT will coordinate with the Seattle Department of Transportation (SDOT) to ensure that one of these agencies and/or another specifically identified party will be responsible for maintenance of landscaping installed as part of the project.

- WSDOT will ensure that permanent lighting and lighted signage throughout the corridor is designed to minimize glare into homes and parks and out over the water; and WSDOT will consult with the Seattle Design Commission and DAHP to ensure that lighting planned for the lids is compatible with the historic setting and residential character of surrounding areas.

- In consultation with the concurring parties to the Programmatic Agreement and other stakeholders as appropriate, WSDOT will consider requests to install landscaping or landscaped buffers where practicable in areas where buffer zones are being removed or reduced. Such buffers will also be considered where new or relocated traffic lanes would intrude on the character of a historic district or the settings of individual historic properties. These decisions will be made before construction plans are finalized.

Evergreen Point Bridge Demolition

Mitigation for the loss of the Evergreen Point Bridge will be partially fulfilled through preparation of Level II Historic American Engineering Record (HAER) documentation of the bridge, including photographs, reproductions of selected as-built drawings, and a written history. WSDOT will provide this documentation to DAHP and to the NPS Historic American Buildings Survey/Historic American Engineering Record program. Copies of the documentation will be provided to local repositories and a selection of the photos will be included on the interpretive Web site.

West Approach Area

Mitigation for effects associated with the new west approach area includes the following measures:

- WSDOT will consult with the Arboretum and Botanical Garden Committee, affected tribes, DAHP, and other stakeholders, including homeowners in surrounding areas, Madison Park Community Council, Montlake Community Club, and Friends of Seattle's Olmsted Parks, to develop an aesthetic design of the west approach and surrounding area.

- WSDOT will consult with the Arboretum and Botanical Garden Committee, affected tribes, DAHP, and other stakeholders, including homeowners in surrounding areas and Friends of Seattle's Olmsted Parks, to develop a plan for landscape design, including grading and planting, within the WSDOT peninsula and current ramp locations. The design may include habitat and wetland restoration and enhancement projects, as appropriate, and will follow the Secretary of Interior's Standards for the Treatment of Historic Properties insofar as these apply to designed landscapes.

- WSDOT will facilitate coordination between the affected tribes and the Arboretum and Botanical Garden Committee and other stakeholders concerning landscape planning and management of Foster Island as needed.

Mitigation for effects associated with changes to the west approach area includes the following measures:

- WSDOT will use quieter concrete pavement on the west approach structure.
- WSDOT will place noise-absorptive material on the inside face of the currently planned 4-foot barriers along the west approach bridge.
- WSDOT will consult with affected property owners, DAHP, and the Arboretum and Botanical Garden Committee about design and location for plantings to create visual buffers between Lake Washington Boulevard East residences and the west approach structure beyond the eastern edge of the Montlake lid as part of planning for the WSDOT peninsula once the SR 520 ramps are removed.

Lake Washington Boulevard

Mitigation for effects associated with historic Lake Washington Boulevard includes the following measures:

- WSDOT will consult with DAHP and the concurring parties to the Programmatic Agreement, as well as affected property owners, about the final design for changes to Lake Washington Boulevard necessitated by the project.
- To the maximum extent practicable, WSDOT will ensure that changes to Lake Washington Boulevard are consistent with the City of Seattle Olmsted Park Furniture Standards and will follow the Secretary of Interior's Standards for the Treatment of Historic Properties insofar as these apply.
- WSDOT will ensure that the portion of the Montlake Boulevard median to be partially removed is re-established such that it reflects the Olmsted plan to the maximum extent practicable.
- Within the areas of Montlake Boulevard where WSDOT plans modifications to the medians, WSDOT will consult with the concurring parties to the Programmatic Agreement, DAHP, and

other stakeholders as appropriate on design, wording, and placement of a sign about the Alaska-Yukon-Pacific Exposition and the Olmsted design for this portion of Montlake Boulevard.

- WSDOT will prepare an NRHP Multiple Property Documentation Form for Seattle's Olmsted-designed parks and boulevards and prepare the associated nomination form for Lake Washington Boulevard. This work, which will be done in consultation with DAHP, Friends of Seattle's Olmsted Parks, King County, and the Washington Trust for Historic Preservation, will include the following:
  - WSDOT will ensure that materials developed as part of this nomination are prepared and submitted to DAHP and the City of Seattle in a format compatible with both the DAHP and City of Seattle historic property databases.
  - As part of developing this nomination, WSDOT will provide for digitization of historic plans, correspondence, and photographs of the Olmsted work on Lake Washington Boulevard, the Washington Park Arboretum, and the Olmsted Boulevard System at a cost not to exceed $10,000. WSDOT will consult with Friends of Seattle's Olmsted Parks, King County, Washington Trust for Historic Preservation, and DAHP to determine which archival sources and which documents will be selected for this digitization project.
  - The selected documents will be digitized to an archival standard, and, subject to applicable rights restrictions, WSDOT will provide the scanned documents to the Friends of Seattle's Olmsted Parks, King County, DAHP, and the City of Seattle.
- WSDOT will consult with Seattle Parks and Recreation to determine whether they would be willing to have a sign or some other indicator of the significance of Lake Washington Boulevard as an Olmsted property placed on the small piece of Seattle Parks and Recreation property at the southeast corner of Montlake Boulevard and Lake Washington Boulevard. If Seattle Parks and Recreation is willing to accept this proposal, WSDOT will consult with Seattle Parks and Recreation, Friends of Seattle's Olmsted Parks, Montlake Community Club, and DAHP to design the sign or other marker and will have it fabricated and placed on the Seattle Parks and Recreation property.

Montlake Interchange

Mitigation for effects associated with the new Montlake lid and interchange include the following measures:

- To facilitate future historic preservation planning efforts within the Montlake community, WSDOT will complete an intensive-level survey of contributing and noncontributing properties within the Montlake Historic District and prepare an NRHP nomination for the district, consistent with DAHP and NRHP standards.
- Once construction of the lid is complete, WSDOT will re-establish a visual buffer on the remaining Canal Reserve Land south of the historic properties on East Hamlin Street. This buffer will be designed in consultation with the Seattle Design Commission and the affected property owners.
- WSDOT will consult with the concurring parties to the Programmatic Agreement to develop a sign plan for historic markers or signage for the Montlake Historic District. Once the sign plan is approved by WSDOT, in consultation with DAHP and the City of Seattle, WSDOT will fund fabrication and installation of up to five historic markers or signs within the district. The information from the markers/signage may become part of a projectwide educational Web site.
- The MOHAI clock tower, bell, and cannon are iconic features of the Montlake Historic District. If MOHAI chooses not to relocate these features elsewhere and is willing to donate them to the City of Seattle, WSDOT will consult with MOHAI, the appropriate offices within the City of Seattle (including Seattle Parks and Recreation), and the concurring parties to the Programmatic Agreement to determine whether these features can be preserved and reused in East Montlake Park or elsewhere within the Montlake Historic District. If the clock tower, bell, and cannon remain within the historic district, WSDOT will coordinate with the City of Seattle to identify maintenance and long-term preservation for these items and will provide DAHP with copies of any agreements covering these issues.

Mitigation for effects associated with the new Montlake lid and interchange include the following measures:

- In consultation with the Seattle Design Commission, Seattle Landmark Preservation Board, King County Metro Transit, DAHP, and the concurring parties to the Programmatic Agreement, WSDOT will create a landscape design plan for the Montlake lid that is compatible with the historic character of the Montlake Historic District. This plan will include plantings and urban design elements, possibly including medians and a planter strip, interpretive signage, and bus shelter design.

- WSDOT will include interpretive exhibits and markers in the lid design if the design process identifies such exhibits or markers as being desirable. If markers or exhibits are placed on the lid, they may include information about the evolution of the Olmsted landscape and the effects of SR 520 on the landscape. Exhibits may note that the lid reconnects communities and recovers the landscape connections that were important historically.

- WSDOT will ensure that the design of the Montlake Boulevard planted areas across the lid reflect the historical connection between Montlake Boulevard and Lake Washington Boulevard; these planted areas should reflect the original design principles of Lake Washington Boulevard and other Olmsted-designed boulevards in Seattle to the maximum extent possible.

- WSDOT will provide for the use of underground wiring on the Montlake lid to the extent feasible.

New Bascule Bridge

Mitigation for effects associated with construction of the new bascule bridge includes the following measures:

- Although WSDOT has not evaluated the feasibility or cost of relocating the houses, WSDOT will make available for purchase and relocation the two contributing houses in the Montlake Historic District (2904 and 2908 Montlake Boulevard) slated for removal to accommodate the new bascule bridge.

- Whether these properties are relocated or not, WSDOT will record them to DAHP Level II standards and submit the records to DAHP and to the Washington State Archives.

Mitigation for effects associated with the new bascule bridge includes the following measures:

- In consultation with DAHP, Seattle Design Commission, Seattle Landmarks Preservation Board, concurring parties to the Programmatic Agreement, and the public, WSDOT will develop a design review process for the new bascule bridge that will ensure context-sensitive design and consistency with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

- WSDOT will ensure that the design for the new bascule bridge is compatible with the existing Montlake Bridge, and neither competes with nor replicates that bridge.
- WSDOT will secure the services of an outside design expert with the appropriate experience in historic bridge design compatibility to serve as a consultant during the design process.
- WSDOT will consult with the nearby property owners, Montlake Community Council, City of Seattle, and DAHP on feasible ways to provide a visual buffer between Montlake Boulevard and the new bascule bridge and those historic properties that are adjacent to the boulevard and bridge. Any agreed-upon measures will be implemented as early as practicable in the construction process for the new bascule bridge.

Mitigation for effects associated with changes from constructing the second bascule bridge includes the following measures:

- In consultation with DAHP, Seattle Landmarks Board, and concurring parties to the Programmatic Agreement, WSDOT will ensure that safeguards are in place such that, to the maximum extent practicable, the historic Montlake Bridge is protected from physical damage during construction of the new bascule bridge.
- In consultation with DAHP, the UW, and any other concerned concurring parties to the Programmatic Agreement, WSDOT will ensure that safeguards are in place to the maximum extent practicable such that vibration, excavations, and heavy equipment do not affect the Canoe House or contributing properties within the Montlake Historic District during construction of the new bascule bridge. No construction staging or storage will occur south of the East Campus Bicycle Route in the immediate vicinity of the Canoe House.
- WSDOT will ensure that access to the Ship Canal Waterside Trail will be maintained throughout construction of the new bridge. Full access to the trail will be re-established once the new bascule bridge construction is completed; the nature of this access will be determined as part of the bridge design process.

- During construction of the new bascule bridge, WSDOT will maintain access through the Montlake Cut for marine traffic except for a few short periods of time when the spans are being erected. During these periods (estimated at up to five total, ranging from several hours to two work days), the Montlake Cut will be closed to marine traffic. None of these closures will take place during the traditional Opening Day events.

Portage Bay Bridge

Mitigation for effects associated with the new Portage Bay Bridge includes the following measures:

- WSDOT is committed to a context-sensitive solutions approach for the replacement of the Portage Bay Bridge. In consultation with the Seattle Design Commission, DAHP, the concurring parties to the Programmatic Agreement, and the public, WSDOT will develop a design review process for the new Portage Bay Bridge that will address overall urban design. WSDOT will secure the services of an outside design expert with appropriate experience in designing new bridges within historically sensitive areas to serve as a consultant during the design process.
- WSDOT will use quieter concrete pavement on the new Portage Bay Bridge.
- WSDOT will place noise-absorptive material on the inside face of the currently planned 4-foot barriers along both sides of the structure.
- WSDOT will encapsulate the Portage Bay Bridge joints in an effort to reduce noise.
- WSDOT will make parking under the bridge available to NOAA Northwest Fisheries Science Center employees again after completion of construction, pending application for and approval of an airspace lease.
- WSDOT will assist the community in their future historic preservation planning efforts by recording the houseboats currently docked on the west shore of Portage Bay between University Bridge and the Queen City Yacht Club docks. WSDOT will also evaluate the NRHP eligibility of these properties, both individually and as a potential district. Survey materials will be compiled and submitted

in a format compatible with both the DAHP and City of Seattle historic property databases.

10th Avenue and Delmar Lid and I-5 Interchange

Mitigation for effects associated with changes to the 10th and Delmar lid includes the following measures:

- WSDOT will adopt the design for the 10th Avenue/Roanoke Street intersection negotiated between SDOT and the adjacent neighborhoods, subject to continuing consultation with the neighborhoods and review by DAHP.
- In consultation with the Seattle Design Commission, Seattle Landmarks Preservation Board, DAHP, and the concurring parties to the Programmatic Agreement, and using the services of a landscape architect, WSDOT will create a landscape design plan for the 10th and Delmar lid. The design will be compatible with the historic character of the Roanoke Park Historic District and other adjacent historic properties and consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties insofar as these are applicable.
- This landscape design plan may include provisions for some or all of the following:
  - Design, fabrication, and installation of interpretive markers describing the evolution of the Olmsted landscape and the effects of SR 520 on the landscape. If adopted as part of the design plan, exhibits may note that the lid reconnects communities and recovers the landscape connections that were important historically within the landscape of Seattle.
  - Incorporating Olmsted characteristics, perhaps using the City of Seattle Olmsted Park Furniture Standards as guidelines for items such as benches or lighting, into the design of the lid and the Bagley viewpoint.
  - A context-sensitive design blending the lid into the hillslope to the south.
  - Retaining or replacing existing fences on the south side of the lid with context-sensitive barriers or fences to protect the security of surrounding homes.

  - Tagging of any mature trees that will be removed and notification to the community before construction plans are finalized.

- An earlier collaborative effort between WSDOT and the Portage Bay/Roanoke Park and North Capitol Hill communities addressed lid design with the goal of retaining as many of the existing trees and as much of the existing hill contour as possible. Design elements from these earlier discussions will be carried forward for consideration in the final design, but details such as curbside bed design, retention or replacement of the current features of Bagley Viewpoint, and location of signage will be determined through the collaborative design process.

- WSDOT will retain as much mature vegetation as possible on all sides of the lid.

- WSDOT will provide for the use of underground wiring on the 10th and Delmar lid to the extent feasible

- WSDOT will consult with the Portage Bay/Roanoke Park Community Council on a sign plan for historic markers for the Roanoke Park Historic District. Once the sign plan is approved by WSDOT, in consultation with DAHP and the Seattle Design Commission, WSDOT will fund fabrication and installation of up to five historic markers or signs at the major entrances to the district. WSDOT will consult with City of Seattle and Portage Bay/Roanoke Park Community Council on a process for ensuring maintenance of the signs.

Mitigation for effects associated with changes to the I-5 interchange includes the following measures:

- WSDOT will use quieter concrete pavement on all parts of SR 520 mainline elements of the project west of the Portage Bay Bridge, including the new HOV ramp. WSDOT will maintain the highway surface for safety, and will monitor quieter concrete pavement for safety every 2 years. WSDOT will also monitor the quieter concrete for noise performance at least quarterly over a period of 4 years

- WSDOT will consult with appropriate concurring parties to the Programmatic Agreement during the design process for the I-5 interchange about the aesthetic treatment of the flyover HOV ramp and other potential measures for protecting views of and from historic properties.

- Where right-of-way fence is required in the Portage Bay/Roanoke and North Capitol Hill communities, WSDOT will consult with those communities about the possibilities for visually compatible fencing.
- WSDOT will consult with the concurring parties to the Programmatic Agreement and Seattle Design Commission to develop the landscape design for the bicycle/pedestrian path on the I-5 overpass at East Roanoke Street.
- As mitigation for the multiyear visual and audible intrusions into the setting of the historic properties of the North Capitol Hill community, WSDOT will assist them in future historic preservation planning efforts by recording and evaluating the Billodue House at 2333 Broadway Avenue East for NRHP eligibility.

Portage Bay Bridge

Mitigation for effects associated with the new Portage Bay Bridge includes the following measures:

- WSDOT will develop a coordination plan with the Seattle Yacht Club to minimize disruption of historically significant activities at the Seattle Yacht Club Main Station and on Portage Bay, the Montlake Cut, and Union Bay during construction. This plan will, at a minimum, address the following issues:
  - Key periods during which the Seattle Yacht Club considers both water access and land access to its facilities particularly crucial.
  - Ongoing coordination relative to special events such as weddings or watercraft training or races being held at the Seattle Yacht Club or on the water.
  - Provisions for water, vehicular, and pedestrian access to the Seattle Yacht Club Main Station for members and guests throughout the construction period.
  - Mechanisms for WSDOT to communicate with Seattle Yacht Club about construction schedules on Portage Bay and closures of the Montlake Cut.

  - Prohibition on the use of West Montlake Park for construction staging or other construction-related activities.
  - Provisions for coordination between WSDOT and Seattle Yacht Club ensuring that construction activities in Portage Bay and the Montlake Cut will not interrupt or interfere with Opening Day Events (one week before the first Saturday of May and one week after).
  - A moratorium on towing of pontoons through Portage Bay, the Montlake Cut, and Union Bay during the Opening Day events as well as a prohibition on anchoring or mooring pontoons in such a way that they would interfere with Opening Day events.
  - A commitment from WSDOT that barge activity (transport, moorage, construction, etc.) will not interfere with Opening Day Events in Portage Bay.
- WSDOT and FHWA are in the process of negotiating an agreement with the NOAA to avoid damage to their historic structures and interruption of historic research functions at the Northwest Fisheries Science Center as a result of SR 520 construction.

Other Historic Properties

Mitigation measures for other effects on historic properties include the following measures.

Access to Historic Properties

- WSDOT will maintain access to all historic properties during construction. Except for emergency situations, WSDOT will provide 24 hours advance notice to affected property owners before any unavoidable interruptions of access. WSDOT will consult with affected property owners to address their needs, which may include the development of an alternative access strategy for short-term interruptions of access and longer-term detours.
- WSDOT will consult with St. Demetrios Church to develop a strategy for ensuring safe and convenient access to the Church grounds and facilities in the event that the East Lynn Street and/or 19th Avenue potential haul routes are chosen for use at any time during project construction. This strategy will include the following:

  - A prohibition on any use of either or both of the above-referenced potential haul routes during the three calendar days of the annual Greek Festival.
  - Cessation of any construction-related activities that would limit the parking available in the neighborhood in the vicinity of the Church during the three calendar days of the annual Greek Festival.
  - A requirement that the contractor provide flaggers to assist in entering and exiting the St. Demetrios facilities through either the East Lynn Street parking lot or the Boyer Avenue entrance if either street is used as a construction haul route during regularly scheduled Sunday services. Flaggers will be made available beginning one-half hour before and extending until one-half hour after regularly scheduled Sunday services.
  - A process for ensuring safe and convenient access to the St. Demetrios parking lot for special events, such as the annual fundraising auction, that are scheduled during any period of use of either or both of the above-referenced potential haul routes.

- WSDOT will coordinate with SDOT, St. Demetrios Church, Montlake Community Club, and Concerned Citizens of Montlake - 520 to initiate the studies required to determine whether conditions at the intersection of 19th Avenue East and East Lynn Street warrant installation of stop signs or other traffic control measures.
- WSDOT will consult with Seward School to ensure safe access during construction when school is in session.
- Except for unavoidable brief periods for which advance notice will be provided, WSDOT will maintain pedestrian access to all historic properties, to St. Patrick’s Church, and to local bus stops throughout the construction period.
- WSDOT will ensure that access to the actively used portions of the Montlake Playfield is maintained during construction.

Projectwide Effects from Construction

- WSDOT will develop measures to protect traffic circles and planters from construction/hauling traffic and will restore islands and planters to their pre-construction condition when use of the haul route has been completed, should any modifications be necessary or should any inadvertent damage occur as a result of construction hauling.

- WSDOT will ensure that any curbs damaged by construction or materials hauling are repaired when use of the route has completed.
- In consultation with the concurring parties to the Programmatic Agreement and others potentially affected by project construction, and prior to the beginning of construction, WSDOT will develop and implement a CCMP. WSDOT will consult with DAHP about the CCMP insofar as the provisions of the plan may pertain to effects on historic properties.
- WSDOT will provide an ongoing opportunity for the concurring parties to the Programmatic Agreement and other affected parties to have input into construction management practices that can help to avoid, minimize, or mitigate the effects of construction activities on historic properties.
- The CCMP will comprise the following parts:
  - WSDOT will address specific construction effects on historic properties within the APE that have been identified through the Section 106 process by implementing stipulations I through VII of the Programmatic Agreement (see Attachment 9 to the Final EIS).
  - Through standard BMPs and WSDOT standard specifications and special provisions, WSDOT will take general precautions to protect historic properties from excessive noise, vibration, excavation, emissions, fugitive dust, lighting, glare, and traffic impacts.
  - WSDOT will implement environmental commitments related to historic properties made in compliance with other regulatory processes (e.g., NEPA).
  - WSDOT will address general community impacts from construction activities, including:
    - Access by emergency service providers to homes and businesses.

- Maintenance of basic services (water, gas, electric, internet, etc.) and timely response in case of accidental interruptions of service as a result of construction activities.
- Vegetation management including provisions for the following:
  - Protecting trees and other screening vegetation adjacent to construction work areas from construction impacts.
  - Replacing removed trees following City of Seattle street tree standards.
  - WSDOT monitoring of contractor adherence.

– Temporary erosion and sediment control measures to be implemented throughout the construction period.

– Traffic management measures during construction to keep traffic flowing, limit detour routes through residential areas, and ensure access for residents, etc.

Summary

The avoidance, minimization, and mitigation measures stipulated in the Programmatic Agreement resolve the adverse effect on historic properties from construction and operation of the Preferred Alternative of the SR 520, I-5 to Medina project.

9. Conclusions

Since the initiation of the environmental review process for the SR 520, I-5 to Medina project, extensive research, surveys, and archaeological investigations have occurred within the APE. In response to redesign and alteration of project alternatives and the limits of construction boundary, additional studies have been conducted in support of the Section 106 process. This discipline report synthesizes the results of the numerous investigations conducted within the APE, describes survey and identification efforts, analyzes project effects, and presents conclusions and recommendations.

No NRHP-eligible archaeological resources were identified within the APE during field investigations for this project. However, research indicates that there is the potential for the project to encounter as yet unidentified or evaluated archaeological resources within the limits of construction in the APE. Therefore, additional investigations are recommended to further identify cultural resources as appropriate.

Foster Island was determined eligible for the NRHP as a TCP. The project has impacts on the TCP, as determined through tribal consultation, that contribute to the overall projectwide adverse effect. To address the effects on the TCP, a commitment to develop a Foster Island Treatment Plan was included in the Programmatic Agreement (Attachment 9 to the Final EIS).

Based on the collected research, the field investigations and the analysis of effects, WSDOT, on behalf of FHWA, and in consultation with the SHPO, has determined that the project would have an adverse effect on historic properties within the APE. A Programmatic Agreement was developed, in consultation with SHPO, ACHP, affected tribes, and other Section 106 consulting parties, to address the adverse effect on historic properties. A stipulation of the agreement is the development and implementation of an Archaeological Treatment Plan, which will outline the identification and evaluation program in order to complete the Section 106 process. The Programmatic Agreement stipulates means to avoid, minimize, and mitigate the adverse effect on historic properties from the Preferred Alternative of the SR 520, I-5 to Medina project.

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