

This chapter compares the expected effects of the No Build, 4-Lane, and 6-Lane Alternatives in the Lake Washington project area in the same manner as in Chapter 5. In addition to the effects comparison, this chapter also describes measures to avoid, mitigate, or minimize any negative effects on the human and natural environment.

Chapter 6: Detailed Comparison of Alternatives – Lake Washington

This chapter compares how the 4-Lane, 6-Lane, and No Build Alternatives are expected to affect the Lake Washington project area, which encompasses the floating portion of the Evergreen Point Bridge, but not the east and west approaches. The description of effects is more detailed than the summary version provided in Chapter 4.

How would views of and from Lake Washington change if the project were built?

The new Evergreen Point Bridge would look similar to the existing bridge in many ways, but there would be some key differences. The bridge would sit on columns on top of pontoons, not directly on pontoons as it does today. The surface of the road would be about 25 feet above the water—14 feet higher than the existing bridge. Compared to the existing bridge, the west approach would be wider and about 70 feet farther north at mid-lake, thus removing the S-curve alignment of the current bridge.

Today's bridge sits directly on pontoons; the new bridge would sit on columns on top of pontoons.

The new bridge would not have steel truss structures atop the west and east highrises like the existing bridge. This would reduce the visual clutter that the trusses create for motorists and other viewers.

These changes in scale and appearance are expected to be somewhat noticeable from shoreline neighborhoods *(Exhibits 6-1 and 6-2)*, but would not change the quality or character of those views because the bridge is a small element in the distance. Boaters on Lake Washington would see changes similar to those that viewers in shoreline neighborhoods would see, but these changes would be more noticeable to boaters close to the bridge. The 6-Lane Alternative, although noticeably wider than the 4-Lane Alternative, would otherwise have the same visual effects. As shown in Exhibit 6-1, the Pacific Street Interchange option would look noticeably different from Husky Stadium compared to the 4-Lane or 6-Lane Alternative because of the proximity of the Union Bay Bridge.

Exhibit 6-1. **View from Husky Stadium**

Looking southeast from Husky Stadium across Union Bay and Lake Washington toward Cascade Mountains

Existing View

- Main roadway about 10 feet above water
- S-curve at west end
- Floating bridge deck rests directly on pontoons

4-Lane Alternative

- Main roadway about 25 feet above water
- S-curve removed and alignment straightened
- Floating bridge alignment shifted to north
- Floating bridge deck rests on column-pontoon combination

6-Lane Alternative

- Same as 4-Lane Alternative, but wider

Pacific Street Interchange Option

- Main roadway about 25 feet above water
- Pacific Street Interchange about 80 feet above water
- Union Bay Bridge about 110 feet above water

Exhibit 6-2. **View from Madison Park**

Looking northeast across Lake Washington toward Evergreen Point Bridge and Kirkland from Madison Park North in Madison Park

Existing View

- Main roadway about 10 feet above water
- S-curve at west end
- Floating bridge deck rests directly on pontoons

4-Lane Alternative

- Main roadway about 25 feet above water
- S-curve removed and alignment straightened
- Floating bridge alignment shifted to north
- Floating bridge deck rests on column-pontoon combination

6-Lane Alternative

- Same as 4-Lane Alternative, but wider

Scenic views from SR 520 of the Cascade and Olympic Mountains and Mount Rainier would change somewhat because of the roadway's increased height and a 10-foot-high sound wall on the south side of the west approach, which would end just east of Madison Park. On the north side of the bridge, a safety barrier between the new bicycle/pedestrian path and the roadway could also partially block views. However, bicyclists and pedestrians would have panoramic views to the north, and the five vantage points on the bridge would allow them the opportunity to stop and enjoy the scenery.

Under the No Build Continued Operation scenario, SR 520 and its bridges would continue to look as they do today. In the Catastrophic Failure scenario, the appearance of the Evergreen Point Bridge would change as a result of damage incurred during the failure, but it is impossible to predict exactly what these changes would be.

How would the project affect navigation channels?

The No Build Alternative would maintain the three navigation channels associated with the existing Evergreen Point Bridge—the west highrise, the midspan, and the east highrise. The east highrise is 57 feet above the water and is 207 feet wide *(see Exhibit 3-15)*. Although the midspan drawbridge has no height limitations, it has mostly been opened only for maintenance in the last several years. However, catastrophic failure of the bridge could render one or more of these channels unusable—for example, by blocking passage beneath a highrise or incapacitating the draw span. The age of the existing bridge and its vulnerability to storms and earthquakes makes this scenario increasingly likely as time goes by.

The 4-Lane and 6-Lane Alternatives would change the navigation channel options available for large recreational and commercial vessels to reach points in Lake Washington south of the Evergreen Point Bridge. Both build alternatives would eliminate the midspan navigational channel and change the height of the east and west channels. The new east navigational channel would be higher, with a 70-foot vertical clearance above high water. This would provide 13 more feet of vertical clearance than the existing span, matching the height of the clearance at the I-90 east channel bridge. At 25 feet high, the new west navigational channel would be lower than the existing west channel, which is now 44 feet high.

Based on consultation with marina and commercial vessel operators, as well as research into the types of vessels that now use Lake Washington, the proposed navigational channels appear to be adequate to allow passage of all vessels currently using the lake. The west navigation channel, although lower than the existing channel, is expected to allow passage of virtually all power boats that use the channel now. All but the smallest sailboats would have to use the east navigation channel. However, only approximately 5 percent of the boats on Lake Washington are sailboats,

and many cannot pass through the existing west channel, so the shift of sailboats to the east channel would be small. A potential future issue is that the Seattle Fire Department is considering the purchase of a new fire boat that may require a vertical clearance greater than the 25-foot-high clearance provided at the new west navigational channel, which may affect emergency response times. WSDOT is working with the Seattle Fire Department to identify which fireboat in its fleet will serve Lake Washington in the future and ensure that it can navigate under the west approach structure in an emergency.

The Pacific Street Interchange option would place a new bridge across Union Bay that would span the navigational channel east of the Montlake Cut with a vertical clearance of 110 feet. This clearance was selected because there are no vessels taller than 110 feet that travel regularly in this part of the lake. However, to reduce the roadway slope that this height would necessitate, WSDOT is considering requesting that the U.S. Coast Guard establish a new governing clearance of 70 feet for this area. (Only two vessels with a vertical clearance higher than 70 feet are now known to travel in this part of the lake.) Before making this change, the Coast Guard would consider whether vessels requiring a higher clearance have an essential use in north Lake Washington. With either a 110-foot or a 70-foot clearance, the bridge columns would be placed just outside the navigational channel to avoid interfering with vessel traffic.

Looking east from the Montlake Cut towards the location where the Union Bay Bridge would span the navigation channel.

How would noise levels change on Lake Washington if the project were built?

Noise levels were not measured or modeled along the open-water portions of the bridge because people only use the lake in the vicinity of the bridge for relatively short-term activities, such as boating. The noise levels that would reach people on land from traffic across the lake are discussed in Chapters 5 and 7 for Seattle and the Eastside, respectively. No sound walls would be built between the eastern end of Madison Park and just west of landfall on the east shore of Lake Washington.

How would effects on cultural and/or historic resources compare between the alternatives?

As described in Chapter 2, the Evergreen Point Bridge is considered eligible for the NRHP and the Washington State Historic Register because of its significant engineering design and the role it has played in the development of the Eastside. Construction of this project would require removal of the existing bridge; this would have a direct adverse effect on a historic resource that would not occur under the No Build Alternative. Neither the 4-Lane nor the 6-Lane Alternative would permanently affect any known archaeological or ethnographic sites in the lake. There could be some effect on the historic sunken vessels (described in Appendix D,

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Cultural Resources Discipline Report), although these vessels are likely ineligible for the NRHP due to their deteriorated condition.

WSDOT will address project effects on the Evergreen Point Bridge through compliance with the Section 106 and Section 4(f) processes, as described earlier in this Draft EIS. WSDOT could mitigate the removal of the historic bridge by having a qualified historian formally document the structure before its demolition. This would include photographs, measured drawings, and a written history of the bridge. The documentation would be added to the Historic American Building Survey/Historic American Engineering Record (HABS/HAER) archive, described in the sidebar at right. Additional mitigation could include funding of a bridge- or transportation-related community project, such as a survey, museum display, publication, or Web site providing information on historic Puget Sound area bridges. Appendices D and P (Cultural Resources Discipline Report and Draft Section 4(f) Evaluation, respectively) provide additional detail on effects, mitigation, and compliance with Section 106 and Section 4(f) requirements.

The Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER)

The HABS/HAER program provides a permanent collection of materials that document the United States' achievements in architecture and engineering. This collection, which is protected in the Library of Congress, consists of measured and interpretive drawings, large-format black and white and color photographs, written historical and descriptive data, and original field notes. The documentation provides a comprehensive record of American structures and engineering through more than 37,000 recorded historic structures and sites, from Native American cliff dwellings at Mesa Verde to space-age technology at Cape Canaveral.

How would the project affect ecosystems in Lake Washington?

The columns of the replacement Evergreen Point Bridge roadway would rest on floating pontoons anchored to the lake bottom, like those of the existing floating bridge. Steel cables would connect the pontoons to the anchors. For either build alternative, approximately 22 anchors would be required on each side of the bridge for a total of 44 new anchors *(see Exhibit 3-14)*. After their installation, the anchors would soon be covered with lake bottom sediments and would have little permanent effect on the lakebed. Chapter 5 describes the project's effects on wetlands along Lake Washington's western shoreline.

The new bridge would have two rows of new pontoons. They would be either 60 feet wide (for the 4-Lane Alternative) or 75 feet wide (for the 6-Lane Alternative) and 18 feet deep. This compares with the single row of 60-foot-wide, 9- to 11-foot-deep pontoons on the existing bridge. The pontoons would cover a total area of 21.5 acres with the 4-Lane Alternative and 27.3 acres with the 6-Lane Alternative, more than double the 10.4 acres covered by the existing pontoons. The greater width of the bridge would shade more aquatic habitat, but the additional shaded area would be negligible compared to the surface area of the lake.

Although the new bridge would have substantially more impervious surface than the current bridge, new stormwater treatment facilities would meet or exceed current federal and state water quality standards. Treating stormwater runoff would result in less sediment being released into the

lake; grease and oil from vehicles would be captured in the lagoon enclosed by the pontoons and removed mechanically. This would improve aquatic habitat quality for fish and other species.

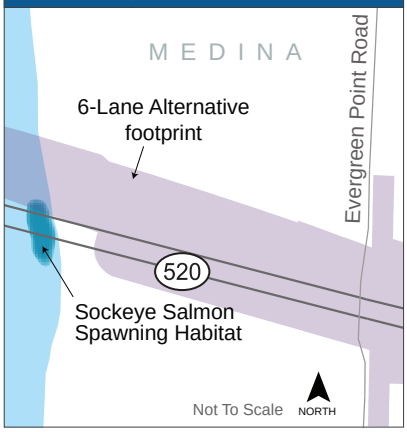
The 4-Lane and 6-Lane Alternatives would both include a bridge operations facility on the east shore of Lake Washington underneath the bridge. The facility would have a dock extending about 70 feet from the shoreline under the bridge in an area where two smaller wood docks now exist. A 50-foot boat and an 18-foot boat that would be used only to access the floating pontoons would be moored at this dock, which would have a metal grated deck supported by steel piles. The dock would extend over a sockeye salmon spawning area identified on Washington Department of Fish and Wildlife map records. *Exhibit 6-3* shows the location of the spawning area.

The effects of the bridge operations facility and dock on the spawning area are uncertain. Sockeye can currently be found along Lake Washington shorelines where docks are common. Redds (nests of salmon eggs) have been found immediately adjacent to docks, although they have not been found beneath docks. Therefore, the sockeye spawning beach could potentially be displaced. Juvenile Chinook salmon, bull trout, and other fish species would likely treat the new dock as they do other docks along the Lake Washington shoreline. The presence of the new dock would be mitigated in part by removing the two existing residential docks.

It is also possible that constructing the bridge operations facility on the hillside could alter groundwater flow and discharge, which currently may encourage sockeye to spawn in this location. Any flows intercepted in this area would likely be discharged to the lake, which could have the potential to affect the sockeye spawning area just offshore from the maintenance facility. WSDOT will conduct further geotechnical investigations during project design to develop more information on groundwater levels and flows in this area and identify suitable dewatering measures.

The No Build Alternative would not include an important benefit of the build alternatives—the treatment of stormwater runoff from the highway. By improving water quality over what it is today, the build alternatives would maintain or improve habitat for fish and other aquatic life.

Exhibit 6-3. **Identified Sockeye Salmon Spawning Habitat**



The sockeye spawning area that is located under the east highrise of the Evergreen Point Bridge is one of more than 85 shoreline spawning areas identified in Lake Washington.