Final Environmental Impact Statement

October 2022

CAPITOL LAKE – DESCHUTES ESTUARY

Long-Term Management Project Environmental Impact Statement

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STATE OF WASHINGTON
DEPARTMENT OF ENTERPRISE SERVICES
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PO Box 41476, Olympia, WA 98504-1476

October 31, 2022

To Affected Tribes, Interested Agencies, Organizations, and Members of the Public:

The Department of Enterprise Services (Enterprise Services) has issued a Final Environmental Impact Statement (Final EIS) for the Capitol Lake – Deschutes Estuary Long-Term Management Project.

Enterprise Services has evaluated alternatives for long-term management of the Capitol Lake – Deschutes Estuary within this EIS process. The purpose of this has been to identify, and then implement, an environmentally and economically sustainable long-term management alternative that improves water quality and manages existing sediment accumulation and future deposition. The project is also needed to improve the impaired ecological functions within the Capitol Lake – Deschutes Estuary and adjacent waters. These efforts would restore and enhance community use of the resource.

Under existing conditions, the waterbody suffers from accumulating sediment, violations of water quality standards, a dense community of aquatic plants, and invasive plant and animal species that have resulted in restrictions to active recreation. Neither short-term actions nor a long-term management alternative can be implemented until an EIS is completed and a Preferred Alternative is selected.

As Lead Agency under the State Environmental Policy Act, Enterprise Services has prepared the EIS to evaluate a range of long-term management alternatives for their ability to meet project goals. The EIS evaluates a "No Action" and three action alternatives – an Estuary, a Hybrid, and a Managed Lake Alternative.

Enterprise Services issued the Draft EIS on June 30, 2021, which analyzed impacts on hydrodynamics and sediment transport; navigation; water quality; aquatic invasive species; fish and wildlife; wetlands; air quality and odor; land use, shorelines, and recreation; cultural resources; visual resources; environmental health; transportation; public services and utilities; and economics.

Enterprise Services is now issuing this Final EIS to document the final evaluation under SEPA. The Final EIS examines the project alternatives, including the Preferred Alternative for long-term management, identified as the Estuary Alternative. The Estuary Alternative is the Preferred Alternative for the long-term management project because it is expected to best achieve project goals and provides other environmental benefits, was determined to be environmentally and economically sustainable, and has the broadest stakeholder support.

The Final EIS evaluates the potential impacts and benefits of the alternatives over a 30-year time horizon, short-term impacts during construction, and potential mitigation measures. It includes additional information to support the decision-making process, including planning-level costs, input from engaged governmental and agency partners, and permits and approvals that would be required to implement the long-term management project.

The Final EIS also responds to public comments received during the Draft EIS comment period held from June 30 to August 29, 2021. All comments received during that comment period were reviewed, compiled, and considered in the development of the Final EIS. The Final EIS reflects revisions and additional information in response to comments received on the Draft EIS. Responses to all comments on the Draft EIS are presented in the Final EIS, Attachment 22.

Please see the Fact Sheet of this Final EIS regarding document availability and who to contact for further information about the Final EIS.

Thank you for your interest in the Capitol Lake – Deschutes Estuary Long-Term Management Project environmental review process.

Sincerely

William Frare

William J. Frare, P.E.
Assistant Director, Facility Professional Services (and SEPA Responsible Official)

Fact Sheet

Project Title: Capitol Lake – Deschutes Estuary Long-Term Management Project

Project Description and Location:

The Capitol Lake – Deschutes Estuary includes the 260-acre waterbody, known as Capitol Lake, located on the Washington State Capitol Campus, adjacent to downtown Olympia, at the base of Puget Sound. Historically, freshwater from the Deschutes River would mix with saltwater from Budd Inlet over expansive tidal flats. Between 1949 and 1951, a dam was constructed at 5th Avenue and, without the tidal exchange, the area was transformed into a freshwater lake, fed primarily by the Deschutes River. The newly formed Capitol Lake began to experience a range of environmental impairments after construction of the 5th Avenue Dam, eventually leading to community-use restrictions that persist today. Neither short-term actions (e.g., dredging to remove accumulated sediment) nor construction of a long-term management alternative (Estuary, Hybrid, or Managed Lake) can be implemented until an Environmental Impact Statement (or EIS) is complete and a Preferred Alternative is selected. The Department of Enterprise Services, at the direction of the state Legislature, developed this EIS.

Summary of Alternatives:

No Action: A No Action Alternative is a required element in an EIS. It provides a baseline against which the impacts of the action alternatives (Managed Lake, Estuary, Hybrid) can be evaluated and compared. The No Action Alternative represents the most likely future in the absence of implementing a long-term management project. The No Action Alternative would retain the 5th Avenue Dam in its current configuration, with limited repair and maintenance activities, consistent with the scope and scale of those that have received funding and environmental approvals over the past 30 years.

Managed Lake: The Managed Lake Alternative would retain the 5th Avenue Dam in its existing configuration. The 5th Avenue Dam would be overhauled to significantly extend the serviceable life of the structure. The reflecting pool within the North Basin would be maintained, and active recreational use would be restored in this area. Sediment would be managed through initial construction dredging and recurring maintenance dredging in the North Basin only. Sediment from construction dredging would be used to create habitat areas in the Middle Basin to support improved ecological function, habitat complexity, and diversity. Sediment would continue to accumulate and over time would promote a transition to freshwater wetlands in the South and Middle Basins. A new non-vehicular bridge south of the existing 5th Avenue Bridge would be constructed to provide a dedicated bicycle and pedestrian recreational trail connection.

Estuary: Under the Estuary Alternative, the 5th Avenue Dam would be removed, and an approximately 500-foot-wide (150-meter-wide) opening would be established in its place. This would reintroduce tidal hydrology to the Capitol Lake Basin, returning the area to estuarine conditions where saltwater from Budd Inlet would mix with freshwater from the Deschutes River. Sediment would be managed through initial construction dredging in the Capitol Lake Basin and recurring maintenance dredging within West Bay. Dredged materials from construction dredging would be used to create habitat areas in the Middle and North Basins to promote ecological diversity, though tideflats would be the predominant habitat type. The

Estuary Alternative has been modified in the Final EIS to construct the new 5th Avenue Bridge south of the existing 5th Avenue Dam and Bridge rather than replacing the bridge in its existing footprint; this avoids long-term closure of the 5th Avenue corridor during construction. The new bridge would include a vehicle lane, bicycle lane, and sidewalk in each direction, with the sidewalk on the south side providing a dedicated recreational trail connection. This bridge would be constructed and connected to the transportation system before the existing 5th Avenue Dam and Bridge are removed. **The Estuary Alternative has been identified as the Preferred Alternative for long-term management of the Capitol Lake – Deschutes Estuary.**

Hybrid: Under the Hybrid Alternative, the 5th Avenue Dam would be removed, and an approximately 500-foot-wide (150-meter-wide) opening would be established in its place. Tidal hydrology would be reintroduced to the western portion of the North Basin and to the Middle and South Basins. Within the North Basin, a curved and approximately 2,600-foot-long (790-meter-long) barrier wall with a walkway would be constructed to create an approximately 45-acre reflecting pool adjacent to Heritage Park. The reflecting pool of the Hybrid Alternative has been updated in the Final EIS to be groundwater-fed, rather than filled by saltwater through tidal gates in the barrier wall. Construction and maintenance of this smaller reflecting pool, in addition to restored estuarine conditions in part of the Capitol Lake Basin, gives this alternative its classification as a hybrid. Other aspects, including sediment management would be the same or similar to that described for the Estuary Alternative.

All action alternatives include adaptive management, and construction of boardwalks, facilities to improve pedestrian and bicycle mobility in the 5th Avenue corridor, a dock, and a boat launch for community use.

Project Proponent:

Washington State Department of Enterprise Services
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Olympia, WA 98501

Lead Agency and Responsible Official:

Washington State Department of Enterprise Services
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List of Permits and Approvals:

The List of Permits and Approvals that may be required for the project can be found in Final EIS Supporting Chapter 9.0, Permits & Approvals.

Authors and Principal Contributors:

The List of Preparers can be found in Attachment 2 of this Final EIS.

Date of Draft EIS Issuance:
June 30, 2021

Date Draft EIS Comments Were Due:
August 29, 2021

Date and Location of Draft EIS Public Hearing:
July 27, 2021, 6:30 – 8:30 pm, online

Date of Final EIS Issuance
October 31, 2022

Final EIS Availability:
The Final EIS is available online at: https://CapitolLakeDeschutesEstuaryEIS.org, and is also available for public access and review at the following locations.

Washington State Library
6880 Capitol Blvd SE, Tumwater, WA 98501
360-704-5200

West Olympia Timberland Library
625 Black Lake Blvd SW, Olympia, WA 98502
360-764-4440

Olympia Timberland Library
313 8th Avenue SE, Olympia, WA, 98501-1307
360-352-0595

Lacey Timberland Library
500 College St SE, Lacey, WA 98503
360-491-3860

Tumwater Timberland Library
7023 New Market Street, Tumwater, WA, 98501-6563
360-943-7790

Copies of the Final EIS on a thumbdrive may be requested from Enterprise Services.

Availability of Background Materials:
The Draft and Final EIS (published on June 30, 2021, and October 31, 2022, respectively), including supporting attachments and other background materials, are available on the project website: https://CapitolLakeDeschutesEstuaryEIS.org.

Next Steps

Following publication of the Final EIS, Enterprise Services intends to make a final decision on project implementation. No agency decision will be made until at least 7 days after issuance of the Final EIS.

If Enterprise Services decides to implement the project, a Notice of Action Taken will be issued in accordance with requirements of RCW 43.21C.080. The Notice of Action Taken would be published in The Olympian on the same day of each week for two consecutive weeks; would be filed with the Department of Ecology; would be mailed to real property owners adjacent to the project area; and would be posted within the project area. Any SEPA challenges to this Final EIS will be governed by WAC 200-10-110 and the SEPA rules and regulations (Chapter 43.21 RCW and WAC 197-11-680).

Subsequent SEPA Environmental Review

No subsequent SEPA environmental review of the proposed project is planned.

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Final EIS Summary

CAPITOL LAKE – DESCHUTES ESTUARY

Long-Term Management Project Environmental Impact Statement

Final EIS Summary

The Washington State Department of Enterprise Services (Enterprise Services) has conducted an environmental review process under the State Environmental Policy Act (SEPA) for the Capitol Lake – Deschutes Estuary Long-Term Management Project. This document provides an overview of the long-term management alternatives, a description of the process to identify the Preferred Alternative, and key findings from the range of technical analyses, which are provided in more detail in the supporting chapters and in the discipline reports that are included as attachments to this Final Environmental Impact Statement (EIS). All of documents that comprise the EIS can be accessed on the project website at https://capitollakedeschutesestuaryeis.org/.

The Estuary Alternative has been identified as the Preferred Alternative for long-term management of the Capitol Lake – Deschutes Estuary; see page 21 for more detail. A summary of the funding approach for the next project phases and planning-level cost estimates are provided on pages 50 through 53.

WHAT IS THE CAPITOL LAKE – DESCHUTES ESTUARY?

Learn more in EIS Supporting Chapter 1.0

Historically, what is now known as Capitol Lake was part of the Deschutes Estuary, where freshwater from the Deschutes River would mix with saltwater from Budd Inlet over expansive tideflats. The Deschutes Estuary has long-standing cultural and spiritual significance to local tribes, particularly the Squaxin Island Tribe. The Squaxin Island Tribe considers the people and land of Deschutes Estuary as Steh-Chass.

Between 1949 and 1951, a dam was constructed at 5th Avenue. Without the tidal exchange, the area was transformed into a freshwater lake, fed primarily by the Deschutes River. The waterbody was renamed Capitol Lake. Capitol Lake is the 260-acre waterbody located on the Washington State Capitol Campus, adjacent to downtown Olympia at the base of Puget Sound. Capitol Lake was designed as part of the Washington State Capitol Campus, and it quickly became an important visual and recreational resource to the community.

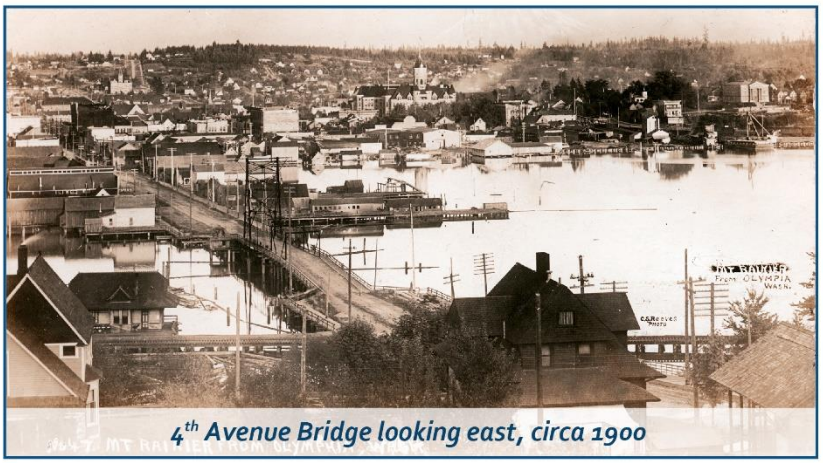
WHAT PROBLEM IS THIS PROJECT SEEKING TO RESOLVE?

Learn more in EIS Supporting Chapter 1.0 (Section 1.2)

An estimated 35,000 cubic yards of sediment are transported by the Deschutes River (and Percival Creek) into the Capitol Lake Basin each year, shallowing the lake and resulting in conditions that are visibly altered. Since construction of the 5th Avenue Dam, sediment accumulation has reached up to 13 feet thick in some areas. Water quality monitoring began in the 1970s in response to excessive

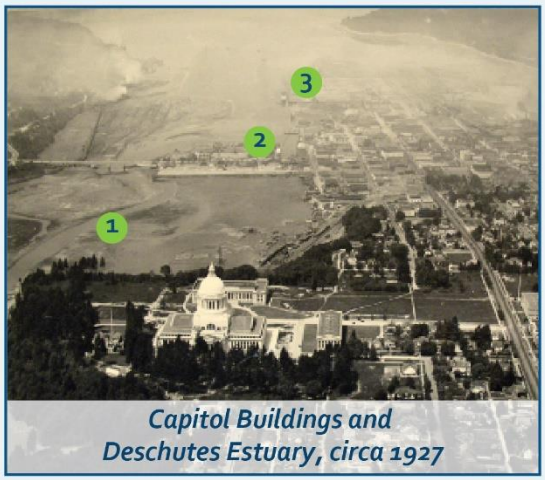
growth of aquatic plants, dense algal mats, and reduced water clarity, which are caused by high nutrient levels in Capitol Lake. In 1985, the Capitol Lake swimming beach operated by the City of Olympia was formally closed because of high bacteria levels, following years of intermittent closures due to water quality conditions near the swimming area, including lack of water clarity. Beginning in the late 1980s, management strategies were implemented to address aquatic invasive species. There are now more than a dozen different plant and animal aquatic invasive species in Capitol Lake. In 2009, the presence of the invasive New Zealand mudsnail resulted in official closure to all public uses. Many of these environmental conditions persist today and active use of the waterbody continues to be restricted.

DEVELOPMENT OF CAPITOL LAKE



4th Avenue Bridge looking east, circa 1900

Source: Courtesy of the Brewmaster's House Collection, City of Tumwater.

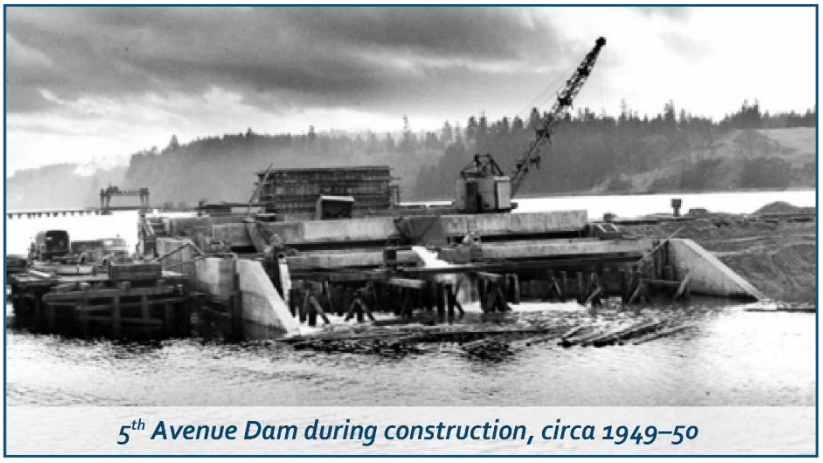


Capitol Buildings and Deschutes Estuary, circa 1927

North Basin of Capitol Lake and West Bay, 1959

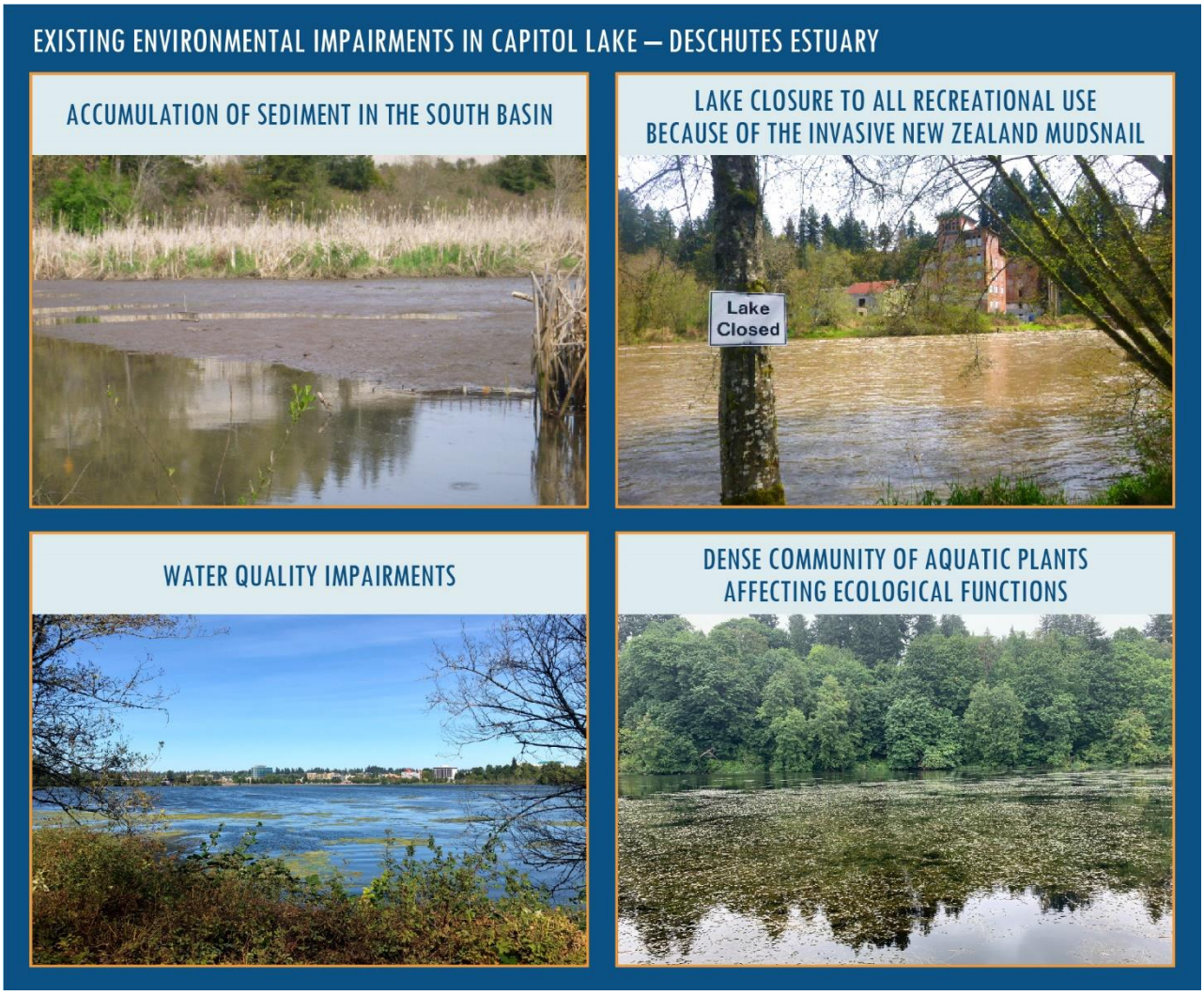
1 Deschutes Estuary 2 Olympia Yacht Club 3 Port of Olympia 4 5th Avenue Dam

Sources: (left) Thurston County Regional Planning (TRPC). (right) Photograph by Merle Junk, Commercial Photographer, Olympia, WA, The Susan Parish Collection of Photography.



5th Avenue Dam during construction, circa 1949–50

Source: Photographer Western Ways, Inc., Washington State Archives.



WHAT IS THE PURPOSE OF THIS PROJECT?

Learn more in EIS Supporting Chapter 1.0 (Section 1.8)

The purpose of the Capitol Lake – Deschutes Estuary Long-Term Management Project is to identify and implement an environmentally and economically sustainable long-term management alternative that improves water quality and manages existing sediment accumulation and future deposition. The project is also needed to improve the impaired ecological functions within the Capitol Lake – Deschutes Estuary and adjacent waters. The long-term management project would address the diminished beneficial uses of the waterbody, caused by accumulating sediment, historically poor water quality in the project area and invasive plant and animal species. These efforts would restore and enhance community use of the resource.

WHAT ARE THE PROJECT GOALS?

Learn more in EIS Supporting Chapter 2.0 (Section 2.1)

In 2016, Enterprise Services, in coordination with the Squaxin Island Tribe, governmental and agency partners, and the community, identified four primary goals for long-term management of the Capitol Lake – Deschutes Estuary that should be satisfied by any long-term management alternative.

The goals were established during a collaborative process, referred to as Phase 1 of the Long-Term Management Project. There is broad agreement that a long-term management project must be implemented to achieve these goals and improve existing conditions in the Project Area.

WHAT LONG-TERM MANAGEMENT ALTERNATIVES WERE EVALUATED?

Learn more in EIS Supporting Chapter 2.0 (Section 2.2)

There are two general approaches for management of the Capitol Lake – Deschutes Estuary: keep the 5th Avenue Dam in place and maintain a freshwater lake, or remove the 5th Avenue Dam and restore tidal estuarine conditions.

Three long-term management alternatives (also referred to as action alternatives) emerged from these two approaches, and were evaluated in the EIS. The objectives of the long-term management alternatives are described below:

- **A Managed Lake**, which would be similar to the existing Capitol Lake but with additional actions to meet lake management objectives. The 5th Avenue Dam would be retained and overhauled to significantly extend the serviceable life of the structure.
- **An Estuary**, which would restore tidal flow to conditions similar to the historic Deschutes Estuary. The 5th Avenue Dam would be removed, and a 500-foot opening would be created to reconnect the Capitol Lake Basin with Budd Inlet. The Estuary Alternative has been identified as the Preferred Alternative for long-term management of the waterbody.
- **A Hybrid**, which would restore tidal flow to conditions similar to the historic Deschutes Estuary. The 5th Avenue Dam would be removed, and a 500-foot-wide opening would be created. A new barrier would be installed to create a smaller (approximately 45-acre) lake feature (or "reflecting pool").

A No Action Alternative, which represents the most likely future expected in absence of implementing a long-term management project, was also evaluated. This is a required element of an EIS. It provides a baseline against which the benefits, impacts, and costs associated with the action alternatives can be compared.

The No Action Alternative does not meet project goals.

WHAT IS THE PROJECT AREA?

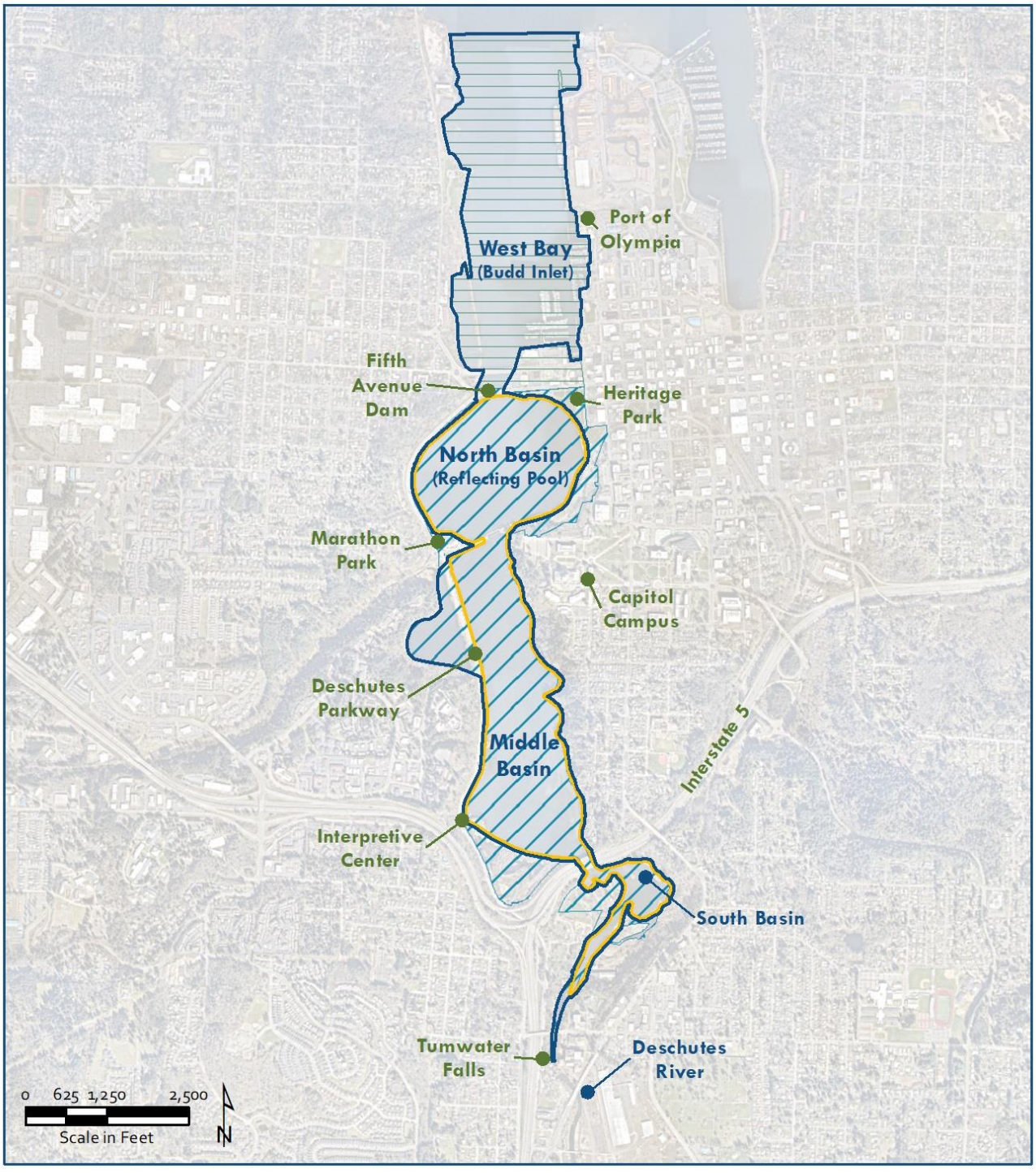
Learn more in EIS Supporting Chapter 1.0 (Section 1.4)

The Project Area includes the 260-acre Capitol Lake that is managed by Enterprise Services, and it extends to the northern point of West Bay of Budd Inlet. West Bay is not managed by Enterprise Services. However, project actions may occur in West Bay so it is included in the Project Area. The waterbody in this area is collectively referred to as the Capitol Lake – Deschutes Estuary.

Capitol Lake extends from the south end at Tumwater Falls in the City of Tumwater to the north end of the 5th Avenue Dam in the City of Olympia. There are three basins within this waterbody, referred to as the North Basin, Middle Basin, and South Basin.

The Project Area does not extend upstream of Tumwater Falls into the Deschutes River (south) because that area would not be directly affected by the Capitol Lake – Deschutes Estuary Long-Term Management Project. The Project Area is shown on Figure 1.

Figure 1 Project Area



Legend

- Capitol Lake/ Capitol Lake Basin
- Capitol Lake – Deschutes Estuary
- Project Area (within Enterprise Services Jurisdiction)
- Project Area (outside Enterprise Services Jurisdiction)

WHAT ARE THE PRIMARY COMPONENTS OF THE ACTION ALTERNATIVES?

Learn more in EIS Supporting Chapter 2.0 (Section 2.3)

The primary components of the Managed Lake, Estuary and Hybrid Alternatives are summarized in Table 1 on the following page. The No Action Alternative is not included in this table because no new action would be taken to improve water quality, manage sediment, improve ecological functions, or enhance community use.

Table 1 provides an overview of the primary components of the long-term management alternatives (Managed Lake, Estuary, and Hybrid). Figures 2 through 7 provide visual simulations of the three action alternatives.

Figures 8 through 10 describe the primary components of the three action alternatives and are provided at the end of this Final EIS Summary and in EIS Supporting Chapter 2.0 of the EIS.

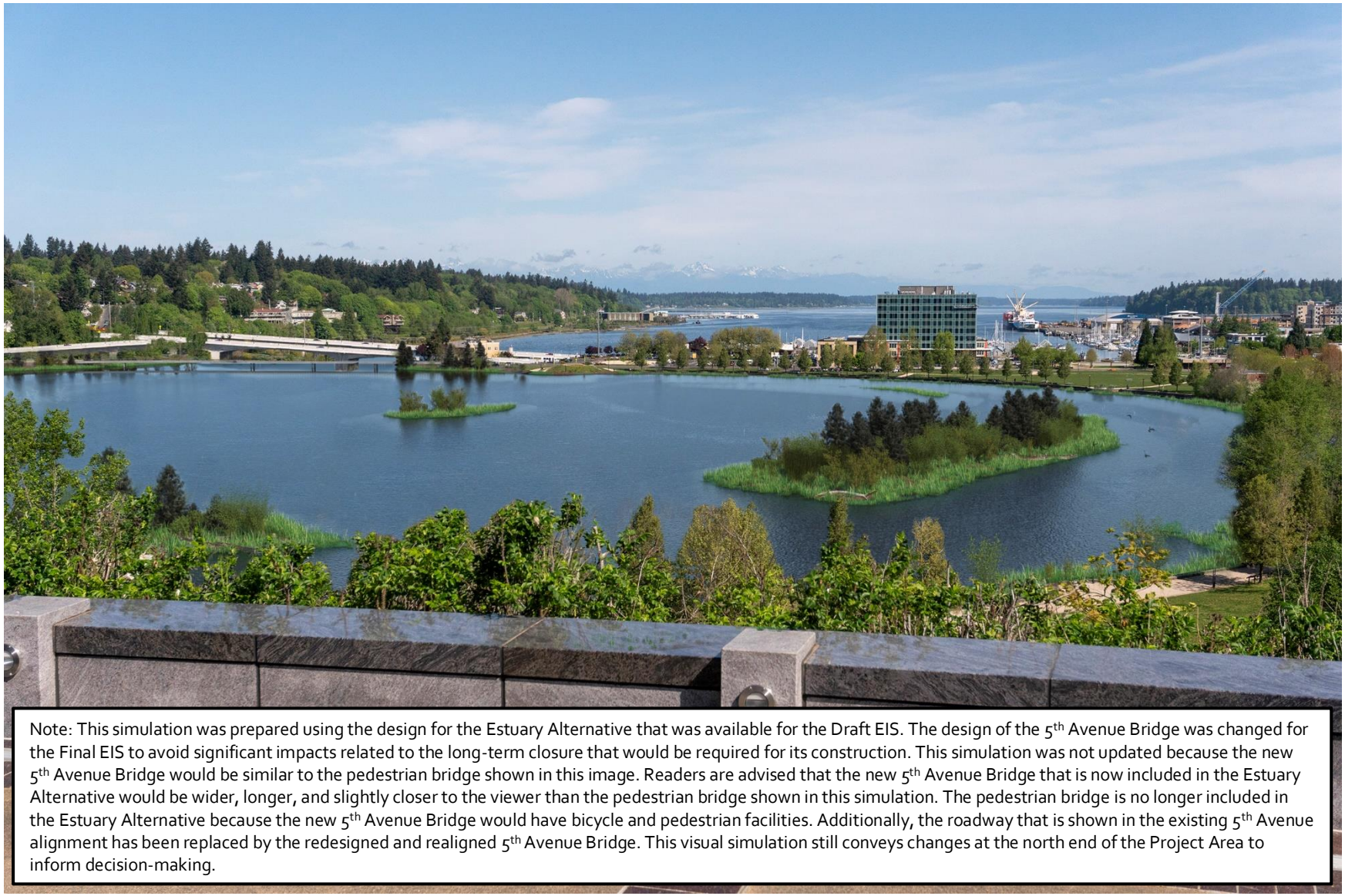
Table 1 Primary Components of the Long-Term Management Alternatives

Note: Items containing an asterisk (*) are a change to the action alternative between the Draft and Final EIS, in response to public comments.

Project Goal	Managed Lake	Estuary	Hybrid
Water Quality	Implement an Adaptive Management Plan to meet lake management objectives, with particular focus on aquatic vegetation control.	Remove the 5th Avenue Dam and create a 500-foot-wide opening to restore estuarine conditions and water quality typical of South Puget Sound inlets.	Same as the Estuary Alternative. Implement an Adaptive Management Plan to maintain water quality of the freshwater reflecting pool, which was selected over a saltwater reflecting pool. *
Sediment Management	Initial construction dredging in the **North Basin** to establish target depth for recreation, which also removes accumulated sediment. Recurring maintenance dredging in the **North Basin** on an approximately **20-year frequency** to maintain target depth for recreation.	Initial construction dredging in the **Middle and North Basins** to establish a main channel and secondary channels, which also removes accumulated sediment. Recurring maintenance dredging (focusing on impacted areas only) in **West Bay** on an approximately **6-year frequency** to avoid or minimize impacts to recreational and commercial navigation in West Bay.	Initial construction dredging is the same as the Estuary Alternative. Recurring maintenance dredging is the same as the Estuary Alternative, but with an approximately **5-year frequency**.
Ecological Functions	Establish shoreline habitat areas in the **Middle Basin** using sediment from construction dredging. Allow passive transition of the **Middle and South Basins** to freshwater wetlands. Implement a Habitat Enhancement Plan to maintain ecological functions, including invasive and nuisance species management.	Restore estuarine habitat with reintroduced tidal flow. Establish shoreline habitat areas in the **Middle and North Basins** using sediment from construction dredging. A Habitat Enhancement Plan would be implemented, just as with the Managed Lake Alternative, but specific to estuarine conditions.	Same as the Estuary Alternative.
Community Use	Restore fishing and reconstruct dock at the Interpretive Center. Restore nonmotorized boating in the **North Basin** and establish a hand-carried boat launch at Marathon Park. Build a new 5th Avenue Non-Vehicular Bridge in the **North Basin**, adjacent to 5th Avenue. Boardwalks in the **Middle and South Basins**.	Same as the Managed Lake Alternative. A new 5th Avenue Bridge would have a non-vehicular path along the south side of the bridge plus protected bicycle lanes in each direction, and a sidewalk on the north side of the bridge. The new 5th Avenue Bridge would be constructed to the south of the 5th Avenue Dam before its demolition to avoid long-term closure of the 5th Avenue corridor during construction.*	Same as the Managed Lake and Estuary Alternatives; and also includes a new trail along the barrier wall of the reflecting pool.

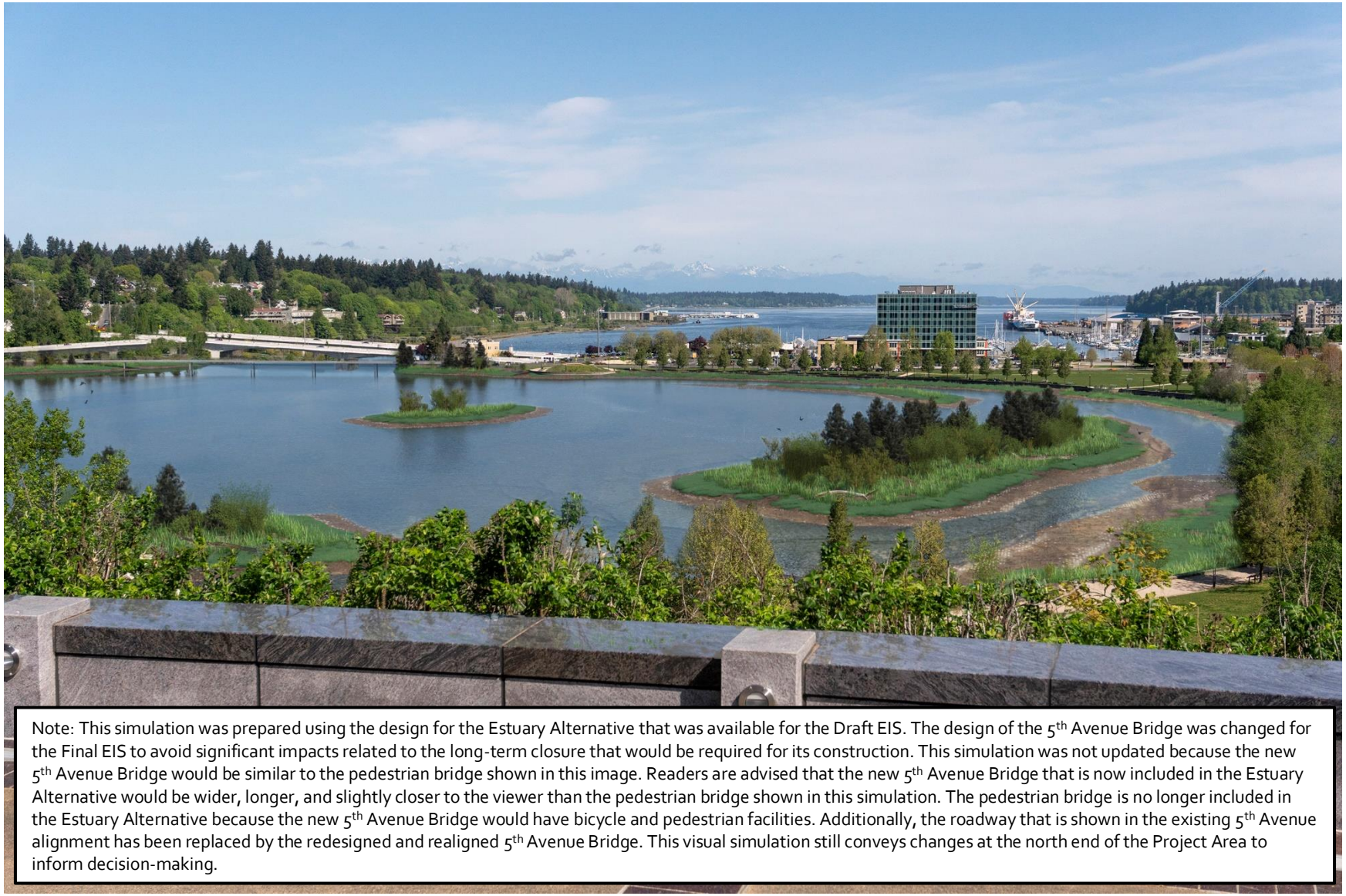
Figure 2 Managed Lake Alternative Visual Simulation

Figure 3 Estuary Alternative Visual Simulation at High Tide



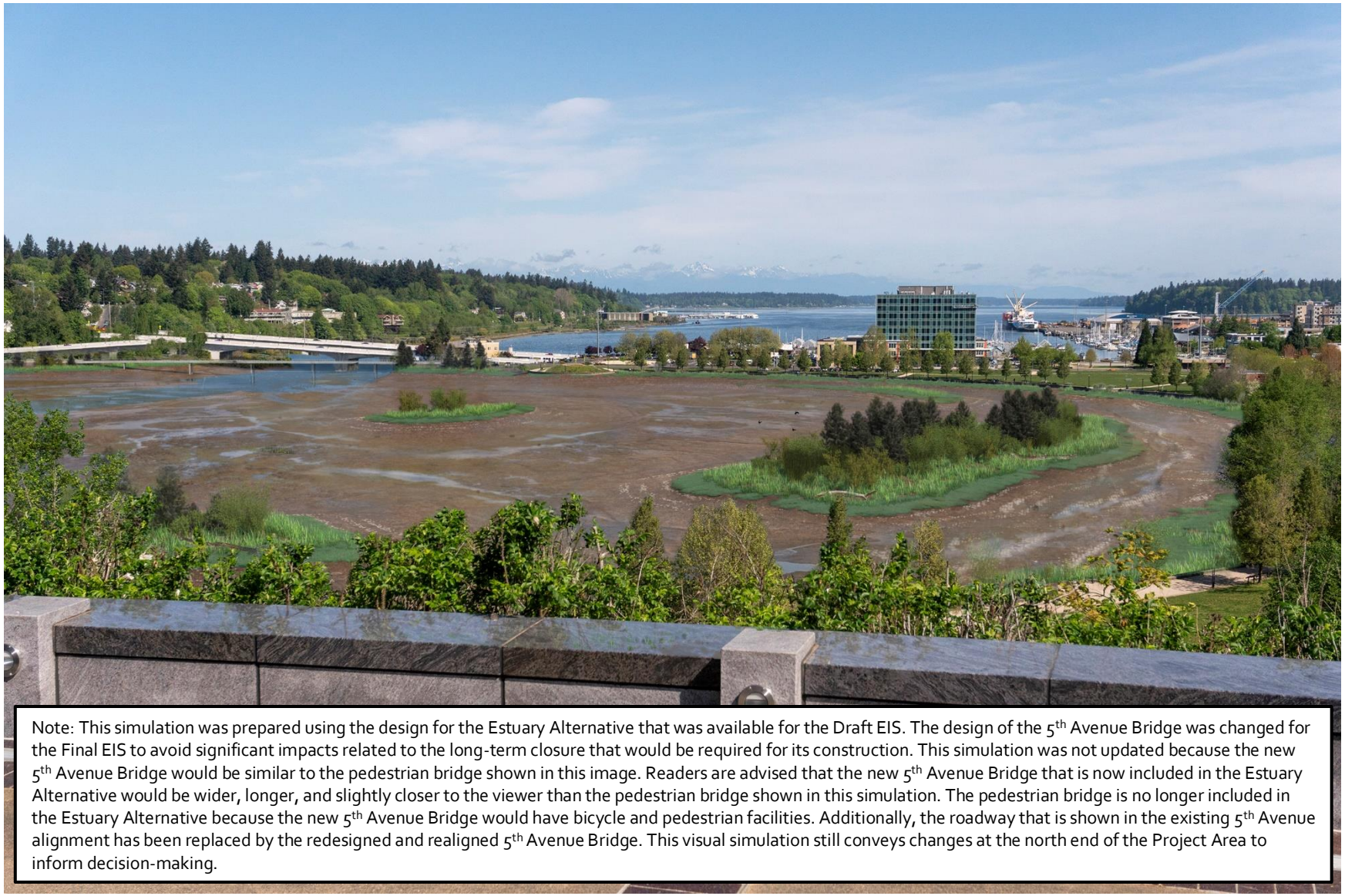
Note: This simulation was prepared using the design for the Estuary Alternative that was available for the Draft EIS. The design of the 5th Avenue Bridge was changed for the Final EIS to avoid significant impacts related to the long-term closure that would be required for its construction. This simulation was not updated because the new 5th Avenue Bridge would be similar to the pedestrian bridge shown in this image. Readers are advised that the new 5th Avenue Bridge that is now included in the Estuary Alternative would be wider, longer, and slightly closer to the viewer than the pedestrian bridge shown in this simulation. The pedestrian bridge is no longer included in the Estuary Alternative because the new 5th Avenue Bridge would have bicycle and pedestrian facilities. Additionally, the roadway that is shown in the existing 5th Avenue alignment has been replaced by the redesigned and realigned 5th Avenue Bridge. This visual simulation still conveys changes at the north end of the Project Area to inform decision-making.

Figure 4 Estuary Alternative Visual Simulation at Mean Tide



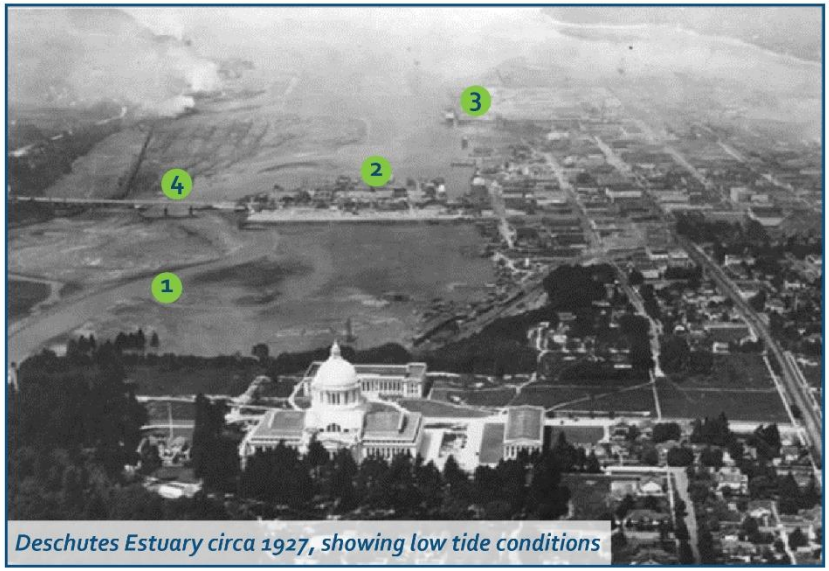
Note: This simulation was prepared using the design for the Estuary Alternative that was available for the Draft EIS. The design of the 5th Avenue Bridge was changed for the Final EIS to avoid significant impacts related to the long-term closure that would be required for its construction. This simulation was not updated because the new 5th Avenue Bridge would be similar to the pedestrian bridge shown in this image. Readers are advised that the new 5th Avenue Bridge that is now included in the Estuary Alternative would be wider, longer, and slightly closer to the viewer than the pedestrian bridge shown in this simulation. The pedestrian bridge is no longer included in the Estuary Alternative because the new 5th Avenue Bridge would have bicycle and pedestrian facilities. Additionally, the roadway that is shown in the existing 5th Avenue alignment has been replaced by the redesigned and realigned 5th Avenue Bridge. This visual simulation still conveys changes at the north end of the Project Area to inform decision-making.

Figure 5 Estuary Alternative Visual Simulation at Low Tide



Note: This simulation was prepared using the design for the Estuary Alternative that was available for the Draft EIS. The design of the 5th Avenue Bridge was changed for the Final EIS to avoid significant impacts related to the long-term closure that would be required for its construction. This simulation was not updated because the new 5th Avenue Bridge would be similar to the pedestrian bridge shown in this image. Readers are advised that the new 5th Avenue Bridge that is now included in the Estuary Alternative would be wider, longer, and slightly closer to the viewer than the pedestrian bridge shown in this simulation. The pedestrian bridge is no longer included in the Estuary Alternative because the new 5th Avenue Bridge would have bicycle and pedestrian facilities. Additionally, the roadway that is shown in the existing 5th Avenue alignment has been replaced by the redesigned and realigned 5th Avenue Bridge. This visual simulation still conveys changes at the north end of the Project Area to inform decision-making.

HISTORICAL PHOTOGRAPHS OF THE DESCHUTES ESTUARY



Deschutes Estuary circa 1927, showing low tide conditions

Deschutes Estuary circa 1949, showing high tide conditions

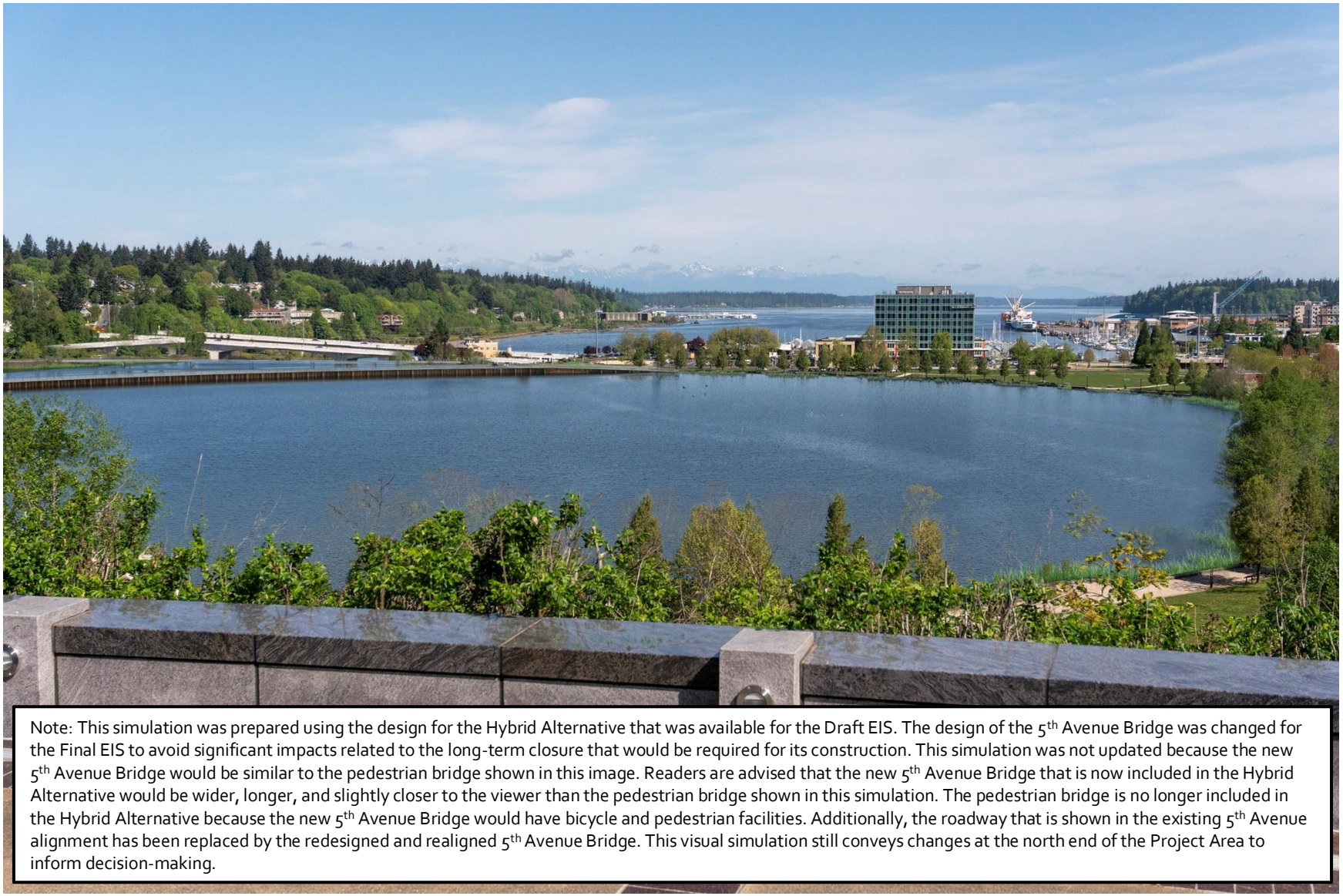
Deschutes Estuary circa 1935, showing mean tide conditions


Deschutes Estuary circa 1941, aerial photo showing Deschutes River

1. Deschutes Estuary
2. Olympia Yacht Club
3. Port of Olympia
4. 4th Avenue Bridge
5. 5th Avenue Dam Construction

Sources:
(top-left) Thurston County Regional Planning. (top-right) Thurston County Regional Planning. (bottom-left) Washington State Archives – State Library Photo Collection. (bottom-right) Department of Natural Resources.

Figure 6 Hybrid Alternative Visual Simulation at High Tide—North Overlook



Note: This simulation was prepared using the design for the Hybrid Alternative that was available for the Draft EIS. The design of the 5th Avenue Bridge was changed for the Final EIS to avoid significant impacts related to the long-term closure that would be required for its construction. This simulation was not updated because the new 5th Avenue Bridge would be similar to the pedestrian bridge shown in this image. Readers are advised that the new 5th Avenue Bridge that is now included in the Hybrid Alternative would be wider, longer, and slightly closer to the viewer than the pedestrian bridge shown in this simulation. The pedestrian bridge is no longer included in the Hybrid Alternative because the new 5th Avenue Bridge would have bicycle and pedestrian facilities. Additionally, the roadway that is shown in the existing 5th Avenue alignment has been replaced by the redesigned and realigned 5th Avenue Bridge. This visual simulation still conveys changes at the north end of the Project Area to inform decision-making.

Figure 7 Hybrid Alternative Visual Simulation at High Tide—Marathon Park

Figure 8 Managed Lake Alternative Overview

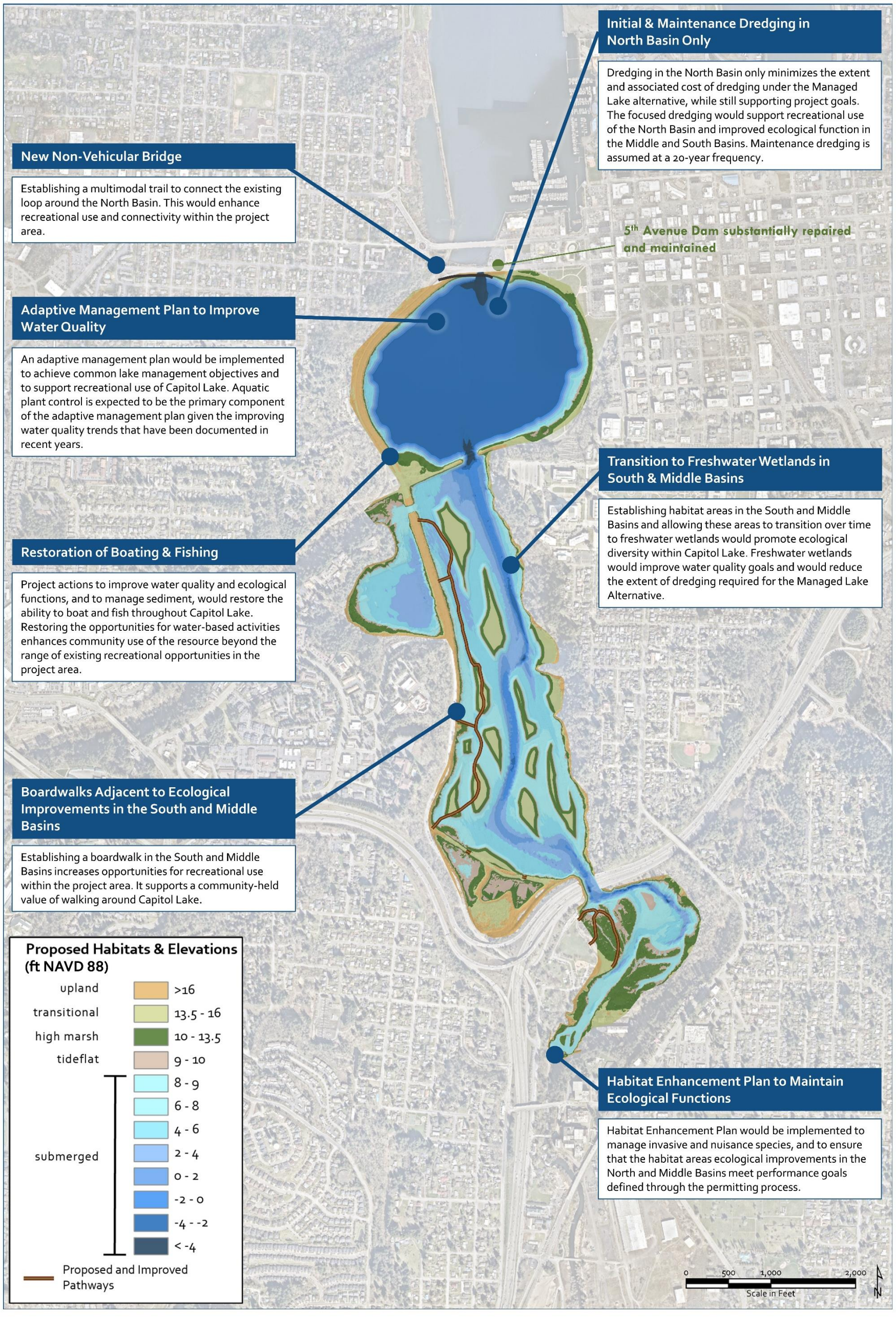


Figure 9 Estuary Alternative Overview

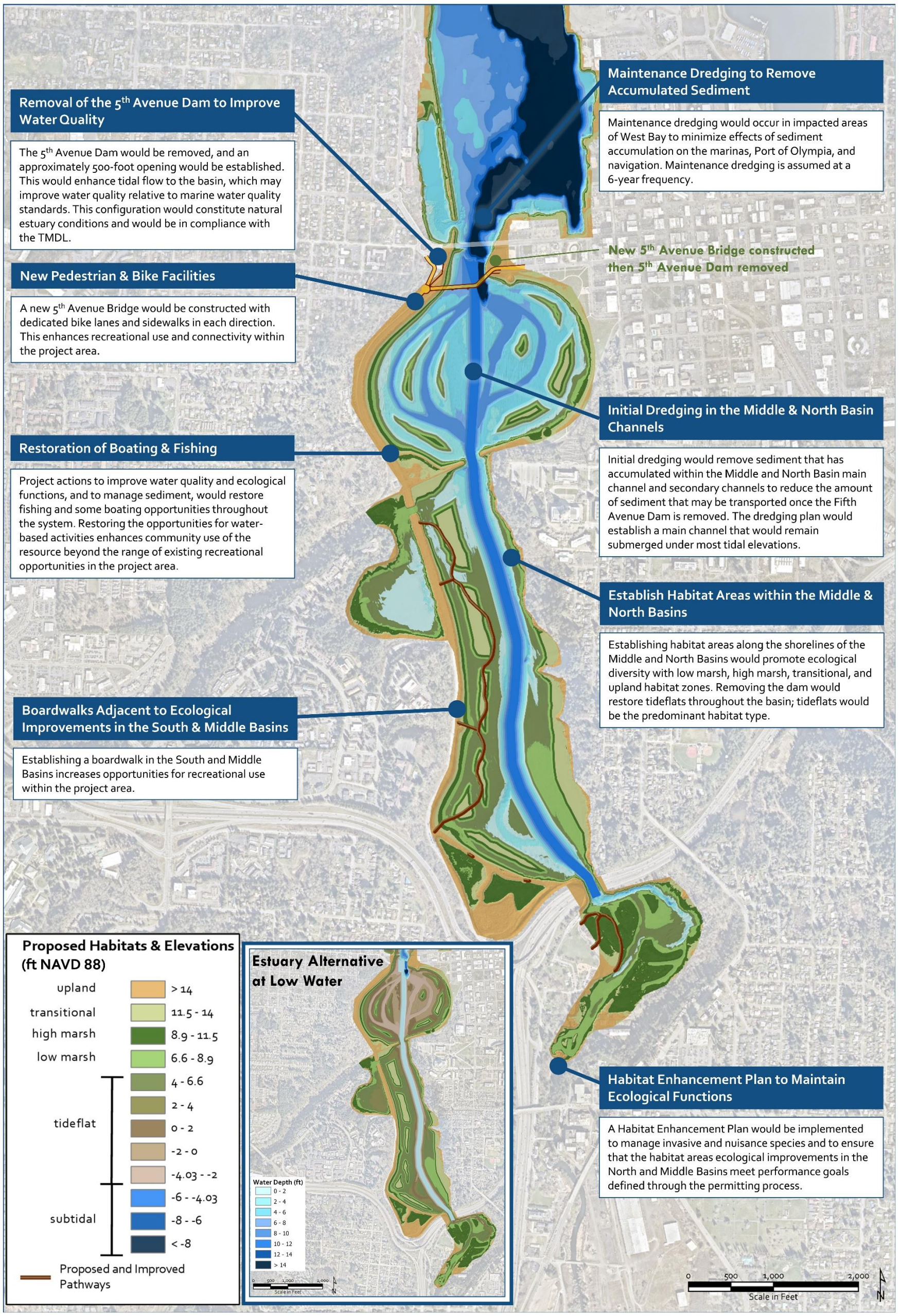


Figure 10 Hybrid Alternative Overview

WHAT IS THE PREFERRED ALTERNATIVE & HOW WAS IT IDENTIFIED?

Learn more in Attachment 21

The Estuary Alternative has been identified as the Preferred Alternative for long-term management of the Capitol Lake – Deschutes Estuary.

In the process to identify a Preferred Alternative, Enterprise Services evaluated the Managed Lake, Estuary, Hybrid, and No Action Alternatives against the following selection criteria.

- **Performance Against Project Goals.** The degree to which the long-term management alternatives would meet project goals.
- **Other Environmental Disciplines.** The potential significant impacts and benefits across the other environmental disciplines analyzed in this EIS but not directly associated with the project goals.
- **Environmental Sustainability.** The ability to provide net environmental benefits over a 30-year horizon, considering relative contribution to project goals; resiliency to climate change (including sea level rise), and the level of active management required to achieve the project goals.
- **Economic Sustainability.** Measured by the relative cost-effectiveness in constructing and operating the alternative in a way that would meet the project goals; and the severity of economic impacts if there is a lapse in long-term funding.
- **Construction Impacts.** The duration and magnitude of construction impacts.
- **Decision Durability.** Enterprise Services sought input on this selection criterion from the Squaxin Island Tribe, governmental and agency partners, and the Community Sounding Board convened for this project regarding the relative ability of the alternatives to achieve long-term support from local tribes, stakeholders, and communities. These groups collectively represent the communities most likely to be affected by this decision.

These selection criteria had been reviewed with the Squaxin Island Tribe, governmental and agency partners, the Community Sounding Board, and the State Capitol Committee. These criteria were also included in the Draft EIS for transparency and to provide additional ability for public comment on the criteria before the process was finalized.

Enterprise Services selected the Estuary Alternative as the Preferred Alternative for long-term management, based on the detailed analysis of the alternatives, review of comments received on the Draft EIS, and feedback from engaged stakeholders. See Attachment 21 for a detailed discussion of this process.

WHAT ARE THE WATER QUALITY CONDITIONS IN THE PROJECT AREA?

Learn more in EIS Supporting Chapter 3.0

What is the existing water quality in Capitol Lake?

Learn more in EIS Supporting Chapter 3.0 (Section 3.3.3)

Historically, Capitol Lake has suffered from a variety of water quality problems, as evidenced by aquatic weed infestations, algal blooms, closure of the swimming area due to bacteria concentrations, and restrictions on boating and other beneficial uses. There are a number of factors that affect the water quality and overall aquatic health of the Capitol Lake aquatic ecosystem.

Capitol Lake is affected by a complex and continually changing interaction between physical (e.g., temperature, river flow and tides, erosion, and sedimentation), chemical (e.g., nutrients, dissolved oxygen, and pH), and biological (e.g., algae, bacteria, aquatic plants, and animals) characteristics.

The Deschutes River, which is the largest inflow source, flows through Capitol Lake at a rate that keeps the water cool and well mixed. Additionally, the detention time of that water in Capitol Lake is low enough that the system still qualifies as a river, rather than a lake. Most regional lakes become stratified in the summer with a warm layer at the surface and colder water below. Because of the river's influence, Capitol Lake does not stratify in the summer and the water quality conditions commonly associated with stratification (e.g., high temperatures in shallow waters, oxygen depletion in deeper waters, and widely fluctuating pH) are much less pronounced than in other lakes in the region. Capitol Lake has not experienced toxic algae blooms, and bacteria concentrations are less than the water quality standards. Although Capitol Lake is generally well oxygenated, it does not always comply with the dissolved oxygen water quality standard.

As part of the water quality analysis, the EIS Project Team evaluated monitoring data from 2004 to 2014 and also collected water quality samples in 2019 and 2021 to compare current conditions against the historical dataset. Monitoring data indicate that water quality conditions have been improving in Capitol Lake in terms of physical and chemical characteristics important to aquatic life. These improving water quality trends reduce the level of management that would be needed under a Managed Lake Alternative to meet lake management objectives.

The interrelationship among all of the factors affecting the Capitol Lake aquatic ecosystem is important to consider in evaluating the water resources throughout the ecosystem.

What is the existing water quality in Budd Inlet?

Learn more in EIS Supporting Chapter 3.0 (Section 3.3.5)

There are a range of water quality impairments in Budd Inlet, including low dissolved oxygen, algae blooms, high bacteria concentrations, and known contaminated sediment. The dominant water source

to Budd Inlet is Puget Sound; however, inflow from Capitol Lake also influences water quality in Budd Inlet.

Portions of Budd Inlet have low dissolved oxygen concentrations, with the lowest concentrations occurring each year in the late summer and early fall. These low dissolved oxygen concentrations are typical of the long narrow inlets that comprise much of South Puget Sound. The seasonal periods of low dissolved oxygen do not meet state water quality standards. Dissolved oxygen is important for aquatic habitat, particularly for cold water fish like salmon. Budd Inlet, along with most inlets in South Puget Sound, frequently violate the water quality standard for dissolved oxygen. Budd Inlet has a relatively high maximum daily depletion of dissolved oxygen from human-caused sources compared to other South Puget Sound inlets, and modeling conducted by the Washington State Department of Ecology (Ecology) identifies Capitol Lake as the primary contributor to these low dissolved oxygen conditions.

How do the project alternatives support the project goal of improving water quality?

Learn more in EIS Supporting Chapter 4.0 (Section 4.3)

Under a Managed Lake Alternative, water quality in Capitol Lake would be improved by actions to meet specific lake management objectives. These actions would primarily focus on removing aquatic plants to maintain a healthy aquatic plant community so recreation and aquatic life uses are not impaired. Capitol Lake would continue to experience summertime algal blooms, occasional violations of state standards for dissolved oxygen, pH, and temperature, and frequent violations of total dissolved gas. These types of conditions are consistent with other lowland lakes in the Puget Sound region, although they are not as severe in Capitol Lake because of the input from the Deschutes River. The general conditions for cold water fish in Capitol Lake would not substantively change. There would be no change to water quality in Budd Inlet.

Under the Estuary Alternative, there would be no change to minor-to-moderate improvements in water quality in Budd Inlet due to removal of the 5th Avenue Dam. Budd Inlet would continue to experience summertime algal blooms, and exceedances of temperature, pH, and dissolved oxygen numeric standards. These exceedances would be consistent with other narrow, shallow estuaries in South Puget Sound, and numeric water quality standards would continue to not be met under an Estuary Alternative. The water quality analysis conducted for this EIS concludes that dissolved oxygen conditions would not result in substantive changes for cold water fish, though overall habitat conditions would improve. Ecology modeling indicates that the Estuary Alternative is the **only** alternative that could meet water quality standards and total maximum daily load (TMDL) allocations because it would constitute a 'natural estuary' condition.

Within the freshwater reflecting pool of the Hybrid Alternative, an adaptive management plan would be implemented to meet specific lake management objectives. Water quality in the estuary portion of the Hybrid Alternative would be similar to the Estuary Alternative.

Seasonal and occasional violations of water quality standards would occur under all long-term management alternatives.

HOW IS SEDIMENT MANAGED IN THE PROJECT AREA?

Learn more in EIS Supporting Chapter 3.0 (Section 3.1)

An estimated 35,000 cubic yards of sediment from the Deschutes River and Percival Creek settle in the Project Area each year. This amounts to almost 2.5 million cubic yards of sediment accumulation since construction of the 5th Avenue Dam in 1951. That volume of sediment is enough to fill more than 750 Olympic-size swimming pools. There have only been two dredge events since that time to manage sediment—removing an estimated total of 300,000 cubic yards of accumulated material. The majority of that dredged sediment was placed at the southeast corner of the Middle Basin, near the present-day Interpretive Center, and the placement area has transitioned into wetlands.

The sediment accumulation has resulted in increasingly shallow conditions throughout the Capitol Lake Basin over time. The largest area of sediment accumulation is in the South Basin, where sediment is up to 13 feet thick in some places. Sediment accumulation in the Middle Basin averages approximately 6 feet, with some spots reaching up to approximately 13 feet. Most of the North Basin has a sediment accumulation averaging between 3 to 7 feet in total.

How were future changes to water flow, water levels, & sediment transport evaluated?

Learn more in EIS Supporting Chapter 3.0 (Section 3.1)

A state-of-the-art three-dimensional (3D) open source computer model, Delft3D, was used to simulate the movement of water (hydrodynamics) and the movement, as well as deposition/erosion, of sediment in the study area under the project alternatives. Delft3D is a world-leading 3D modeling suite used to investigate hydrodynamics, sediment transport and morphology, and water quality for fluvial, estuarine, and coastal environments. This numerical model uses complex systems of physics-based equations to calculate how water and sediment move in response to tides, river inflow, water depth, and the sediment load input. The model predicted variations among the project alternatives using the same hydrologic and tidal inputs but varying project geometries.

The numerical model used historical and recent hydrography (underwater topography) data; streamflow, tide, weather and stream measurements both upstream and downstream of the dam; historical records of dam operations; flooding and climate change projections; and sediment characteristics.

Numerical modeling of hydrodynamics and sediment transport allowed the EIS Project Team to evaluate potential changes across many of the environmental disciplines addressed in the EIS. It projected average water levels under each alternative, and maximum water levels from extreme river flows or tidal events. This supported a review of potential overland (riverine/coastal) flooding in adjacent parks, in downtown Olympia, and at the Port of Olympia. The numerical model and EIS incorporate climate change projections related to sea level rise and extreme river flows as part of the future conditions for all alternatives and affected resource areas. (In addition, the EIS incorporates qualitative consideration of other climate change trends [e.g., temperature] where appropriate.)

The numerical model also projected the rate of sediment accumulation within the Project Area, which allowed the EIS Project Team to estimate the frequency and extent of recurring maintenance dredging that would be needed to avoid or minimize impacts under the action alternatives.

The methodology, calibration/validation, and results of the numerical model were reviewed by independent third-party experts (see Attachment 5, Hydrodynamics and Sediment Transport Discipline Report).

How would the water depths change within the Capitol Lake – Deschutes Estuary under each action alternative?

Learn more in EIS Supporting Chapter 4.0 (Section 4.1)

Under the Managed Lake Alternative, the North Basin would be dredged to establish an average year-round depth of 13 feet (for recreational boating). The Middle and South Basins would not be dredged, and average water depths would be 6 feet or less. Over time, as a result of sediment accumulation, the Middle and South Basins would become even more shallow and slowly transition to vegetated freshwater wetlands.

Under the Estuary and Hybrid Alternatives, tidal conditions and water levels in the Deschutes Estuary would be similar to Budd Inlet. An inundation curve, which represents a statistical analysis of predicted tides in Budd Inlet, averaged across a calendar year, shows that the North Basin would be inundated, or covered by some amount of water, approximately 80% of the time. Water would rise and fall with the tide, and the depth of water within the North Basin would vary throughout the tidal cycle, but there would be some amount of water for most of the day. Notably, low tide conditions occur in the day during the summer so tidal flats would be exposed more often during daylight hours in June, July, and August each year.

In the reflecting pool of the Hybrid Alternative, the average water depth would be approximately 10 feet.

How do the alternatives support the project goals of sediment management & can impacts from sediment accumulation be mitigated?

Learn more in EIS Supporting Chapter 2.0 and Chapter 4.0 (Section 4.2)

Sediment Management During Construction

All action alternatives include initial dredging during construction to remove some of the sediment that has accumulated within the Capitol Lake Basin over time. (There have been only two dredge events in Capitol Lake since 5th Avenue Dam construction.)

Under the Managed Lake Alternative, only the North Basin would be dredged during construction. Dredging would establish an average year-round water depth of approximately 13 feet to support recreational boating. Under the Estuary and Hybrid Alternatives, dredging would occur in the Middle and North Basins in the area that would transition to the main channel of the estuary and

Deschutes River, and in smaller secondary channels to develop conditions similar to the historic estuary.

Under all action alternatives, sediment dredged during construction would be beneficially reused within the Project Area to create new shoreline habitat areas. Beneficially reusing the material on-site to develop shoreline habitat would improve ecological function and habitat diversity for all action alternatives. It would also result in a significant cost savings for the project—it avoids or minimizes costs associated with hauling the material off-site for upland disposal. Notably, when the Capitol Lake Basin was last dredged in the 1980s, that sediment was placed in the area now referred to as the Interpretive Center and wetland habitat has developed over time.

Sediment Management After Construction

The approach to sediment management after construction would vary across the alternatives. Under the Managed Lake Alternative, sediment would be managed to avoid recreational impacts. This means that the North Basin would be dredged before water depths became too shallow for use by nonmotorized boats and other watercraft. Maintenance dredging is expected to be needed approximately 20 years after construction, and on an increasing frequency after that dredge event.

Under the Estuary and Hybrid Alternatives, sediment deposition would be approximately 3 to 5 times higher in West Bay than under the Managed Lake and No Action Alternatives because sediment transported by the Deschutes River would not be held back behind the 5th Avenue Dam. These conditions would be more similar to what existed before the 5th Avenue Dam was constructed. A maintenance dredging program would be established to minimize impacts to commercial and recreational navigation in West Bay. Maintenance dredging would occur along the eastern shore of West Bay, at the Olympia Yacht Club, private marinas, and areas of navigational access between these resources, and at the Port of Olympia. Maintenance dredging occurred in these areas historically, before the 5th Avenue Dam was constructed, and that dredging supported the existence of commercial and recreational navigation in the former Deschutes Estuary. Maintenance dredging would not occur in the Capitol Lake Basin (though the initial construction dredging in the Capitol Lake Basin would reduce impacts from sediment deposition by about 49% at the Olympia Yacht Club).

Sediment accumulation would be monitored annually (at a minimum) along the eastern shore of West Bay because the rate of sediment accumulation is highly dependent on river flow conditions. The numerical model predicts that, on average, spot-dredging would be needed every 5 years under the Hybrid Alternative, and on a 6-year frequency under the Estuary Alternative. When dredging occurs at the Port of Olympia and private marinas, some slips, piers, and boathouses may need to be temporarily relocated to other locations in West Bay. Maintenance dredging conducted under the Estuary Alternative would be funded by members of the Funding and Governance Work Group, at least through 2050, based on the areas of agreement outlined in an existing Memorandum of Understanding (MOU; see EIS Supporting Chapter 7.0 and Attachment 23 for more information).

WHAT FACTORS ARE IMPACTING ECOLOGICAL FUNCTION IN THE PROJECT AREA?

Learn more in EIS Supporting Chapter 3.0 (Sections 3.3 and 3.4)

Construction of the 5th Avenue Dam blocked the tidal exchange between the Deschutes River and Budd Inlet, substantially altering the lower river system.

In addition to changes in water quality and sediment transport, ecological functions have been impacted by a dense community of aquatic plants that have existed in Capitol Lake for several decades. In the past, saltwater flushing was used to control the aquatic plants, but this was discontinued due to concerns about adverse impacts to lake ecology. In 2004, the herbicide triclopyr was applied to Capitol Lake to control the infestation of Eurasian watermilfoil. At that time, it was estimated that the plants covered almost the entire lake surface and Ecology estimated the volume at 72 tons of dry weight. Two months following the treatment, the Eurasian watermilfoil was nearly eliminated; however, the native aquatic plant biomass has returned to a comparable density. The primary aquatic plant at that time was common waterweed; Capitol Lake is currently dominated by coontail, a native floating plant.

More than a dozen different aquatic invasive species have been documented in Capitol Lake in recent survey efforts, including plants, invertebrates, fish, and aquatic mammals. There are only limited management strategies currently being implemented to address these invasive species.

How do the alternatives support project goals of improving ecological functions?

Learn more in EIS Supporting Chapter 4.0 (Sections 4.4 through 4.6)

All action alternatives would improve ecological functions within the Project Area and include shoreline habitat areas developed with sediment dredged during construction. Implementation of a Habitat Enhancement Plan with management strategies to meet performance standards and to address nuisance and invasive species is also included in all action alternatives.

Wetland habitat conditions under the Managed Lake Alternative would improve with a transition from deepwater to vegetated freshwater wetlands. This increase in habitat complexity would provide minor improvements in ecological function. Active lake management, focusing on aquatic plant removal, would have minor benefits to fish and other aquatic species, although fish and wildlife distribution and use patterns would remain similar to existing conditions. The Managed Lake Alternative would best support the foraging base for bats, which would be significantly impacted by the Estuary and Hybrid Alternatives.

Comparatively, the Estuary and Hybrid Alternatives would reestablish estuarine wetland and tideflat habitats that have been greatly diminished and degraded because of historical development patterns. While both vegetated freshwater wetlands and estuarine wetlands have experienced historical declines, the loss of estuarine wetlands in Puget Sound represents a dramatic change in the historical occurrence in these once-prominent nearshore ecosystems. Estuarine wetlands provide water quality, hydrologic, and habitat functions that are particular to their position in the landscape. The mixing of freshwater and

saltwater in estuarine environments creates some of the most productive and valuable habitat on earth. The reestablishment of estuarine conditions by reintroducing saltwater and tidal influences to the Capitol Lake Basin would substantially improve ecological functions in the Project Area. In addition to supporting key ecological processes, estuarine conditions would provide productive habitat for shellfish, salmon, other anadromous species, and marine fish in the area, potentially including Endangered Species Act-listed Chinook salmon (non-hatchery) and steelhead trout. Shallow water habitats with salt marsh vegetation along the shoreline would provide preferred forage and rearing habitat for juvenile salmon. The freshwater aquatic plants that dominate the basin today would not persist and most of the aquatic invasive species that exist in the freshwater system would be eradicated.

Removal of the dam would provide a natural freshwater to saltwater salinity gradient that is physiologically favorable to salmon and is not available under the Managed Lake Alternative. Prior to construction of the 5th Avenue Dam, salmon and other anadromous fish species used the Project Area for foraging and refuge. (Historically, Tumwater Falls was a natural barrier to anadromous fish, meaning that there is no naturally reproducing native salmon population in the Deschutes River because migrating adults were not able to pass Tumwater Falls.)

WHAT IS IMPACTING RECREATION IN THE PROJECT AREA?

Learn more in EIS Supporting Chapter 3.0 (Sections 3.4 and 3.8)

In 2009, the presence of the invasive New Zealand mudsnail resulted in official closure of the waterbody to all public uses. State agencies determined that closure of Capitol Lake was feasible, and doing so would be an effective method to contain and prevent the spread of these highly invasive species into other waterbodies where they pose a risk of environmental and economic harm. Human activity is the primary way that New Zealand mudsnails are spread.

Before this closure, boating had been impacted by the density of aquatic plants and management strategies that were being implemented to control the aquatic plants. Water quality conditions had also resulted in intermittent closures of the historical swimming beach through the 1970s, and formal closure of the swimming beach in 1985.

How would the action alternatives support the goal of enhanced recreational use?

Learn more in EIS Supporting Chapter 4.0 (Section 4.8)

The approach to restoring recreation is similar across all of the action alternatives.

A hand-carried boat launch would be established at Marathon Park to restore nonmotorized boating. Under the Managed Lake Alternative, this could include small sailboats. Under the Estuary and Hybrid Alternatives, predominant use would likely be kayaks, paddleboards, or other shallow-draft vessels, but frequent use by small sailboats is unlikely. Nonmotorized boating would be possible at all times under the Managed Lake Alternative and within the approximately 45-acre reflecting pool of the Hybrid Alternative. Under the Estuary and Hybrid Alternatives, tidal water level variations would influence

where and when boating could occur, though it is estimated that there would be water in the North Basin most of the time. This is the primary difference in recreational opportunity across the alternatives. For all action alternatives, the existing dock at the southern point of the Interpretive Center would be rebuilt to support fishing.

Under all action alternatives, decontamination stations would be installed at the proposed boat launch in Marathon Park, the existing boat launch in Tumwater Historical Park, near the reconstructed fishing dock at the Interpretive Center, and if needed, at the existing boat launches in West Bay. Decontamination stations would provide hot water for recreationalists to power spray the exterior of vessels and gear before entering the waterbody and after exiting to reduce or avoid the spread of aquatic invasive species. This approach has been used in other recreational areas that have been affected by the New Zealand mudsnail. The New Zealand mudsnail is not expected to be eradicated entirely under any alternative, so decontamination stations are assumed for the Managed Lake, Estuary, and Hybrid Alternatives. There would be a greater population (density) of the New Zealand mudsnail under the Managed Lake Alternative.

Elevated boardwalks would be constructed along the west shoreline of the South and Middle Basins, and adjacent to the shoreline habitat areas. Pedestrian access would also be improved along the existing loop around the North Basin. Under the Managed Lake Alternative, a new 5th Avenue Non-Vehicular Bridge would be constructed just south of 5th Avenue. Under the Estuary and Hybrid Alternatives, dedicated bicycle lanes and sidewalks would be included in both directions as part of the new 5th Avenue Bridge. Additionally, under the Hybrid Alternative, a pathway would be constructed on top of the reflecting pool barrier wall.

Would the old swimming beach be reconstructed?

Learn more in EIS Supporting Chapter 2.0 (Section 2.3.4)

The swimming beach that existed in the North Basin of Capitol Lake from 1964 to 1985 was operated by the City of Olympia, not by the State of Washington. Operating formal swimming facilities is not in alignment with the mission of Enterprise Services, and there are no known plans to introduce such services into the agency mission or scope of services. Additionally, during the Measurable Evaluation Process, the EIS Project Team concluded that formal swimming facilities would be more expensive to operate compared to other ways to enhance active community use of the resource, like boating and fishing.

This project does not preclude or prohibit swimming. A governmental or agency partner could negotiate a lease to operate formal swimming facilities in Capitol Lake, should water quality conditions be suitable, following separate environmental review. The Managed Lake and Hybrid Alternatives would be most conducive to formal swimming facilities.

WHAT ARE THE LONG-TERM IMPACTS & BENEFITS OF THE PROJECT ALTERNATIVES?

Learn more in EIS Supporting Chapter 4.0

The potential long-term impacts and benefits of the project were analyzed across 14 environmental disciplines. Table 2 provides the major conclusions regarding the long-term environmental changes from the multidisciplinary impact analyses, and mitigation measures to offset potential project impacts. A more complete description of the findings is provided in the EIS supporting chapters, with the full technical analyses provided in the discipline reports that are attached to the EIS.

Table ES.2 Summary of Key Findings – Long-Term Impacts, Benefits, and Proposed Mitigation

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Hydrodynamics & Sediment Transport (EIS Supporting Chapter 4.0 [Section 4.1])	**Hydrodynamics** Maximum water levels and extent of flooding in downtown Olympia/ Heritage Park during extreme river floods would be higher than the Estuary and Hybrid Alternatives, and comparable but slightly lower than the Managed Lake Alternative. During an extreme tide, the results would be reversed and maximum water levels would be lower for the No Action and Managed Lake Alternatives upstream of the 5th Avenue Dam and Bridge. **Sediment Transport** Sediment would continue to settle in the Capitol Lake Basin, though some suspended sediment would continue to pass through the 5th Avenue Dam and deposit in West Bay.	**Hydrodynamics** Highest maximum water levels and greatest extent of flooding in downtown Olympia/Heritage Park during extreme river floods compared to other project alternatives. During an extreme tide, the results would be lower for the No Action and Managed Lake Alternatives upstream of the 5th Avenue Dam and Bridge. **Sediment Transport** Sediment would continue to settle in the Capitol Lake Basin. Compared to the No Action Alternative, more sediment would settle in the North Basin resulting in slightly less suspended sediment passing through the 5th Avenue Dam and depositing in West Bay.	**Hydrodynamics** Maximum water levels would occur under major tidal floods (rather than river floods), though maximum water levels would be lower than the highest water levels that occur under the No Action and Managed Lake Alternatives during extreme river floods. Tidal flow circulation, salinity, and water levels within the estuary would be restored to a more natural condition. **Sediment Transport** Sediment deposition patterns in Budd Inlet would be restored to a more natural condition. Sediment deposition in West Bay would be approximately 3 times more than under the No Action and Managed Lake Alternatives.	**Hydrodynamics** The long-term hydrodynamic conditions for the Hybrid Alternative would be similar to those of the Estuary Alternative. However, flooding in Heritage Park and along Powerhouse Road SW in the North Basin would be avoided due to the barrier wall that would define the westerly perimeter of the reflecting pool. Tidal flow circulation, salinity, and water levels within the estuary portion would be restored to a more natural condition. **Sediment Transport** Sediment deposition patterns in Budd Inlet would be restored to a more natural condition. Sediment deposition in West Bay would be approximately 5 times more than under the No Action and Managed Lake Alternatives.
Navigation (EIS Supporting Chapter 4.0 [Section 4.2])	No change to the navigational impact in West Bay; separate entities would continue to dredge for navigability. Impacts to navigation from ongoing sediment deposition would be less than significant but could become significant over time if dredging is delayed in the future, similar to existing conditions.	Same as No Action Alternative.	Navigational impacts from sediment deposition would be **significant** but could be reduced to less than significant if consistent funding is secured for the dredging program (with dredging estimated at a 6-year frequency), and with implementation of a sediment monitoring program to ensure that to ensure that maintenance dredging is responsive to actual sediment deposition that is highly influenced by environmental conditions. **Proposed Mitigation** • Implementation of a sediment monitoring plan. Monitoring would be conducted regularly (annually, at a minimum) and used to modify the dredging plan, as necessary. • As part of the maintenance dredging program, scheduling and phasing would be developed in coordination with the U.S. Army Corps of Engineers, the Olympia Yacht Club, other private marinas, and the Port of Olympia.	Same as the Estuary Alternative (with dredging estimated at a 5-year frequency).

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Water Quality (EIS Supporting Chapter 4.0 [Section 4.3])	There would be no change in impact to dissolved oxygen or algae in Budd Inlet. There would be minor to moderate improvements in dissolved oxygen and algae in Capitol Lake due to improving conditions in the watershed. There would be **significant impact** to the lake due to expansion of aquatic plants and loss of open water. The No Action Alternative would be unlikely to meet the recent Budd Inlet TMDL oxygen depletion limitations and therefore would result in continued exceedances of water quality standards in the Project Area, per Ecology interpretations.	There would be no change in impact to habitat quality or quantity for cold water fish in Budd Inlet or Capitol Lake. Ecology has concluded that the Managed Lake Alternative would result in continued dissolved oxygen depletion in Budd Inlet, so water quality standards in the Project Area would not be met with the current design. The Managed Lake Alternative would be unlikely to meet the recent Budd Inlet TMDL oxygen depletion limitations and therefore would result in continued exceedances of water quality standards in the Project Area, per Ecology interpretations. **Proposed Mitigation** • Consider whether modifications could be made to limit the pulsed nature of the discharge through the 5th Avenue Dam (this influences dissolved oxygen conditions in West Bay). • It has been suggested that late season die-off of aquatic plants is an important contributor to dissolved oxygen problems in Budd Inlet. Late season removal of aquatic plants should be considered as a means of reducing this impact.	There would be no change in impact to minor-to-moderate improvement to habitat quality or quantity for cold water fish in Budd Inlet. The existing lake basin would have lower dissolved oxygen than exists currently resulting in a **significant impact** in habitat quality and quantity for cold water fish in the lake basin. However, this represents conditions more typical of the narrow inlets in South Puget Sound. There would be **substantial beneficial effects** in the lake basin, due to reduced aquatic plants caused by the estuarine conditions. Ecology modeling indicates that the Estuary Alternative is the only alternative that could meet water quality standards and TMDL allocations because it would constitute a "natural estuary" condition.	For Budd Inlet and the estuary portion of the Capitol Lake Basin, the impacts or benefits would be similar to those described for the Estuary Alternative in terms of habitat quality or quantity for cold water fish, the numeric dissolved oxygen water quality standard, and algae blooms. Ecology has not modeled the Hybrid Alternative, and has not determined if this alternative would result in continued dissolved oxygen depletion in West Bay. The Hybrid Alternative has unknown consistency with the recent TMDL allocations and water quality standards in the Project Area. For the freshwater reflecting pool, an adaptive management plan would be implemented to control algae and aquatic plants and therefore it would have impacts similar to the Managed Lake Alternative.
Aquatic Invasive Species (EIS Supporting Chapter 4.0 [Section 4.4])	Capitol Lake would remain closed to the public due to the New Zealand mudsnail, and there would be limited management of invasive and nuisance species. There would be low risk of aquatic invasive species spreading outside of the Capitol Lake Basin to otherwise non-invaded water bodies so there would be less than significant impacts.	Management of the lake would likely not substantially affect the abundance and distribution of aquatic invasive species. There would be less than significant impacts from changes in the population and distribution of aquatic invasive species. Decontamination stations would be installed to support reopening Capitol Lake to recreational watercraft; educational signage, and an adaptive management plan with monitoring, would also reduce the potential spread of invasive species. **Proposed Mitigation** • Aquatic invasive species adaptive management plan would be developed and implemented. • Washington Department of Fish and Wildlife (WDFW)-approved best management practices (BMPs) would be implemented during maintenance dredging.	Saltwater would have a minor beneficial impact by reducing or eliminating freshwater aquatic invasive species. Tidal flow would move salt-tolerant aquatic invasive species into Budd Inlet; however, the aquatic invasive plant species that would be eliminated as a result of reintroduced saltwater are relatively common in the region. Although there is uncertainty, there would be less than significant impacts related to potential changes in the population and distribution of aquatic invasive species, which may move into West Bay. Decontamination stations would be installed to support reopening Capitol Lake to recreational watercraft; educational signage, and an adaptive management plan with monitoring, would also reduce the potential spread of invasive species. Proposed mitigation is the same as the Managed Lake Alternative.	Same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Fish & Wildlife (EIS Supporting Chapter 4.0 [Section 4.5])	Habitat quality and use by some fish and other aquatic species would continue to be affected by the presence of the dam and lack of active lake management, though there would be less than significant impacts from the incremental changes. Continuation of current, limited management practices would not benefit species of importance to the tribes.	Efforts to actively manage the lake would result in changes in lake bathymetry and habitat conditions that would have minor benefits to fish and other aquatic species, although fish and wildlife distribution and use patterns would remain similar to existing conditions. Less than significant impacts on fish and wildlife would be associated with additional permanent overwater and in-water structures, artificial lighting elements, buttressing berm, and maintenance dredging. Maintaining a freshwater lake system would not substantially benefit species of importance to the tribes. **Proposed Mitigation** • BMPs and other measures would be implemented to avoid and minimize impacts to fish and wildlife. • A Habitat Enhancement Plan would be developed and implemented.	The estuary habitat conditions reestablished by dam removal would result in **substantial beneficial effects** for salmon, other anadromous species, and marine fish. Due to historical declines, estuary habitat is highly valued in the region. The removal of the dam and restoration of estuarine conditions would also improve migration and habitat for anadromous fish and wildlife, including shorebird and wading birds. Habitat changes are expected to have **substantial beneficial effects** on shorebirds and wading birds, moderate beneficial effects on marine shellfish and waterfowl, and minor beneficial effects on raptors and songbirds. Potential for increased salmon prey base could have minor beneficial effects on ESA-listed orcas. Eliminating the existing lake would have **significant impacts** to freshwater fish species, as well as Yuma myotis and little brown bats at the Woodard Bay bat colony. Less than significant impacts on fish and wildlife would be associated with additional permanent overwater and in-water structures, artificial lighting elements, and maintenance dredging. Reintroducing tidal hydrology to the Capitol Lake Basin would benefit many of the species of importance to the tribes. **Proposed Mitigation** In addition to mitigation proposed under the Managed Lake Alternative: • Trees removed to realign Deschutes Parkway would be replaced based on City of Olympia's tree protection ordinances and critical areas regulations. • Coordination with wildlife experts would occur during the design phase to identify opportunities to mitigate potential impacts to the local bat population.	For salmon, other anadromous species, and marine fishes, the estuary provided in the Hybrid Alternative would result in moderate beneficial effects as the full range of estuarine functions would not be develop over the entire North Basin estuary area. The freshwater reflecting pool would provide some functions of a freshwater lake system for resident fish and could provide habitat for freshwater mussels to persist. The freshwater reflecting pool may provide some habitat for bat foraging, but the loss of the greater freshwater lake system would still have a **significant impact** on Yuma myotis and little brown bats at the Woodard Bay bat colony. Potential impacts and benefits on other wildlife groups and species would generally be the same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Wetlands (EIS Supporting Chapter 4.0 [Section 4.6])	Wetland habitat conditions would improve incrementally over time as Capitol Lake transitions to a more diverse complex of freshwater wetlands through ongoing sediment deposition, resulting in a minor beneficial effect.	A transition from deep water to vegetated freshwater wetlands in the Middle and South Basins would increase habitat complexity and provide a minor beneficial effect. There would be less than significant impacts on wetlands associated with fill and indirect shade impacts associated with additional permanent overwater and in-water structures. **Proposed Mitigation** • BMPs and other measures would be implemented to avoid and minimize impacts to wetlands. • A Habitat Enhancement Plan would be developed and implemented.	Reestablishment of estuarine wetlands by reintroducing saltwater and tidal influences to the restored Capitol Lake Basin would provide a **substantial beneficial effect** because estuarine wetlands are some of the most productive and valued habitats on earth. There would be less than significant impacts on wetlands associated with fill and indirect shade impacts associated with additional permanent overwater and in-water structures. Notably, several acres of fill would be removed from the Project Area as a result of dam demolition. Proposed mitigation is the same as the Managed Lake Alternative.	Same as the Estuary Alternative but with less estuarine wetlands given the presence of the reflecting pool.
Air Quality & Odor (EIS Supporting Chapter 4.0 [Section 4.7])	Odors due to continued algal growth and decay would change little from existing conditions where impacts are infrequent, short in duration, and with low intensity, resulting in less than significant impacts.	There would be no impacts related to odor because the lake would be managed to control algae growth. Criteria pollutant and greenhouse gas emissions from long-term management activities are lower than state thresholds and, therefore, there would be less than significant impacts to air quality from post-construction activities. **Proposed Mitigation** • Compliance with air quality rules and implementation of BMPs for controlling dust and reducing emissions would reduce potential exposure of people to emissions during maintenance dredging.	The variability in personal perception of naturally occurring odors from tideflats makes an impact determination subjective. In consideration of the variable frequency and duration, and low intensity, there is expected to be less than significant impacts from odor. Criteria pollutant and greenhouse gas emissions from long-term management activities are lower than state thresholds and, therefore, there would be less than significant impacts to air quality from post-construction activities. Most opportunity for carbon sequestration and least methane emissions, comparatively. Proposed mitigation is the same as the Managed Lake Alternative.	Same as the Estuary Alternative, except for reduced carbon sequestration potential.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Land Use, Shorelines, & Recreation (EIS Supporting Chapter 4.0 [Section 4.8])	Increased flooding in areas around the Capitol Lake Basin, including in parks, is expected in the future under all alternatives, including the No Action Alternative. Under current conditions, portions of Tumwater Park and Heritage Park, as well as parts of the downtown Olympia area, already experience flooding, particularly when high river flows coincide with high tide events. Therefore, there is a continued risk of **significant impact** on land use and recreation from the No Action Alternative.	There would be no substantial changes to land or shoreline uses and no conflict with plans and policies; therefore, there would be less than significant impacts. Increased flooding is expected and could impact downtown land uses and low-lying parks; the impacts would be most significant under the Managed Lake Alternative compared to the other action alternatives due to higher maximum river flood elevations. Improved water quality, sediment management, improved ecological functions, and increased opportunities for community use would have a **substantial beneficial effect** on recreation. **Proposed Mitigation** • Coordination with the Olympia Sea Level Rise Response Plan on design parameters for the flood protection design of the Heritage Park berm to account for extreme river flooding.	With maintenance dredging in West Bay, there would be no substantial changes to land or shoreline uses, and no conflict with plans and policies; therefore, there would be less than significant impacts. Impacts would be considered **significant** if maintenance dredging does not occur as planned, or if project actions (sediment monitoring and recurring maintenance dredging) do not fully avoid impacts to marinas, Port of Olympia shipping facilities, and the Federal Navigation Channel. The Estuary and Hybrid Alternatives would increase sediment deposition in West Bay when compared to the No Action or Managed Lake Alternatives. Under extreme river flood conditions, the Estuary Alternative would reduce the extent and intensity of flooding compared to the No Action and Managed Lake Alternatives; substantially less flooding is predicted in Heritage Park, downtown, and in the Interpretive Center. A lower elevation of flooding is also predicted in Tumwater Historic Park and in Marathon Park for the Estuary Alternative compared to the No Action and Managed Lake Alternatives. However, for the extreme tidal-driven event, maximum water levels would be higher for the Estuary Alternative than the No Action and Managed Lake Alternatives. Improved water quality, sediment management, improved ecological functions, and increased opportunities for community use would have a **substantial beneficial effect** on recreation. **Proposed Mitigation** • Ongoing coordination with the Olympia Sea Level Rise Response Plan team would ensure that the modeled tidal-driven events continue to be mitigated by the planned improvements in Heritage Park area. • Enterprise Services would work with owners of identified properties requiring acquisition and provide compensation in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act. • Restrictions on motorized boat use would continue to be enforced, including signage at the entry from West Bay to the North Basin. • If incidental motorized boat use occurs in the North Basin, a speed limit would be established. • Rules such as no-wake, lower speed, or restricted access for motorized boats would be established in areas frequented for wildlife viewing.	Same as the Estuary Alternative plus the following: The barrier wall and reflecting pool would provide additional flood protection and recreational opportunities compared to the other project alternatives.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Cultural Resources (EIS Supporting Chapter 4.0 [Section 4.9])	Continued river flooding could impact cultural resources, if present, and there would be **potentially significant impacts**.	Continued flooding could impact cultural resources, and there would be **potentially significant impacts**. Maintenance dredging could intersect, remove, or compact unrecorded resources, and there would be **potentially significant impacts**. **Proposed Mitigation** • Mitigation would be identified through the Section 106 process under the National Historic Preservation Act of 1966 and/or consultation under Executive Order 21-02. • Several additional mitigation measures that could help to maintain the character-defining features of affected historic properties are included in Section 5.7.2.1 of the Cultural Resources Discipline Report (Attachment 13).	Potential flooding impacts would generally be the same as the Managed Lake Alternative. Reestablishment of estuary function could potentially expose and result in damage to cultural resources, which would result in a **potentially significant impact**. Removal of the 5th Avenue Dam,5th Avenue Bridge, and Olympia Street W Bridge would be a **significant impact** to these eligible resources. Permanently returning the basin to an estuary context is more compatible with the historic waterfront character of the Tumwater Historic District having an overall **substantial benefit** to the historic district. **Proposed Mitigation** • Mitigation would be identified through the Section 106 process under the National Historic Preservation Act of 1966. • Mitigation measures that could help to maintain the character-defining features of affected historic properties are included in Section 5.7.2.2 of the Cultural Resources Discipline Report (Attachment 13). • Low-tide archaeological surveys and conditions monitoring could be conducted after construction to identify any archaeological sites that could become exposed.	Same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Visual Resources (EIS Supporting Chapter 4.0 [Section 4.10])	Aquatic plants and algae populations would continue in Capitol Lake, and likely increase as it becomes shallower through sediment deposition. Capitol Lake is already affected by aquatic algae and aquatic plant populations, so there would be less than significant impacts on visual quality from continued and worsening vegetative growth.	Additional view access from the boardwalks would have **substantial beneficial effects**. Improved water quality and aquatic plant removal would have **substantial beneficial effects** related to the aesthetics. There would be less than significant impacts associated with loss of some views of open water in the Middle Basin due to riparian vegetation growth in new habitat areas. **Proposed Mitigation** • Design of park modifications/improvements could be developed with input from user groups. • Final design of habitat would include aesthetic considerations. • Design of habitat areas and shoreline plantings could include the establishment of view corridors. • Lighting on the walkways could be placed as low as possible and directed onto the walkway surface only to reduce contrast with the natural surroundings. • Maintenance dredging could be scheduled to minimize impacts on views from Marathon Park during the summer season.	Additional view access from the boardwalks would have **substantial beneficial effects**. Tidal fluctuations would change the appearance of the waterbody substantially, and tideflats would be more visible during the summer months when lower tides are experienced during daytime hours, but the landscape would remain unified and harmonious with the natural setting of the existing surroundings resulting in less than significant impacts. **Proposed Mitigation** • Design of park modifications/improvements could be developed with input from user groups. • View corridors could be established at locations along Deschutes Parkway where lower-height vegetation could be used to facilitate motorists' and non-motorized users' views toward the water. • Lighting on the walkways could be placed as low as possible and directed onto the walkway surface only. • A view corridor could be established from the realigned section of Deschutes Parkway and 4th Avenue W to maximize motorists' views toward the water.	Same as the Estuary Alternative plus the following: Visual impacts of the barrier wall would be severe. Although mitigation for the appearance of the wall could be provided, its sheer scale would result in a **significant unavoidable impact**. **Proposed Mitigation** Same as the Estuary Alternative plus the following: • The barrier wall could have a textured concrete surface to improve the appearance of the structure. • The barrier wall design could be adjusted to better integrate with the long-term plans for the Eastern Washington Butte. • Guardrails on the barrier wall walkway could be designed to be as transparent as possible.
Environmental Health (primarily sediment quality) (EIS Supporting Chapter 4.0 [Section 4.11])	There would be no change to sediment quality in Capitol Lake or Budd Inlet.	The risk of sediment quality degradation from maintenance dredging is low because dredged sediment would be similar to the high-quality conditions currently present in Capitol Lake, resulting in less than significant impacts. **Proposed Mitigation** • BMPs would be implemented in accordance with permit requirements for turbidity management and spill prevention. • A Water Quality Monitoring and Protection Plan would also be prepared, approved by the regulatory agencies, and implemented throughout construction.	The risk of sediment quality degradation from maintenance dredging is low because sediment dredged from West Bay would be material deposited from the Deschutes River, which would be similar to the high-quality sediment conditions currently present in Capitol Lake, resulting in less than significant impacts. The export of sediment into West Bay would improve sediment quality in West Bay as cleaner sediment is deposited on existing sediment, resulting in minor to moderate beneficial effects. Proposed mitigation is the same as the Managed Lake Alternative.	Same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Transportation (EIS Supporting Chapter 4.0 [Section 4.12])	There would be no change to transportation infrastructure. Some traffic impacts associated with ongoing minor maintenance dredging would continue to occur.	The Managed Lake Alternative would include construction of a new 5th Avenue Non-Vehicular Bridge that would be separate from the existing 5th Avenue Bridge along the north edge of Capitol Lake. Provision of this new facility would support many policies established by the City of Olympia that seek to improve pedestrian and bicycle travel throughout the city, and is considered to provide a **substantial benefit** to transportation. Construction of boardwalks in the South and Middle Basins would enhance the pedestrian environment, supporting local policies encouraging non-motorized travel, and is considered a moderate benefit to transportation. During maintenance dredging events that are estimated to occur every 20 years, hauling dredged material by truck or rail would result in congestion and delays that would cause a **significant unavoidable impact** on traffic operations for several months each time. If in-water disposal is possible for the Managed Lake Alternative, dredge material would need to be trucked to a near-site loading facility. Although the distance travelled for disposal of dredge material would be less than that required for upland disposal, the volume of truck traffic on local streets would still have **a significant unavoidable impact** to the local roadway network. **Proposed Mitigation** • A Construction Traffic Management Plan would be prepared for maintenance dredging.	The Estuary Alternative would include construction of a new 5th Avenue Bridge and a new connection between Deschutes Parkway and Olympic Way. Provision of these new multimodal facilities would support many policies established by the City of Olympia that seek to support and improve pedestrian and bicycle travel throughout the city. They would also provide vehicular and transit connectivity between Olympic Way and Deschutes Parkway that do not exist today. The new bridge would provide a **substantial benefit** to transportation because, in addition to the improved connectivity for all travel modes, it would extend the design life of a major element of Olympia's transportation network and reduce overall maintenance needs related to the bridge. Construction of boardwalks in the South and Middle Basins would enhance the pedestrian environment, supporting local policies encouraging non-motorized travel, and is considered a moderate benefit to transportation. During maintenance dredging events that are estimated to occur every 6 years, impacts to traffic operations would be less than significant if the dredged material is transported by barge for in-water disposal. If the dredged material is not suitable for in-water disposal, transport by truck or rail would have a **significant impact** on traffic operations. **Proposed Mitigation** • A Construction Traffic Management Plan would be prepared for maintenance dredging.	Transportation improvements and benefits are the same as the Estuary Alternative. Transportation impacts associated with transport of dredge material are the same as the Estuary Alternative, except maintenance dredging events are estimated to occur every 5 years.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Public Services & Utilities (EIS Supporting Chapter 4.0 [Section 4.13])	There would be **significant impacts** on utility infrastructure from extreme river flooding, but these could be addressed through mitigation measures. Under Ecology's Budd Inlet TMDL, there would be an increased likelihood that additional nutrient source reduction is required of LOTT Clean Water Alliance (LOTT) and other discharges to improve water quality and meet regulatory standards. This means that LOTT and other utilities would almost certainly need to implement additional treatment sooner under the No Action Alternative, and this would be a **significant impact.**	Same as the No Action Alternative. **Proposed Mitigation** • In coordination with the Olympia Sea Level Rise Response Plan, design parameters would be included for the flood protection design of the Heritage Park berm to account for extreme river flooding.	Impacts on utility infrastructure from saltwater exposure could cause corrosion and could reduce infrastructure life; this would be a **significant impact** but could be addressed through mitigation measures. The reestablished estuarine conditions would reduce the extent of overland flooding from river floods. Impacts on low-lying utilities that could be physically affected during extreme tide flood events would be less than significant. Ecology has stated in the Budd Inlet TMDL that the Estuary Alternative is the only alternative that can meet the waste load allocation because it would constitute a "natural estuary" condition. **Proposed Mitigation** • During design, complete an evaluation of utilities within low-lying areas potentially vulnerable to flooding under future conditions with relative sea level rise, and coordinate with public and private utility owners in developing a protection or replacement schedule. • Ongoing coordination with the Olympia Sea Level Rise Response Plan team would ensure that the modeled tidal-driven events continue to be mitigated by the planned improvements in the Heritage Park area. • Coordinate with local utility providers during their scheduled systemwide conditions assessments to ensure corrosion risks are identified and appropriate measures are in place to monitor, protect, or replace utilities at risk of corrosion.	Impacts on utility infrastructure would be the same as the Estuary Alternative, except corrosion impacts on outfalls along the Arc of Statehood within the freshwater pool would be avoided and no replacements would be necessary. Under Ecology's Budd Inlet TMDL, Ecology could require LOTT to construct additional treatment sooner than under the Estuary Alternative. Requirements for LOTT and other utility dischargers would be substantially less stringent than would occur under the No Action and Managed Lake Alternatives. Impacts are considered less than significant. Proposed mitigation is same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	No Action Alternative (Long-Term)	Managed Lake Alternative (Long-Term)	Estuary Alternative (Long-Term)	Hybrid Alternative (Long-Term)
Economics (including ecosystem services) (EIS Supporting Chapter 4.0 [Section 4.14])	Project benefits would not be realized under the No Action Alternative, and there would be ongoing equity and social justice issues to tribes given the sustained loss of connection to the natural environment and access to Usual and Accustomed Fishing Grounds and Stations.	There would be ongoing equity and social justice issues to tribes given the sustained loss of connection to the natural environment and access to Usual and Accustomed Fishing Grounds and Stations. The long-term impacts on economic activity and changes in economic value related to downtown development would be similar among the action alternatives. The enhancements to trails, habitat areas, and restored water-based recreation would increase the value of recreation in the basin across all action alternatives. The action alternatives would improve habitats, visual aesthetics, and cultural, heritage, spiritual, and educational values.	Same as the Managed Lake Alternative; except that the Estuary Alternative would beneficially affect tribal populations and other people who value ecosystem restoration through the cultural, heritage, spiritual, and educational value that an estuarine environment provides. This would address equity and social justice impacts associated with the No Action and Managed Lake Alternatives. There would be reduced, avoided, or deferred regulatory compliance costs for LOTT and stormwater discharges compared to the No Action and Managed Lake Alternatives.	Same as the Estuary Alternative.

WHAT ARE THE IMPACTS FROM CONSTRUCTION OF THE ACTION ALTERNATIVES?

Learn more in EIS Supporting Chapter 5.0

Construction would result in temporary impacts, and some permanent, to many of the environmental disciplines analyzed in the EIS. The construction duration would range from 4 to 8 years, depending on the alternative. Many of the construction elements would occur under all action alternatives (e.g., dredging, habitat area formation, boardwalks, etc.). The primary difference in construction impact is the duration.

Table 3 summarizes the primary impacts of project construction, beginning with impacts that are common to all action alternatives. Construction activities that would increase the magnitude, intensity, or type of impact specific to a particular alternative are also described, along with mitigation measures to offset potential project impacts. If there are no additional construction impacts beyond those common to all action alternatives, that cell is shaded gray. Under the No Action Alternative, the project would not be constructed; therefore, there are no construction impacts and the No Action Alternative is not included in this table.

Table 3 Summary of Key Findings – Construction Impacts and Proposed Mitigation

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Hydrodynamics & Sediment Transport (EIS Supporting Chapter 5.0 [Section 5.1])	The changes in hydrodynamics (water flow and elevation) and sediment transport (areas of sediment accumulation and erosion) would occur after construction and are summarized in Table 2.	No additional construction impact beyond those common to all action alternatives.	No additional construction impact beyond those common to all action alternatives.	No additional construction impact beyond those common to all action alternatives.
Navigation (EIS Supporting Chapter 5.0 [Section 5.2])	There would be no change to navigation in West Bay during construction. Potential impacts to commercial and recreational navigation in West Bay would occur after construction and are summarized in Table 2.	No additional construction impact beyond those common to all action alternatives.	No additional construction impact beyond those common to all action alternatives.	No additional construction impact beyond those common to all action alternatives.
Water Quality (EIS Supporting Chapter 5.0 [Section 5.3])	Construction impacts on water quality would be largely related to the sediment disturbance from activities such as dam repair or removal, roadway construction, dredging, habitat construction, and building recreational amenity structures. With implementation of BMPs, short-term impacts on water quality such as localized turbidity (suspended sediments that reduce water clarity) and resuspended sediments can be confined within the allowable mixing zone and, therefore, there would be less than significant impacts. **Proposed Mitigation** • Standard dredging and overwater and in-water construction BMPs would be implemented in accordance with permit requirements for in-water work. • A Water Quality Monitoring and Protection Plan would be prepared, approved by the regulatory agencies, and implemented throughout construction. • To reduce potential dissolved oxygen impacts to Budd Inlet, dam operations could be modified to restrict lake outflow during dredging and during construction activities and increase lake outflow at night.	Construction impacts on water quality would occur intermittently and in varying locations over approximately 4 to 5 years.	Construction impacts on water quality would occur intermittently and in varying locations over approximately 7 to 8 years.	Same as the Estuary Alternative.
Aquatic Invasive Species (EIS Supporting Chapter 5.0 [Section 5.4])	Prior to construction, Capitol Lake would be treated to significantly reduce the population of aquatic invasive species and minimize the potential spread of aquatic invasive species outside of the study area, as prescribed in an aquatic invasive species management plan developed for the project. Construction equipment would be decontaminated before entering and leaving the Project Area. For these reasons, construction would have less than significant impacts on aquatic invasive species populations and distribution. Reuse of dredged material within the habitat areas may have a minor beneficial effect due to burial of some aquatic invasive species. **Proposed Mitigation** • Capitol Lake would be treated prior to construction to significantly reduce the population of aquatic invasives. • WDFW-approved BMPs would be implemented during construction.	No additional construction impact beyond those common to all action alternatives.	Some dredged sediment may be exported out of the study area; this could provide a cause for transmission of aquatic invasive species. However, treatment of the dredged material and disposal at an approved upland site would ensure that there is less than significant impact on aquatic invasive species populations and distribution. **Proposed Mitigation** • An Aquatic Invasive Species Management Plan would be followed during transport and upland disposal of material dredged during construction.	Same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Fish & Wildlife (EIS Supporting Chapter 5.0 [Section 5.5])	Construction activities could produce localized turbidity and sedimentation and temporarily disrupt ecological functions of aquatic and terrestrial habitats. With implementation of BMPs and other permit conditions (in particular, adherence to the established in-water work windows), impacts on fish and wildlife from construction would be avoided or minimized; thus, there would be less than significant impacts. **Proposed Mitigation** • Standard overwater and in-water construction and demolition BMPs would be implemented in accordance with permit requirements. • In-water work would only occur within the allowable work window to minimize potential impacts to fish and wildlife.	Construction impacts on fish and wildlife would be localized to areas experiencing active construction over approximately 4 to 5 years. **Proposed Mitigation** • Installation of the berm that would be installed to increase stability of the 5th Avenue Dam would be timed to occur at low tide as feasible to minimize impacts of in-water work on fish.	Construction impacts on resident fish and wildlife would be localized to areas experiencing active construction over approximately 7 to 8 years.	Construction impacts on resident fish and wildlife would be localized to areas experiencing active construction over approximately 7 to 8 years but would also include construction of the reflecting pool barrier wall, which would generate in-water noise and vibration that can impact aquatic species.
Wetlands (EIS Supporting Chapter 5.0 [Section 5.6])	Construction activities would produce localized turbidity and sedimentation and temporarily disrupt ecological functions of wetlands. With implementation of standard construction BMPs, however, all impacts on wetlands from construction would be avoided or minimized; thus, there would be less than significant impacts. **Proposed Mitigation** • BMPs would be implemented, in accordance with project permits, to minimize potential construction impacts on wetlands.	Construction impacts on wetlands would be approximately 4 to 5 years. **Proposed Mitigation** • Installation of the berm that would be installed to increase stability of the 5th Avenue Dam would be timed to occur at low tide as feasible to minimize impacts of in-water work on fish.	Construction impacts on wetlands would be approximately 7 to 8 years.	Same as the Estuary Alternative.
Air Quality & Odor (EIS Supporting Chapter 5.0 [Section 5.7])	The annual emissions for criteria pollutants from construction activities are estimated to be less than state thresholds and would result in less than significant impacts to air quality and odor. **Proposed Mitigation** • Compliance with air quality rules and implementation of BMPs for controlling dust and reducing emissions would reduce potential exposure of people to emissions during dredging and construction activities.	The Managed Lake Alternative would generate the lowest construction emissions.	The Estuary Alternative would generate emissions greater than the Managed Lake Alternative but less than the Hybrid Alternative.	The Hybrid Alternative would generate the most construction emissions.

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Land Use, Shorelines, & Recreation (EIS Supporting Chapter 5.0 [Section 5.8])	Most recreational resources in the Project Area would remain open, but most of Marathon Park would be closed for the entire duration of construction. There would be construction noise and visual disturbance, which would reduce the value of the Project Area for some recreation activities. Impacts to Marathon Park from staging and impacts on recreational use related to noise and other disruptions could not be fully mitigated and would be a **significant unavoidable impact.** **Proposed Mitigation** • BMPs would be implemented to minimize noise, dust, and other disturbances to visitors to recreation sites during construction, as well as in areas used for informal recreation (e.g., along roads). • Coordination with potentially affected park districts/departments would be needed, to ensure that the public is well-informed of upcoming construction activities, and to plan construction to minimize conflicts with park events to the extent feasible. • Alternative access points to recreation sites and trail detours would be provided. • Signage along trails or park entrances would be provided at least 1 week prior to closures. • Pedestrian and bicycle access routes would be clearly marked, as well as detour signage and other wayfinding elements. • Recreation sites or trails would be restored after construction. • Construction activities would be scheduled in a way that minimizes or avoids impacts to major festival days, whenever feasible. • Coordination with festival and event planners would be needed when conflicting construction activities and closures cannot be avoided. This could include planning for detours, signage, media notifications, and similar actions. • Construction hours would be limited to avoid high-use times in parks, such as weekends and festival hours. • Given the duration of construction, interpretative signage would be provided in adjacent parks to explain how the work meets project goals, adding interest for some users. • A 24-hour hotline would be provided to address complaints or safety concerns that may arise during construction.	Construction impacts to recreational resources would be approximately 4 to 5 years. **Proposed Mitigation** • Construct the new 5th Avenue Non-Vehicular Bridge prior to overhaul repairs at the 5th Avenue Dam and Bridge in order to maintain the trail loop connecting Heritage Park and Deschutes Parkway during the time the work is occurring.	Construction impacts to recreational resources would be approximately 7 to 8 years.	Construction impacts to recreational resources would be approximately 7 to 8 years and this would be the most intensive of the action alternatives due to construction of the reflecting pool barrier wall. **Proposed Mitigation** • For barrier wall construction, vibratory pile driving would be the preferred construction method, rather than impact pile driving, to minimize disruption.

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Cultural Resources (EIS Supporting Chapter 5.0 [Section 5.9])	Initial dredging and other construction activities could intersect, remove, or compact unrecorded archaeological resources, and, if present, there would be **potentially significant impacts**. Construction impacts on historic built environment resources could occur from temporary construction activities and could reduce a resource's historic register eligibility or reduce the ability of the resource to convey its historic significance. However, measures to reduce construction impacts would be implemented, and there would be less than significant impacts from temporary construction activities. **Proposed Mitigation** • Mitigation would be identified through the Section 106 process under the National Historic Preservation Act of 1966 and/or consultation under Executive Order 21-02. Additional mitigation measures may be separately developed through consultation with the DAHP, affected tribes, the City of Olympia, the City of Tumwater, and other stakeholders. • An Archaeological Site Alteration and Excavation Permit may be required if impacts on a protected archaeological resource could not be avoided and would contain conditions and stipulations. Potential stipulations are listed in EIS Supporting Chapter 5.0 (Section 5.9.6.1). • Several mitigation measures that could help to maintain the character-defining features of affected historic properties are included in Section 5.7.2.1 of the Cultural Resources Discipline Report (Attachment 13).	No additional construction impact beyond those common to all action alternatives.	There would be a greater risk of encountering unrecorded archaeological sites due to greater ground disturbance compared to the Managed Lake Alternative. **Proposed Mitigation** • Before constructing, Enterprise Services would consult with DAHP, affected tribes, and the lead federal agency to determine the types and locations of cultural studies that are needed. Any efforts to avoid, minimize, document, or interpret resources necessarily assume that inventories, surveys, and other properly designed studies occur as a precursor.	Same as the Estuary Alternative.
Visual Resources (EIS Supporting Chapter 5.0 [Section 5.10])	Construction staging areas would be established in nearby parks, and public access to these parks and other public facilities would be reduced or restricted. Most of Marathon Park would be closed during construction, resulting in an obstruction to visual access to the shoreline. Construction activities, equipment, and materials would also remain in place in the water of the Capitol Lake Basin for several years. Given the duration of construction-related staging at Marathon Park and in-water construction and staging, construction impacts on visual resources are considered a **significant unavoidable impact** for all action alternatives. **Proposed Mitigation** • The staging area in Marathon Park would be minimized during periods of no construction to allow visual access where feasible. • Project areas in parks and along Deschutes Parkway would be planted as soon as feasible to minimize the duration of construction disturbance. • In-water construction equipment, other than coffercells, would be removed from the lake between construction seasons.	Construction impacts to visual resources would be approximately 4 to 5 years.	Construction impacts to visual resources would be approximately 7 to 8 years.	Construction impacts to visual resources would be approximately 7 to 8 years.

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Environmental Health (primarily sediment quality) (EIS Supporting Chapter 5.0 [Section 5.11])	Construction activities and dredging would not change sediment quality in the lake basin. Dredging would uncover sediment with lower sulfide concentrations (though the existing sulfide concentrations do not pose a health risk to humans); this would result in minor beneficial effects on sediment quality in Capitol Lake. Sediment dredging and placement of dredged sediments in constructed habitat areas would have no adverse impacts on sediment quality because high sediment quality is present throughout Capitol Lake within and below the dredge areas. **Proposed Mitigation** • BMPs for turbidity management and spill prevention would be implemented during dredging activities to minimize and avoid impacts to sediment quality. • A Water Quality Monitoring and Protection Plan would also be prepared, approved by the regulatory agencies, and implemented throughout construction.	No additional construction impact beyond those common to all action alternatives.	There would be no impacts to sediment quality associated with removing the 5th Avenue Dam because all dam demolition would be contained within a coffercell to prevent the spread of sediment beyond the mixing zone established by the water quality permit.	Same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Transportation (EIS Supporting Chapter 5.0 [Section 5.12])	Construction of any of the three action alternatives could result in temporary narrowing or closure of street lanes, sidewalks, or bicycle lanes adjacent to construction activities. This would include narrowing of Deschutes Parkway during construction related to the 5th Avenue Bridge, but also could include short-term lane or sidewalk closures in areas adjacent to a specific construction activity. All alternatives would also generate truck and construction worker trips and parking, and could degrade pavement along truck haul routes. These impacts would be less than significant. **Proposed Mitigation** • Implementation a Construction Traffic Management Plan with measures described in EIS Supporting Chapter 5.0 (Section 5.12.6). Additional measures could be considered: ○ Apply time-of-day restrictions for construction trips ○ Use rail to reduce truck trips associated with construction spoil disposal ○ Prohibit construction employee parking in residential neighborhoods, Capitol Campus, and downtown streets ○ Coordinate with rail owner to ensure that construction activities do not interfere with scheduled rail trips across the Project Area • Manage pavement damage during construction and restore pavement to pre-construction conditions once the project is complete.	The 5th Avenue Bridge would be narrowed or closed for approximately 7 weeks for dam repairs and overhaul work. Buses would be displaced from the 5th Avenue Bridge (currently Routes 12 and 42), and, unless a temporary connection can be provided that allows buses to reroute to 4th Avenue, this is considered a **significant unavoidable impact.** Although pedestrians and bicyclist could be detoured to 4th Avenue, the elevation difference between 5th Avenue and 4th Avenue would not meet Americans with Disabilities Act (ADA) standards. Without a suitable detour, the bridge closure could be a **significant impact.** **Proposed Mitigation** • Construct the new 5th Avenue Non-Vehicular Bridge prior to closure of the 5th Avenue Bridge. • Identify detour route for closure of the 5th Avenue Bridge. • Coordinate with Intercity Transit to reroute affected bus routes. • Develop and implement a public communication strategy that would give ample advance notice to residents and employees of the impending bridge closure.	A new 5th Avenue Bridge would be constructed prior to removal of the existing 5th Avenue Dam and Bridge. Most of the new 5th Avenue Bridge would be constructed without any disruption to traffic because it would be located in a new alignment. There may be partial lane closures or night and weekend full closures when the new bridge is connected at each end of the structure, but long-term closures (previously evaluated for the Draft EIS) would be eliminated. Impacts would be less than significant. The Estuary Alternative could result in closure of Olympic Way between 5th Avenue W and Deschutes Parkway for up to 1 month during construction of the new roadway. While this could affect vehicular, pedestrian, and bicycle travel, it is not expected to affect existing transit routes. With mitigation, this would be a less than significant impact. **Proposed Mitigation** • Identify detour route for closure of Olympic Way. • Develop and implement a public communication strategy that would give advance notice to residents and employees in advance of road closure.	Same as the Estuary Alternative.

Environmental Disciplines Analyzed in the EIS	Construction Impacts Common to All Action Alternatives	Managed Lake Alternative (Construction)	Estuary Alternative (Construction)	Hybrid Alternative (Construction)
Public Services & Utilities (EIS Supporting Chapter 5.0 [Section 5.13])	Accidental damage to utility lines during construction could temporarily disrupt utility services. However, with measures to locate utility lines and to coordinate final construction plans with affected utilities, there would be less than significant impacts on utilities. Closure of the 5th Avenue Bridge for repairs or replacement would be temporary and short (about 4 to 7 weeks depending on the alternative), so impacts related to increased emergency response time and travel time in the corridor would be less than significant. **Proposed Mitigation** • Prior to construction, consultation would be needed with local police, fire, and emergency response to develop and implement emergency response plans, establish emergency vehicle routes, and ensure that general emergency management services are not compromised. • Coordination would be needed with utility agencies and companies to locate existing utilities and avoid damage. The extent and type of temporary protective measures that must be implemented to prevent construction damage to surface and subsurface utilities would be determined. • Utility relocations would be staged to minimize interruptions in service. • Contractors would be required to prepare a Construction Traffic Management Plan for construction activities that may affect road rights-of-way.	The overhaul repairs to the 5th Avenue Dam would require the replacement or overhaul of electrical systems within the dam; however, no utility conflicts are anticipated, and no utilities would be relocated. As a result, there would be no impacts on public services or utilities.	Utility lines on the existing 5th Avenue Bridge would likely be relocated to the 4th Avenue Bridge or be installed under the new 5th Avenue Bridge, or directionally drilled under the opening. Service disruptions are expected to be minimal as utility lines would be relocated prior to removal of the existing bridge. With measures to minimize utility disruptions, impacts would be less than significant. **Proposed Mitigation** In addition to mitigation common to all alternatives: • Coordinate with the City of Olympia and utility providers during project design regarding relocation of utilities related to 5th Avenue Bridge replacement.	Same as the Estuary Alternative.
Economics (including ecosystem services) (EIS Supporting Chapter 5.0 [Section 5.14])	Construction spending would temporarily support jobs, labor income, and economic output. Some recreation facilities would be closed or blocked during construction, causing people to recreate elsewhere or choose other lower-preference activities, although some people might enjoy watching the construction activities. Construction would also disrupt the value of ecosystem services, but the effects would be localized and temporary.	Construction spending would be least under the Managed Lake Alternative, but because of the shorter construction duration, construction would be less disruptive to ecosystem services than the Estuary and Hybrid Alternatives.	Construction spending would be greater than the Managed Lake Alternative but less than the Hybrid Alternative.	Construction spending would be highest under the Hybrid Alternative.

The No Action Alternative would not result in construction impacts because the project would not be built. The No Action Alternative is not included in this table for that reason.

ARE THERE SOCIAL JUSTICE & EQUITY ISSUES ASSOCIATED WITH THE PROJECT?

Learn more in EIS Supporting Chapter 4.0 (Section 4.14)

Tribal populations would experience disproportionately adverse impacts from the Managed Lake Alternative, raising environmental justice concerns. The Managed Lake Alternative would have a continued impact on Usual and Accustomed Fishing Grounds and Stations, and on the Deschutes Estuary, both of which have cultural, religious, and economic significance. The Managed Lake Alternative would also perpetuate historic and continued loss of tribes' and tribal members' connection to the natural environment.

Removal of the 5th Avenue Dam under the Estuary Alternative (and the Hybrid Alternative, to a lesser extent) would have beneficial effects for ecological, cultural, heritage, spiritual, and educational value for tribes. Tribal populations would likely experience the beneficial effects of restoration of the Capitol Lake Basin to an estuarine system most significantly.

The Squaxin Island Tribe has stated that the Estuary Alternative is the only alternative that they support. This input and potential effects to tribal resources were considered in the process to identify the Preferred Alternative, as summarized below and described in more detail in Attachment 21.

ARE THERE AREAS OF CONTROVERSY OR UNCERTAINTY?

Learn more in EIS Supporting Chapter 7.0 and Attachment 23

The Estuary Alternative (identified as the Preferred Alternative for long-term management) includes recurring maintenance dredging in West Bay after project construction. Maintenance dredging would be needed in West Bay to avoid impacts to navigation, and to maintain a working waterfront and recreational boating. Maintenance dredging would be focused in the deeper areas of West Bay along the eastern shoreline that are used for navigation. The shallow intertidal bench that exists on the western shore of West Bay and the former Capitol Lake Basin would not be dredged because estuarine habitat would be restored and preserved in these areas.

In 2022, the Funding and Governance Work Group, which is composed of the cities of Olympia and Tumwater, Thurston County, Port of Olympia, LOTT Clean Water Alliance (LOTT), the Squaxin Island Tribe, Enterprise Services, and the Washington State Department of Natural Resources (DNR), agreed to provide shared funding for maintenance dredging of the increased sediment that would deposit along the eastern shoreline of West Bay under the Estuary Alternative. The preliminary, conceptual agreement for this shared funding is outlined in a MOU, provided as Attachment 23. The Funding and Governance Work Group members expect to transform the conceptual MOU into a formal Interlocal Agreement (ILA). The initial term of the ILA is expected to be through 2050, which aligns with the latest current lease agreements between the marinas in West Bay and the Washington State Department of Natural Resources, where dredging would be needed, in part. There is opportunity for extension of the ILA beyond 2050.

In coordination with the marinas and the Port of Olympia through the EIS process, Enterprise Services identified triggers for maintenance dredging after construction. Maintenance dredging would be needed to avoid significant impacts to the marinas and the Port of Olympia before either of two conditions occurs:

- More than 10% of vessels at any single marina are unable to access leased moorage due to shallowed water depth caused by sediment deposition.
- A wait time of more than 4 hours on more than one consecutive occasion for large vessels accessing the Federal Navigation Channel and Port of Olympia due to water depth and low tide conditions caused by sediment deposition.

Based on hydrodynamic and sediment transport numerical modeling conducted for the project, and these defined triggers to avoid significant impacts, it is anticipated that maintenance dredging would be needed on an average frequency of approximately 6 years. The actual rate of sediment accumulation would be highly dependent on river flow conditions, and dredging frequency may be increased or decreased relative to the average estimate. To ensure that maintenance dredging is responsive to actual environmental conditions, the MOU envisions that bathymetric surveys would be conducted in West Bay to monitor sediment deposition, at least annually.

Similar to the maintenance dredging that is proposed after project construction, maintenance dredging was needed historically to maintain navigation in West Bay. Before the 5th Avenue Dam was constructed in 1951, the U.S. Army Corps of Engineers (USACE) dredged the Budd Inlet Federal Navigation Channel frequently between 1893 and 1948. That maintenance dredging was conducted to support commercial uses within the historic Deschutes Estuary, including the Olympia Yacht Club (established in its existing location in 1906) and the Port of Olympia (established in its existing location in 1922).

After 1951, maintenance dredging continued to occur in West Bay to remove accumulated sediment and maintain navigation, at less frequent intervals. The USACE has led dredging efforts in the Federal Navigation Channel; the Port of Olympia dredges its vessel berths; and the marinas in West Bay have each dredged within their footprints.

The MOU includes a range of conditions intended to increase certainty that funding for increased maintenance dredging is available through 2050. In the event that funding lapses and/or maintenance dredging is delayed, sediment accumulation would eventually impede navigation in West Bay, resulting in significant impacts as defined by the thresholds listed above. See the updated analysis in EIS Supporting Chapter 4.0 (Section 4.2) and the Navigation Discipline Report (Attachment 6) for more detail.

WHAT ARE THE NEXT PROJECT PHASES & HOW WOULD THEY BE FUNDED?

Learn more in EIS Supporting Chapter 7.0 (Section 7.2)

After the EIS, funding would be needed to design and permit estuary restoration, to construct the Estuary Alternative, and for long-term management. Enterprise Services would submit a capital budget

request to the Washington State Legislature for the 2023–2025 biennium, for funding to begin a 3- to 5-year design and permitting process. A suite of state, federal, and local permits would be needed to construct the project. These are outlined in EIS Supporting Chapter 9.0.

Enterprise Services would also develop a strategy for construction funding, which is likely to rely on funds from a variety of sources, including federal and state, and potentially funds from other private and non-profit granting programs. As the party responsible for constructing the 5th Avenue Dam, and as the resource manager, the State of Washington would need to contribute majority funding for design, permitting, and construction. Construction of the Estuary Alternative is expected to be up to 8 years.

After construction, maintenance dredging would be needed in West Bay. Shared funding would be provided by members of the Funding and Governance Work Group through 2050, as described in the section above and as outlined in the MOU provided as Attachment 23.

Are planning-level cost estimates provided for the project alternatives?

Learn more in EIS Supporting Chapter 7.0 (Section 7.1)

Planning-level cost estimates were developed for the project alternatives based on conceptual design components. The accuracy of the planning-level cost estimates is consistent with the conceptual level of design, and accuracy will increase as design is further developed following selection of a preferred alternative. The planning-level cost estimates reflect an accuracy variation of - (minus) 25% to + (plus) 35%. Planning-level costs are provided in the EIS for construction and for maintenance dredging. In the Draft EIS, the planning-level cost estimates assumed 3.5% annual escalation with construction beginning in 2028.

Escalation has been removed from the planning-level cost estimates included in the Final EIS given the impact that COVID-19 has had on inflation and the associated uncertainty in escalating costs into the future. Removing escalation from the planning-level cost estimates allows for a more straight-forward analysis and acknowledges that escalated cost-estimates would not be accurate given the continued uncertainty. The Funding and Governance Work Group also requested that planning-level cost estimates be reported in 2022 dollars to better support current budgetary planning, which is also done in 2022 dollars.

Given the numerical modeling that was conducted for the EIS, costs associated with sediment management can be estimated and represent the largest long-term maintenance cost. Costs associated with maintenance dredging were estimated for a 30-year duration after construction. The EIS findings suggest that under the Managed Lake Alternative, the dredged material would be trucked to an upland disposal site given the presence of the New Zealand mudsnail. In response to comments received on the Draft EIS, planning-level cost estimates were developed for in-water disposal of dredged sediment under the Managed Lake Alternative. Existing environmental conditions and environmental regulations prohibit material from the Managed Lake being disposed at an in-water disposal site; but cost estimates were prepared because these conditions and regulations could change before maintenance dredging, which is not expected to occur sooner than the 2050s under this alternative. Upland disposal via truck is significantly more expensive than in-water disposal via barge,

resulting in higher dredging costs for the Managed Lake Alternative; these costs would be reduced if in-water disposal became feasible.

In-water disposal of sediment from the maintenance dredging events is assumed for the Estuary and Hybrid Alternatives, based on findings of the EIS. However, given the inherent uncertainty in dredging and sediment quality, planning-level estimates were also included for upland disposal of this material.

Other long-term costs, such as those associated with future project permit conditions or alternative-specific Adaptive Management Plans, Habitat Enhancement Plans, and other operations and maintenance activities would be estimated during design and permitting of the Preferred Alternative, when those requirements are better understood.

A summary of planning-level costs are provided in Table 4.

Table 4 Planning-Level Costs Summary Table (Shown in 2022 Dollars)

Alternative	Estimated Construction Costs	Estimated 30-Year Maintenance Dredging Costs	Total Estimated Costs (Construction + 30 Years Maintenance Dredging)
Managed Lake Alternative	$76–$136M	$141–$254M (1)	$217–$390M
Estuary Alternative (Preferred Alternative)	$137–$247M	$29–$52M (2)	$166–$299M
Hybrid Alternative	$178–$320M	$43–$78M (3)	$221–$398M

Notes:

1 Under the Managed Lake Alternative, dredged sediment is expected to be disposed of upland. If environmental conditions and/or environmental regulations change such that in-water disposal is permittable, these costs would reduce to $56 to $100M.

2 This estimate reflects the additional costs beyond those that would be incurred by the USACE, Port of Olympia, and private marinas for dredging under the No Action Alternative. Based on findings of the EIS, sediment dredged from the Estuary Alternative is expected to be suitable for in-water disposal. If environmental conditions change, and upland disposal is required, these costs would increase to $157 to $283M.

3 This estimate reflects the additional costs beyond those that would be incurred by the USACE, Port of Olympia, and private marinas for dredging under the No Action Alternative. Based on findings of the EIS, sediment dredged from the Hybrid Alternative is expected to be suitable for in-water disposal. If environmental conditions change, and upland disposal is required, these costs would increase to $242 to $436M.

Were the potential economic impacts of the project alternatives evaluated?

Learn more in EIS Supporting Chapter 4.0 (Section 4.14)

Potential long-term economic impacts were evaluated for this project based on the potential for the action alternatives to result in changes in economic activity or economic value in the region.

The economic analysis found that there is no clear evidence that implementing any action alternative would reduce demand for residential or commercial development in downtown Olympia.

The City of Olympia's plans for the redevelopment of downtown are long-range, and investment in residential and commercial development is projected to increase in intensity over the next decade. Effects of any of the action alternatives on development in downtown Olympia would be beneficial, as long as the project is implemented in a way that is both attractive and accessible. This was a key finding in a series of project-specific interviews with municipal planners, economic development officials, private developers, and real estate experts. Overall, the economic analysis concludes that economic factors other than Capitol Lake – Deschutes Estuary Long-Term Management Project would have more influence on market conditions for development.

The economic activity and changes in economic value would be similar in type among the action alternatives. There were four primary categories or topics that were evaluated in the economic analysis, including potential long-term economic impacts to downstream economic activity, downtown development, demand for and value of recreation, and demand for and value of ecosystem services.

The methodology for the economic analysis and the findings were reviewed by independent third-party experts (see Attachment 18, Economics Discipline Report).

HOW WERE GOVERNMENTAL & AGENCY PARTNERS ENGAGED IN THE EIS PROCESS?

Learn more in EIS Supporting Chapter 8.0

Throughout the process to prepare this EIS, Enterprise Services actively engaged governmental and agency partners that have jurisdiction or regulatory authority within the Project Area, including the City of Olympia, City of Tumwater, LOTT, Port of Olympia, Squaxin Island Tribe, Thurston County, Washington State Department of Archaeology and Historic Preservation (DAHP), DNR, Ecology, and Washington State Department of Fish and Wildlife (WDFW). These entities have been studying and considering long-term management options for several decades.

Enterprise Services convened several work groups, including an Executive Work Group, Technical Work Group, and Funding and Governance Work Group to provide structured opportunities to engage in the EIS process and provide input on substantive project topics.

Figure 11 reflects an understanding that the Capitol Lake – Deschutes Estuary is a shared resource, and long-term management planning should be a collaborative process that includes potential beneficiaries and key stakeholders, including the community.

HOW WAS THE COMMUNITY ENGAGED IN THE EIS PROCESS?

Learn more in EIS Supporting Chapter 8.0 (Section 8.4)

Enterprise Services convened a Community Sounding Board to participate throughout the EIS process, recognizing continued community interest in long-term management planning. A 25-member Community Sounding Board was selected through an application process that focused on assembling a group representing a wide range of community interest areas. To contribute to a robust and well-informed EIS process, Enterprise Services met with the Community Sounding Board nine times

between 2019 and 2021 to understand the concerns of the community, represented by the members, values, and perspectives on specific topics of interest. Additionally, Enterprise Services engaged separately with community groups, and with the private marinas given the potential impact of sediment accumulation under the Estuary and Hybrid Alternatives, and to discuss the approach to impact avoidance and funding for maintenance dredging.

Figure 11 Project Process Map (page 1)

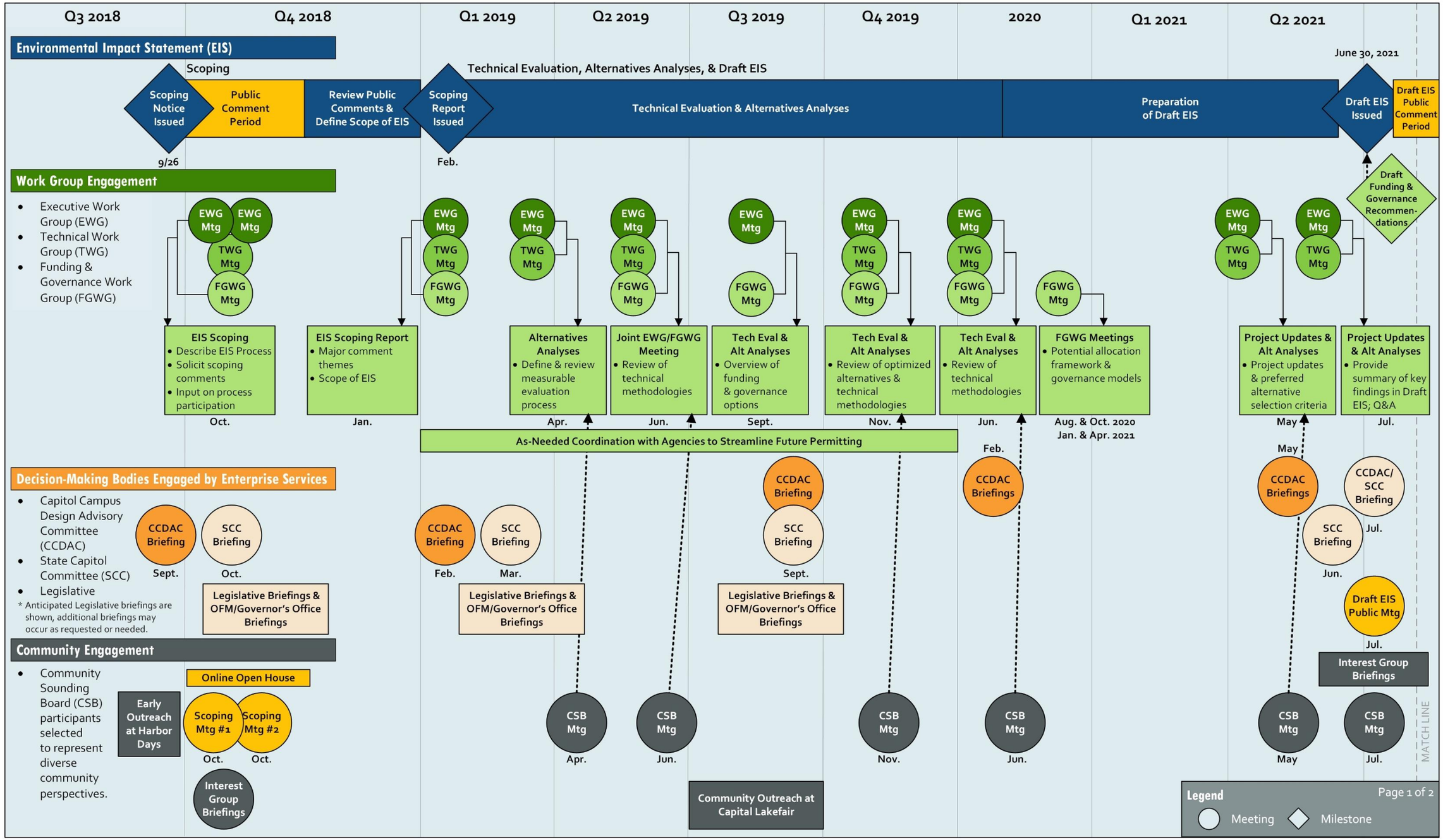
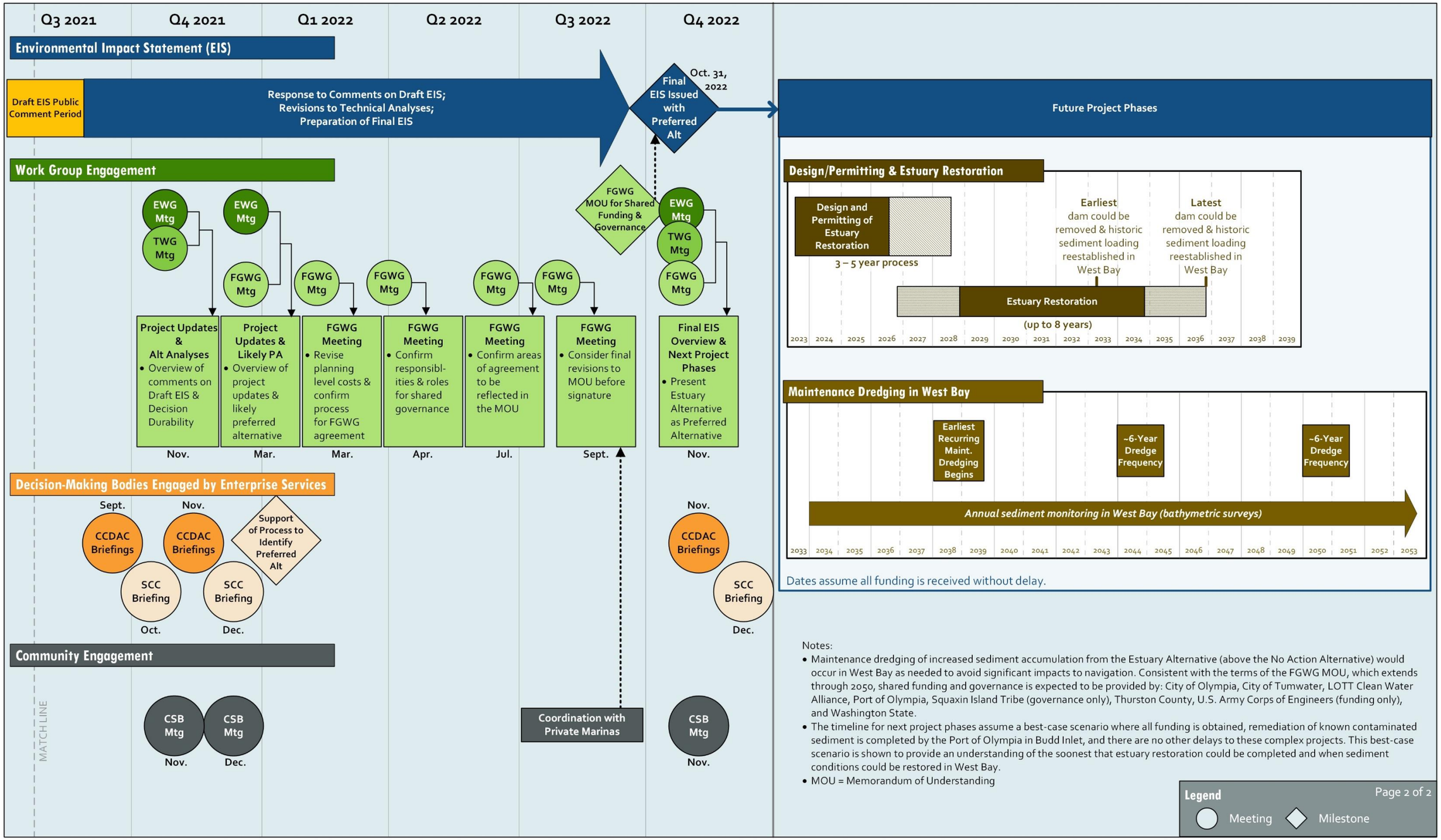


Figure 11 Project Process Map (page 2)



Notes:

- Maintenance dredging of increased sediment accumulation from the Estuary Alternative (above the No Action Alternative) would occur in West Bay as needed to avoid significant impacts to navigation. Consistent with the terms of the FGWG MOU, which extends through 2050, shared funding and governance is expected to be provided by: City of Olympia, City of Tumwater, LOTT Clean Water Alliance, Port of Olympia, Squaxin Island Tribe (governance only), Thurston County, U.S. Army Corps of Engineers (funding only), and Washington State.
- The timeline for next project phases assume a best-case scenario where all funding is obtained, remediation of known contaminated sediment is completed by the Port of Olympia in Budd Inlet, and there are no other delays to these complex projects. This best-case scenario is shown to provide an understanding of the soonest that estuary restoration could be completed and when sediment conditions could be restored in West Bay.
- MOU = Memorandum of Understanding

Legend: Meeting, Milestone

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HOW DOES THIS PROJECT INTERSECT WITH ECOLOGY'S WORK TO IMPROVE WATER QUALITY IN THE DESCHUTES RIVER & BUDD INLET?

In 2015, Ecology issued a Water Quality Improvement Report and Implementation Plan for the Deschutes River, Percival Creek, and Budd Inlet. In 2020, the U.S. Environmental Protection Agency (USEPA) revised some of the recommendations from Ecology and approved a TMDL for the Deschutes River and its tributaries. In 2022, Ecology released a Draft TMDL for Budd Inlet (and Capitol Lake). A TMDL is the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant or pollutants.

The Draft TMDL for Budd Inlet describes Capitol Lake as the largest source of pollution that results in low dissolved oxygen conditions in Budd Inlet. Ecology modeling indicates that the Estuary Alternative is the only alternative that could meet water quality standards and TMDL allocations.

These studies and the subsequent actions to improve water quality by reducing pollutant loading in the Deschutes River and the Project Area are separate from the Capitol Lake – Deschutes Estuary Long-Term Management Project. However, water quality under all project alternatives would improve as the water quality improvement strategies required by the TMDL are implemented. For example, if the TMDL goal for total phosphorus in the Deschutes River is achieved, it would result in a substantive reduction in nutrients in the Project Area, which would reduce algal blooms and improve dissolved oxygen concentrations. The TMDLs also require state agencies and other municipalities to improve stormwater discharges in the Project Area.

The work of Ecology and the USEPA focuses solely on water quality and numeric targets to achieve consistency with state water quality standards. In contrast, the EIS considers a wide range of interrelated environmental impacts and benefits that would occur under each project alternative. The EIS is intended to support a comparative analysis of the project alternatives relative to all four project goals, including, but not limited to, water quality.

The water quality analysis conducted for the EIS was completed independently from the work of Ecology and the USEPA; it was also reviewed by an independent third-party expert (see Attachment 7, Water Quality Discipline Report). The water quality analysis has been updated for the Final EIS to include an evaluation of regulatory compliance for each alternative, describing the alternatives' ability to meet water quality standards and to comply with TMDL requirements.

HOW DOES THIS PROJECT INTERSECT WITH THE OLYMPIA SEA LEVEL RISE RESPONSE PLAN?

To address flooding vulnerabilities of downtown Olympia and its combined sewer system, the City of Olympia, LOTT, and the Port of Olympia prepared an Olympia Sea Level Response Plan. In the near term, the Olympia Sea Level Rise Response Plan calls for flooding to be managed through emergency response activities, installation of backflow prevention on key stormwater outfalls and pipes, and landscaping of low spots to reduce flood impacts. The Olympia Sea Level Rise Response Plan also

includes future response strategies, such as construction of a berm within Heritage Park to increase flood protection. The Olympia Sea Level Rise Response Plan is intended to be an adaptable framework that can be modified as conditions change.

The Olympia Sea Level Rise Response Plan is separate from the Capitol Lake – Deschutes Estuary Long-Term Management Project and is focused solely on increasing resiliency of the City of Olympia from the effects of rising sea levels.

The hydrodynamic and sediment transport numerical model conducted for the EIS incorporated relative sea level rise projections consistent with those used in the Olympia Sea Level Rise Response Plan. Under the Managed Lake Alternative, flooding from extreme river flood events would not be mitigated by the Olympia Sea Level Rise Response Plan under the current preliminary designs presented in the plan. However, the Olympia Sea Level Rise Response Plan acknowledges that adaptation measures will be coordinated with the Capitol Lake – Deschutes Estuary Long-Term Management Project described in this EIS. Therefore, it is unlikely that plans for the Heritage Park area will be modified by the City of Olympia to mitigate river flood risks under the Managed Lake Alternative, since the Managed Lake Alternative was not identified as the Preferred Alternative. Under the Estuary Alternative, the modeled flood elevations predicted in the Heritage Park area would be mitigated by the improvements already planned under the Olympia Sea Level Rise Response Plan. The potential for flooding in Heritage Park under the Hybrid Alternative would be addressed by the protective presence of the barrier wall for the hybrid reflecting pool.

HOW DOES THE PROJECT INTERSECT WITH THE REMEDIATION OF CONTAMINATED SEDIMENT IN BUDD INLET, LED BY THE PORT OF OLYMPIA?

In 2007, Ecology began an investigation of sediment quality in lower Budd Inlet and subsequently found that levels of dioxins and polycyclic aromatic hydrocarbons exceeded state cleanup levels around the Port of Olympia, and in areas near downtown. Through further study, Ecology concluded that the contamination is likely a result of historical industrial practices and from stormwater runoff. In 2008, the Port of Olympia entered into a legal agreement to further investigate the sediment contamination, and to evaluate and implement needed remedial actions.

Sediment that has accumulated in the Budd Inlet Federal Navigation Channel since the last dredge event in 2007, and at the port vessel berths that were last dredged in 2014 are currently impacting operations, requiring cargo vessels calling at the Port of Olympia to light-load and sail on flood tides only. For this reason, it is assumed that dredging will be a component of remedial design for the Port of Olympia project. Natural recovery, where cleaner sediment is allowed to deposit over contaminated material to reduce concentrations of surface sediment contamination over time, may also be used outside of navigation areas and would be especially applicable under the Estuary and Hybrid Alternatives, which would increase sediment deposition in West Bay.

The Port of Olympia has taken recent action to support future dredging and other remedial actions. Remediation in lower Budd Inlet is a critical part of the ongoing effort to improve the health of the

Deschutes River Watershed; but it is a separate project from other actions, like the long-term management planning for Capitol Lake – Deschutes Estuary. The Port of Olympia's remediation project is required by the Model Toxics Control Act (MTCA) to restore the health of the marine environment, and to protect the health of consumers of fish and shellfish; whereas, the Capitol Lake – Deschutes Estuary long-term management project is being implemented to improve water quality and ecological functions, to restore active community use, and to manage future sediment deposition.

Based on coordination with the Port of Olympia through the EIS process, it is assumed that dredging to remediate known contaminated sediment and restore authorized dredge depths in navigational areas of West Bay will occur within the next 10 years. This timing would ensure that those actions were taken before removal of the 5th Avenue Dam under the Estuary Alternative.

WHAT CHANGES WERE MADE WITHIN THE EIS BETWEEN THE DRAFT & FINAL?

After the Draft EIS public comment period, Enterprise Services and the EIS Project Team reviewed the comments received and evaluated whether additional technical analyses were required to ensure a complete evaluation and support informed decision-making. The technical analyses and associated discipline reports (Attachments 5 through 18) were updated as needed. In general, revisions have been made to provide additional information, update and expand analyses and findings, and correct inadvertent errors.

The notable substantive revisions made to the technical analyses are provided in Table 5.

IS THERE A PUBLIC COMMENT PERIOD FOR THE FINAL EIS?

Enterprise Services is delivering the EIS in accordance with SEPA. SEPA does not include a public comment period on the Final EIS. See Attachment 22 for responses to all comments received on the Draft EIS.

Table 5 Notable Substantive Revisions to the Final EIS Supporting Chapters and/or Discipline Reports

Environmental Disciplines Analyzed	Notable Substantive Revisions
Hydrodynamics & Sediment Transport	• Tidal datums have been presented in reference to the City of Olympia Datum. • Information has been added to characterize the relationship between extreme high tides in West Bay and the top elevation of radial gates when fully closed, as well as the top elevation of the fish ladder weir. This information describes what level of tides can result in a backflow of saltwater into the North Basin over the top of the radial gates and fish ladder. • To capture the maximum flow velocities at the opening to Budd Inlet, Observation Point NB06 has been slightly relocated in the southeast direction. With this adjustment, the updated maximum velocities are approximately equal to 4.9 meters per second (Estuary Alternative) and 5.0 meters per second (Hybrid Alternative) and are in agreement with model results from an earlier study conducted by the U.S. Geological Survey in 2006. • Minor discrepancies among tables have been corrected. • The description of the model downstream boundary condition (tidal boundary) has been corrected.
Navigation	• Additional discussion has been added to explain why non-project-related maintenance dredging is anticipated to occur within the next 10 years, prior to project construction. • Additional discussion has been added to explain what would happen if maintenance dredging, proposed as part of the Estuary and Hybrid Alternatives, was delayed or not completed due to funding lapses. • Reference to large Panamax vessels berthing at the Port of Olympia has been corrected to partially loaded Panamax vessels. • One Tree Island Marina has been included in the discussion of existing resources and stakeholders. Its location is referenced on applicable figures, and outreach has been initiated. • Anticipated maintenance dredging rates and volumes were updated to use the more conservative average annual sediment erosion/deposition rates for modeling events A and B without relative sea level rise, rather than with relative sea level rise. This does not result in any changes to the anticipated maintenance dredge rates and volumes. • Significance criteria for potential impacts to the private marinas has been clarified.
Water Quality	• A loading estimate has been included to compare total organic carbon and total nitrogen loads between the Deschutes River and Capitol Lake. • Water quality data collected in Capitol Lake and the Deschutes River in 2021 have been included in the assessment. • The impacts assessment approach has been modified to further emphasize water quality standards attainment. • A discussion of regulatory compliance has been included for the alternatives, based on Ecology modeling and the Draft TMDL for Budd Inlet that Ecology issued in June 2022. • The Hybrid Alternative has been modified to include a freshwater reflecting pool rather than a saltwater pool, and the analysis has been updated accordingly.
Aquatic Invasive Species	• Updated plant aquatic invasive species information from a weed management report prepared in December 2021 was included. • Canada geese were removed as an animal aquatic invasive species because they are considered a nuisance species rather than an invasive species. • Results of a New Zealand mudsnail survey of Budd Inlet that was conducted in April 2022 was summarized, and the report was added as an appendix to the Aquatic Invasive Species Discipline Report. This survey was conducted in response to comments received on the Draft EIS. • The discussion of salt tolerance and the potential for New Zealand mudsnails to spread from dam removal was expanded. • The discussion of potential of marine aquatic invasive species introductions in the Project Area was expanded. • The discussion of potential aquatic invasive species spread from boat access to the Project Area was expanded. • A description of aquatic invasive species inspection and decontamination stations in Whatcom County was added. It is a successful example of decontamination that could be used in the Project Area. • Revisions were made as needed in response to comments from the Washington State Department of Fish and Wildlife – the state agency with jurisdiction over aquatic invasive animal species. • Operational impact findings for the Estuary and Hybrid Alternatives were changed from substantial beneficial effects to minor beneficial effects because the plant aquatic invasive species that would be eliminated as a result of reintroduced saltwater are relatively common in the region.

Environmental Disciplines Analyzed	Notable Substantive Revisions
Fish & Wildlife	• The analysis was updated to reflect changes to the 5th Avenue Bridge design included in the Estuary and Hybrid Alternatives to avoid long-term closure of the existing 5th Avenue Bridge during construction. • The characterization of fish and wildlife impacts under the Hybrid Alternative was updated to reflect the change from a saltwater pool to a groundwater-fed, freshwater pool. • Additional information was included on salmon use, historic and present, in the study area. • Additional information was included on fish predation conditions and potential changes to predation under the alternatives. • Additional information was included, and clarifications made related to: (1) the role of estuaries in supporting juvenile salmonids; and (2) salmonid predation, including an annotated bibliography of reviewed literature. • Additional information was included on freshwater mussel presence and potential impacts. • Additional information was included, and clarifications made, related to bat use in the study area and potential impacts, including an annotated bibliography of reviewed literature. • The discussion of impacts and benefits on bird species groups was clarified.
Wetlands	• The types of wetland impacts considered in the analysis were clarified. • The significance criteria used in the analysis were clarified. • The analysis was updated to reflect changes to the Estuary and Hybrid Alternatives to avoid long-term closure of the existing 5th Avenue Bridge during construction. • The approximate area of wetland fill and shade impacts were clarified, or recalculated. • The characterization of wetland changes under the Hybrid Alternative was updated to reflect the change from a saltwater pool to a groundwater-fed, freshwater pool.
Air Quality & Odor	• The characterization of odor impacts was expanded to include the potential for odor generation during the initial introduction of saltwater under the Estuary and Hybrid Alternatives, and during extreme heat events. • The description of impacts under the Managed Lake Alternative was revised to clarify that if in-water disposal of dredged materials is found to be feasible in the future, emissions associated with transport of dredged material would be reduced. • The characterization of carbon sequestration and consistency with the 2020 Thurston Climate Mitigation Plan was clarified.
Land Use, Shorelines, & Recreation	• The analysis was updated to reflect changes to the Estuary and Hybrid Alternatives to avoid long-term closure of the existing 5th Avenue Bridge during construction. • The characterization of flooding potential and potential impacts on land use and recreation was clarified. • The analysis of potential impacts on land use and recreational use in West Bay was expanded to describe what would occur if maintenance dredging does not occur or is delayed because funding is not provided, or lapses, or for other unknown reasons. • Clarifications were made related to the consistency of the alternatives with the City of Olympia's Shoreline Master Program. • Clarifications were made related to water-based recreation opportunities under the Estuary Alternative.
Cultural Resources	• The regulatory context was updated to incorporate Executive Order 21-02. • The description of indigenous use context was expanded and clarified. • Information on archaeological sites was updated to reflect new sites recorded subsequent to the Draft EIS release. • The description and analysis of historic built environment resources was updated based on determinations of eligibility and discipline report review comments received from the DAHP following the release of the Draft EIS. • In particular, DAHP's determination that Capitol Lake – Deschutes Estuary (and Des Chutes Basin Project) is not eligible for listing in the national historic register resulted in changes to the impact analysis and mitigation. • The description of historic context and built environment resources was refined and reduced in some areas to reflect the determinations of eligibility, and expanded in some areas to incorporate additional survey work as requested by DAHP. • Mitigation measures were clarified, and an additional archaeological mitigation was identified related to the Estuary Alternative.

Environmental Disciplines Analyzed	Notable Substantive Revisions
Visual Resources	• The analysis was updated to reflect changes to the Estuary and Hybrid Alternatives to avoid long-term closure of the existing 5th Avenue Bridge during construction. • The analysis was updated to reflect the change under the Hybrid Alternative from a saltwater-fed to a freshwater-fed pool. • Several mitigation measures were clarified.
Environmental Health	• Solid waste handling standards were added as applicable. • References were changed from MTCA Method A to MTCA Method B. • A note has been added to Table 4.1 of the Discipline Report to describe that averages are for comparative purposes only. • Sediment cleanup information was added for two cleanup sites in Budd Inlet. • Clarifying text has been added to note that future sediment cleanup site boundaries in Budd Inlet may change. • Editorial changes were made to Figure 5.1 of the Discipline Report. • Throughout the document, references to high quality sediment have been removed and, instead, the sediment is described as not requiring cleanup relative to applicable standards.
Transportation	• Evaluated new alignment of the 5th Avenue Bridge for the Estuary and Hybrid Alternatives. • Evaluated roundabout at the new 5th Avenue Bridge / Deschutes Parkway / Olympic Way intersection for the Estuary and Hybrid Alternatives. • Augmented analysis of dredge transport by barge and rail modes.
Public Services & Utilities	• A new figure showing utility lines and pump stations in the study area was added. • The analysis was updated to reflect changes to the Estuary and Hybrid Alternatives to avoid long-term closure of the existing 5th Avenue Bridge during construction. • The characterization of flooding potential and potential impacts to utilities was clarified. • The analysis was updated to reflect potential impacts to LOTT from the recently issued Budd Inlet TMDL for dissolved oxygen. • A mitigation measure was revised that addresses impacts to utilities at risk from corrosion under the Estuary and Hybrid Alternatives.
Economics	• Updated construction and maintenance dredging cost estimates were included, which reflect updated cost assumptions and present all cost estimates in 2022 dollars. Economic impact modeling was updated to incorporate revised cost estimates. • Data about current economic conditions were updated to reflect economic recovery from the COVID-19 pandemic and associated recession. • Additional details about the Olympia Yacht Club and private marina operations were incorporated, as well as the economic importance of recreational boating in Washington. • The discussion about water quality ecosystem service benefits related to LOTT were revised to include potential impacts under the draft TMDL for Budd Inlet, which Ecology released in June 2022. • The discussion about temporary disruption to recreational use and value and potential disruption to downtown businesses during construction were updated, reflecting revised assumptions about the new 5th Avenue Bridge under the Estuary and Hybrid Alternatives that would avoid a long-term construction closure of this corridor. • The analysis to identify potential impacts to downstream economic activity if maintenance dredging does not occur as planned, such as in the event that funding is not provided, or funding is delayed or lapses and results in delays or lapses to maintenance dredging, was expanded. • Details were incorporated about Funding and Governance Work Group progress toward a long-term funding and governance agreement and expanded on distributional impacts of potential project funding arrangements based on preliminary outcomes of the Funding and Governance Work Group process. • The analysis was revised throughout to reflect updated project design assumptions and related impact findings from other disciplines (e.g., Land Use, Shorelines, and Recreation; Public Services and Utilities; Water Quality; Navigation; Transportation; etc.).