



STATE OF WASHINGTON
DEPARTMENT OF ENTERPRISE SERVICES

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The following sections are from the "Capitol Lake Alternatives Analysis—Final Report," July 2009

Prepared for Washington Department of General Administration & Capitol Lake Adaptive Management
Plan Steering Committee

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Section 1.3, "Description of Alternatives"

Section 3, "Summary"

A full copy of the report is available at:

[http://des.wa.gov/SiteCollectionDocuments/About/CapitolLake/21-CapitolLakeAlternativesAnalysisFinalReport\(July200\).pdf](http://des.wa.gov/SiteCollectionDocuments/About/CapitolLake/21-CapitolLakeAlternativesAnalysisFinalReport(July200).pdf)

1.3 Description of Alternatives

1.3.1 Status Quo

The Status Quo Lake alternative describes the lake if present conditions and management actions were extended into the future. This alternative is the baseline condition for the other three alternatives.



Artist's concept of Status Quo Alternative

Under this alternative, ongoing CLAMP management actions would continue. These

actions include; managing the lake elevation to avoid flooding of adjacent properties, removal of noxious weeds along the shoreline and milfoil from the lake, and control of the resident Canada geese population.

This alternative assumes that the Capitol Lake dam would remain and be maintained in good working order. New construction may include building a pedestrian bypass around the dam and other design elements during the final phases of Heritage Park construction. There would be no changes to the adjacent roadway system with this alternative.

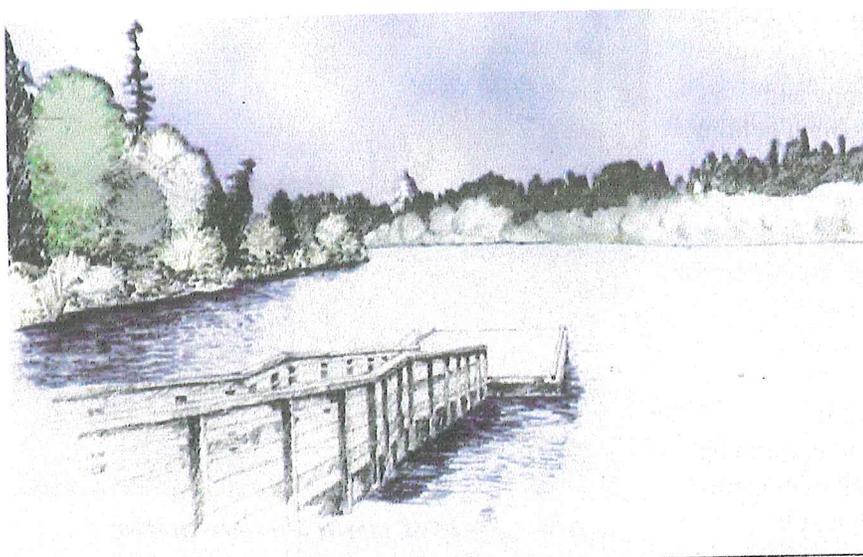
This alternative also assumes that no dredging would occur within the basin. Without dredging, sediment from the Deschutes River and Percival Creek would continue to fill-in the open water areas of the lake. The transition from open water to sand bars, to marshes, then to riparian vegetation would be similar to the south basin (located south of Interstate 5). It would take several decades for the lake to fully transition into the large wetland and river system that defines the long-term condition for this alternative. Because the transition period is predicted to be beyond the planning horizon for this project, both near-term (i.e., the next 50 years) and long-term (i.e., beyond 50 years) conditions are addressed in this analysis.

The historical sediment rate for the lake is about 35,000 cubic yards per year. Over time, Percival Cove, the middle basin, and then the north basin would be filled-in. Then, sediment would pass through the lake and into lower Budd Inlet.

The community's use of roads, parks, and sidewalks adjacent to the lake would change little with this alternative. Summer weed growth in open-water areas is expected to continue, and water depth in all basins would become shallower. Over time, the lake will become too shallow and weedy for motor boats, and the public boat launch in the south basin would be abandoned.

1.3.2 Managed Lake

The Managed Lake alternative describes basin conditions if a freshwater lake continues into the future. Capitol Lake has been managed as a freshwater lake since the 5th Avenue Dam was constructed in 1951.



Artist's concept of Managed Lake Alternative

Under this alternative, ongoing CLAMP management actions would continue. These would include;

managing the lake elevation to avoid flooding of adjacent properties, removal of noxious weeds along the shoreline and milfoil from the lake, and control of the resident Canada geese population.

This alternative assumes that the Capitol Lake dam would remain and be maintained in good working order. New construction would include building a pedestrian bypass around the dam and development of the final phase of Heritage Park. There would be no changes to the adjacent roadway system with this alternative.

This alternative also assumes that the north and middle basins of Capitol Lake would be dredged. Both basins are visually important to the lake, and lie adjacent to Heritage Park and the West Capitol Campus. In those basins, no dredging would occur within 100 feet of the shoreline. No dredging is planned for Percival Cove and the south basin, except near the public boat launch.

The target water depth would be about 13 feet in the summer. This would increase opportunities for boating and water-based recreation within the basins. (This target water depth is the maximum that is feasible based on the design of the current dam.) Saltwater currently lies within depressions in the lake deeper than the dam, and so an existing depression in the north basin would be filled-in during dredging.

Several scenarios were created to compare various dredging methods and disposal techniques. A medium cost approach was chosen for the Managed Lake alternative. This would require initial dredging and removal of approximately 875,000 cubic yards of sediment, which would be disposed of in an approved marine location. Dredging within the lake would be limited by a summer fish window, and the amount of dredging needed would require two summers to complete.

About 220,000 cubic yards of sediment would need to be routinely dredged every 8 to 9 years, based on the historic sedimentation rate in the lake. Each maintenance dredging operation would be completed within a single summer fish window. Materials from these later dredge operations would be reused as construction fill and/or disposed at an approved marine location.

The community's use of the roads, parks, and sidewalks adjacent to the lake would not change under this alternative. Additional water depth would discourage aquatic plant growth within the dredged basins. A swimming beach is not proposed as a part of this alternative.

1.3.3 Estuary

The Estuary alternative describes basin conditions if tides were reintroduced into the Capitol Lake basin. This would resemble conditions prior to the construction of the Capitol Lake dam.

Under this alternative, ongoing CLAMP management actions would continue until the dam is removed. This would include; managing the lake elevation to avoid flooding of adjacent properties, removal of noxious weeds, and control of the resident Canada geese population.



Artist's concept of Estuary Alternative

A feasibility study evaluated various estuary options. The selected design for this alternative (labeled as "Option A" in the 2008 Estuary Feasibility Study) would remove the Capitol Lake dam. This would create a tidal opening of about 500 feet that would be similar to the existing opening under the 4th Avenue bridge. A new 5th Avenue bridge would be constructed over the opening. A new intersection of Deschutes Parkway and 5th Avenue would be constructed to the west of the new bridge, connecting to the 4th Avenue roundabout.

The Estuary alternative would require protecting the foundation of Deschutes Parkway. A blanket of large rocks would be laid along the lake side of the roadway and keyed into the base of the shoreline. This rock buttress would be constructed along the western shore of the existing lake and along the Percival Cove causeway.

Prior to removing the dam, an initial dredge of approximately 395,000 cubic yards would occur in the main channel of the existing lake. This would reduce the amount of lake sediment which would otherwise flow into the navigation channel, Percival Landing marinas, and the Port of Olympia. This lake sediment would be used to cover the rock buttress along Deschutes Parkway and to reshape the shoreline to support intertidal, saltmarsh habitat. After the dam is removed, the navigation channel, slips at the Percival Landing marinas, and berths at the Port of Olympia would need to be dredged more frequently than in the past.

This alternative would also require minor restoration around the existing lake basin. Rock would be added for scour protection at the base of the BNSF Railroad Bridge and the adjacent pedestrian bridge. The trails at Tumwater Historical and Interpretative Site and the Arc of Statehood bulkhead at Heritage Park would also require some repair or replacement.

Community use of the roads, parks, and sidewalks adjacent to the estuary would change slightly due to the revised road alignment. Piers and docks around the estuary would not be accessible to boaters during periods of low tide. It is assumed that the shift to tidal conditions would eliminate the growth of freshwater invasive aquatic weeds.

1.3.4 Dual-Basin Estuary

The Dual-Basin Estuary alternative describes basin conditions with tidal influence and a reflecting pool adjacent to Heritage Park. This alternative is the same as the Estuary alternative, except for the reflecting pool. The ongoing CLAMP management actions of flood protection, removal of noxious weeds, and control of the Canada geese population would continue.



Artist's concept of Dual Basin Alternative

Splitting the north basin to create a reflecting pool is a design promoted by the Olmsted Brothers in 1912 as one of the alternatives considered by the Wilder and White design team. The design for the Dual-Basin Estuary was one of the scenarios (Option D) evaluated by the 2008 estuary feasibility study.

This alternative would require all of the major construction required for the Estuary alternative. This includes removing the Capitol Lake Dam, constructing a new 5th Avenue Bridge, creating a new intersection for Deschutes Parkway and 5th Avenue, installing a rock buttress along Deschutes Parkway, dredging the lake prior to removing the dam, and placing lake sediments along the roadway to create intertidal habitat.

This alternative would also require the construction of a 1,900 foot long barrier built of sheet pile and topped with a pedestrian walkway. It would connect to the existing shoreline east of the current dam and east of the BNSF Railroad trestle.

The western side of the north basin would be an estuary of about 61 acres, with the eastern side being a reflecting pool of about 39 acres. Baffles constructed in the barrier would keep the pool water at a desired level during low tide. They would also help to circulate salt water inside the reflecting pool and lessen water quality concerns. A design to use fresh water in the pool was found to be infeasible.

This alternative would increase the amount of sediment discharging into Budd Inlet and increase the need to dredge the navigation channel, Percival Landing marinas, and the Port of Olympia.

Community use of the roads, parks, and sidewalks adjacent to the lake would change slightly due to the revised road alignment. Piers and docks around the lake would only be accessible during periods of high tide. It is assumed that the shift to tidal conditions would (temporarily, at least) eliminate the growth of freshwater invasive aquatic weeds.

1.4 Next Steps

The CLAMP Steering Committee members will use this report and the detailed studies it previously commissioned to make recommendations to the GA Director on long-term management of the Capitol Lake basin. The GA director will review these recommendations and materials and make a recommendation to the State Capitol Committee (SCC). The SCC consists of the Governor, Lieutenant Governor, Secretary of State, and the Commissioner of Public Lands. Finally, the SCC will then present their final recommendations which would be brought to the State Legislature for possible funding and action.

3.0 Summary

As described in the Introduction, the purpose of this report is not to provide a technical review of the background reports aimed at evaluating Capitol Lake management alternatives, or to further analyze the information presented in those reports. Instead, its purpose is to provide a concise summary of the information provided in the background reports, as it pertains to each of the selected topics. The text provided for each topic concludes with a brief comparative analysis of the key differences between alternatives. Therefore, the purpose of this Summary section is not to re-summarize all of the differences among the alternatives but to present the key findings for each topic as viewed by the CLAMP Steering Committee.

Although four alternatives were carried through this analysis, ultimately the differences to be considered are those between the Managed Lake and Estuary Alternatives. At the scale of analysis conducted here, there were no major differences between the Estuary and Dual-basin Estuary Alternative. Inclusion of the Status Quo Alternative was used to provide perspective and to more clearly document the impacts of choosing to do nothing, rather than to present an alternative to be seriously considered. Therefore, this summary is focused on the general comparison of a managed lake and an estuary condition.

The following briefly describes the general perspectives discussed during the CLAMP meetings for each of the eight topics.

Sediment: Due to the many uncertainties and the inherent complexity of the sediment management issue, the majority of the technical studies prepared to support the comparison of alternatives, focused on this topic. Regardless of which management alternative is selected, a long term program for sediment management that involves dredging and disposal will be required. However, in almost all aspects of sediment management, the Estuary Alternatives were considered to have less impact than the Managed Lake Alternative. There is less sediment removed (both initially and over the long term) and generally removal and disposal is less expensive under the Estuary Alternatives. The Estuary Alternatives will result in a greater accumulation of sediments in the Port of Olympia and the marinas located in the Percival Landing area. There were also predicted changes in dredging frequency. The long term dredging frequency was estimated at every 10 years for the Managed Lake Alternative and every 5 years for the Estuary Alternatives.

Plants and Animals: The plant, animal, and fish species supported will depend on whether the basin supports freshwater or marine water species. In general, the species supported or not supported by the alternatives are commonly occurring. CLAMP members agreed there appeared to be an advantage to salmon under the estuary alternatives, based on improved water quality and migration corridor improvements.

Water Quality: Water quality was the analysis topic that all CLAMP members agreed was a very high priority. In their discussion of this topic, the overarching message was that improving water quality to meet State standards would continue to be a focus no matter which management alternative is selected. The water quality variable most directly impacted by the selection of alternatives, was dissolved oxygen. Water quality violations related to dissolved oxygen are predicted to occur whether the system is managed as a lake or as an estuary. Under the estuary alternatives there would be an improvement in terms of the extent and duration of these violations. A large portion of the West Bay area extending out to Butler Cove, as well as the entire existing lake basin area would no longer exhibit significant dissolved oxygen water quality standards violations. The improvement to the West Bay area is especially important because this area is critical to salmon migration. To prevent dissolved oxygen violations in Southern Budd Inlet other initiatives must be taken in the upstream watershed and/or in the Inlet itself. A multi-organization group, the "Deschutes Water Clean-up Initiative" will be addressing this issue.

Infrastructure: There are no historic or highly valued structures affected by the different management alternatives, therefore, the most significant impact of infrastructure needs are related to cost. The Estuary Alternatives would require more infrastructure changes to protect structures from saltwater and tidal action, but the cost for this is secondary in comparison to sediment management costs associated with either the Lake or Estuary alternatives.

Downtown Flood-Risk: The differences in flood-risk between the lake and estuary management alternatives were not considered to be significant at existing sea levels. Limited flooding of areas outside of downtown Olympia would occur more frequently under the estuary alternatives, particularly as associated with predictions of sea level rise. However, at higher sea levels, the flood-risk to downtown associated with flooding from the Deschutes River or Capitol Lake are over-shadowed by predicted flooding from Budd Inlet.

Long-term Cost: There are high economic costs associated with implementing either a lake or the estuary alternatives. For the estuary alternatives there are infrastructure costs associated with removing the dam and re-building or stabilizing roadways that are not shared by the lake alternative. However, these costs are small in comparison to the costs associated with dredging. The total cost for implementing the Managed Lake Alternative was estimated to be nearly 70 percent higher than the cost for implementing the Estuary Alternatives.

Cultural and Spiritual Resources: There were different perspectives and values voiced among groups and individuals included in the surveys. Ultimately, one set of values is no more important, or most strongly held, or most reflective of the community. The common thread among the perspectives was that all groups and

individuals placed a high value on a landscape that included water. This shared value exists whether the water is a lake or an estuary.

Public Recreation: The area near and surrounding Capitol Lake is an important, well-used, regional, recreational hub. Differences in the specific type of recreational activities were identified, as were differences in timing and opportunity for those activities. Overall, recreational activities will be supported, and supported well, under all of the management alternatives.