Below is the proposed final draft Purpose and Need Statement, which continues to be updated to incorporate feedback from the stakeholders of this Phase I process. Reaching broad agreement on a Purpose and Need Statement could provide the foundation for a future Environmental Impact Statement (Phase II), the process used to compare and select a long-term management option.

Capitol Lake/Lower Deschutes Watershed Long-Term Management Project: Draft Purpose and Need Statement

The purpose of the Capitol Lake/Lower Deschutes Watershed Long-Term Management Project is to identify and implement an environmentally and economically sustainable watershed approach 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 existing Capitol Lake basin and adjacent watershed. These efforts would restore and enhance community use of the resource.

The Deschutes estuary has long-standing history with active use and significance to the Squaxin Island Tribe. The Deschutes watershed continues to be used for subsistence harvesting of natural resources, and is a place of strong cultural and spiritual value. The area use and conditions changed after construction of Capitol Lake in 1951. The Capitol Lake area now supports community events such as the annual Capital Lakefair, organized athletic events, and various other gatherings. The trail system and nearby parks provide continued passive recreational opportunities that maintain the lake's edge as an important recreational center and valued amenity in the south Puget Sound area. With its central location, the area holds historical and personal value for many people.

Although the shoreline remains vibrant, active use of the waterbody has been restricted for more than 30 years due to the degraded water quality and ecological functions. An estimated 35,000 cubic yards of sediment accumulates annually within the lake basin, resulting in increasingly shallow conditions. Capitol Lake was closed to swimming in 1985 due to high bacteria levels. Water draw-down and back-flushing to control algal blooms and freshwater plant growth continued annually until 1999 and caused temporary impacts to other recreational uses, such as boating and fishing. The presence of invasive species resulted in official closure to all public uses in 2009. Active use of the waterbody continues to be restricted today.

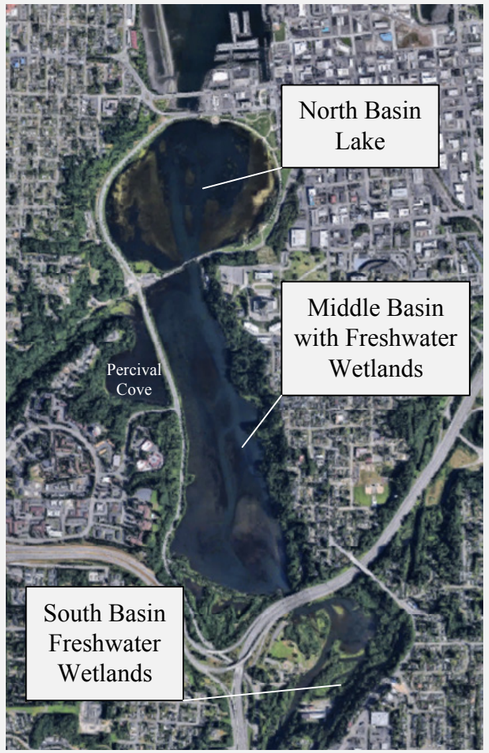
Water quality must be improved to meet federal law and state water quality standards, and to restore aquatic life and recreational uses, which are protected under these regulations. Restoring ecosystem functions would be supported by improved water quality, enhanced fish and wildlife habitat, and management or eradication of invasive species. The project would also include elements to manage sediment within the Capitol Lake/Lower Deschutes Watershed and in adjacent Budd Inlet. These collaborative efforts between the Washington State Department of Enterprise Services and other stakeholders would be compatible with other watershed-wide restoration and improvement plans, and would be consistent with the on-going state-led initiative to restore the Puget Sound. Once completed, the project is expected to have a beneficial effect on the ecosystem service value, economic value and community value of the resource.

Managed Lake

Similar to existing conditions, with additional management strategies for sediment accumulation. Maintains the historic reflecting pool and the Capitol Lake Basin. Fish and wildlife habitat would not substantially change compared to existing conditions, but a freshwater wetland habitat would develop in the South Basin.

Additional components:

- Retains existing Fifth Avenue dam and tide gate in its existing configuration
- Maintenance dredging within the North and Middle Basins, and selective dredging within the South Basin
- Maintains existing recreational opportunities and potentially restores a boat harbor



Source: Entranco, Inc., et al. 1999

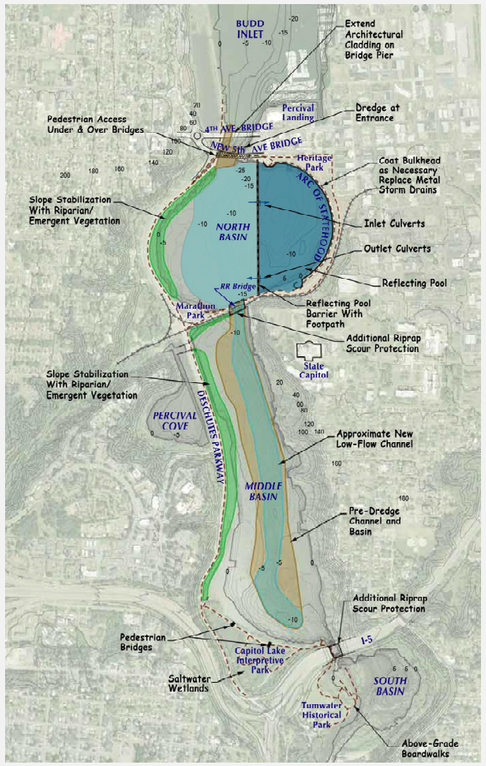
Hybrid Option: Dual Basin

Adaptively Manages the basin by establishing a tidal estuary in the western portion of the north basin, and throughout the middle and south basins. Maintains a 39-acre saltwater Reflecting Pool at the north end of the basin through construction of a sheet pile retaining wall. Improves Fish and Wildlife Habitat and Ecosystem Functions by establishing estuary marsh plants throughout the basin and creating intertidal habitat along Deschutes Parkway.

Additional components:

- Construction of a 500-foot opening at the current Fifth Avenue dam
- Initial dredging in Capitol Lake and maintenance dredging in Budd Inlet
- Installation of elevated boardwalks within estuary and on top of retaining wall

Note:
Extent of surface water shown is based on the conclusion from technical studies completed during the Deschutes Estuary Feasibility Study.



Source: Moffatt & Nichol, 2007

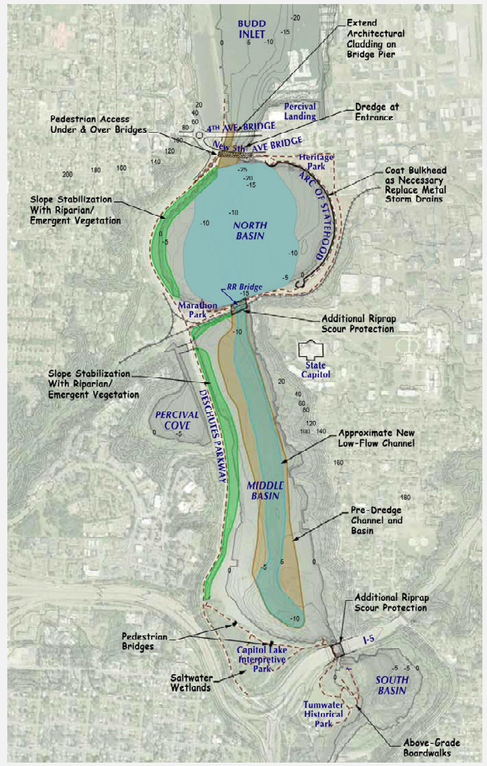
Restored Estuary

Restores full tidal hydrology throughout the existing Capitol Lake Basin to restore estuarine conditions, and allows saltwater exchange within the newly formed intertidal mudflats of the North and Middle Basins. Removes the existing reflecting pool, but natural reflection of the Capitol would occur at 75 percent of tidal elevations. Restores fish and wildlife habitat through the establishment of estuary marsh plants and improves ecological functions that would support native invertebrate, bird, and fish populations.

Additional components:

- Construction of a 500-ft opening at the current Fifth Avenue dam
- Initial dredging in Capitol Lake before estuary is restored
- Installation of elevated boardwalks within estuary

Note:
Extent of surface water shown is based on the conclusion from technical studies completed during the Deschutes Estuary Feasibility Study.



Source: Moffatt & Nichol, 2007

Notes:
1. **These three options and the information included on this figure are a result of the Capitol Lake Adaptive Management Plan (CLAMP) process and have been through preliminary technical analysis and review from CLAMP participants and the consultant team. While some of the CLAMP information may represent conditions or findings that have changed, it serves as the initial design and feasibility review and still represents a basis of work that could be built upon.**
2. All long-term management options will require additional design and technical evaluation. That work will be completed as part of a future Environmental Impact Statement in Phase II for the options that are selected for review in that process.

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Overview of Existing Long-Term Management Options

Previously Evaluated as Part of CLAMP Process

9/22/2016

Conceptual Long-Term Management Option	Managed Lake Source: CLAMP Alternatives Analysis	Hybrid Option: Dual Basin Source: Deschutes Estuary Feasibility Study	Restored Estuary Source: Deschutes Estuary Feasibility Study and DERT
Improve and Support Water Quality	No measureable improvements in water quality are predicted	Includes engineered saltwater exchange to the reflecting pool, reducing the residence time and, therefore, increasing water quality; tidal exchange throughout the remaining portion of the basin; supports improvement in dissolved oxygen conditions in Budd Inlet	Supports goals of achieving water quality standards, now marine standards under an estuary system; improves dissolved oxygen conditions in Budd Inlet
Improve and Support Sustainable Ecosystem Functions	Eventually develops freshwater wetland habitat in the South Basin; retains existing nearshore wetlands (previously created to mitigate impacts of park construction)	Includes restoration of hydraulic connectivity would reestablish biological connectivity across the river-estuary-marine boundary and result in natural recruitment of estuarine plants and animals	Restores 100% of the Capitol Lake basin to tidal estuary; restores plants and animals that thrive in marine, estuarine waters; restores native organisms in sediments that serve as the basis of the marine food chain
Improve and Support Fish and Wildlife Habitat	Maintains habitat for freshwater-dependent species; continues removal of noxious weeds along the shoreline and milfoil from the lake	Establishes an estuary marsh plants throughout the basin; creates an intertidal habitat along Deschutes Parkway through placement of dredged material for slope stability and establishment of intertidal, riparian vegetation	Restores 260 acres of intertidal nursery areas for juvenile salmon; reestablishes 6.5 miles of marine shorelines; increases salt marsh habitat (WRIA 13 habitat limiting factors)
Control Invasive Species	Includes efforts to eradicate New Zealand Mudsnail	Includes efforts to eradicate New Zealand Mudsnail	Includes efforts to eradicate New Zealand Mudsnail; reduces or eliminates freshwater invasive species due to introduction of tidal flows
Improve and Support Sediment Management	Includes maintenance dredging in the North and Middle Basins (not within 100 feet of the shoreline), and selective dredging in the South Basin	Includes initial dredging of Capitol Lake prior to estuary restoration and future maintenance dredging of areas in Budd Inlet	Proposes sediment management upstream in the watershed, with mechanism to capture sediment in the estuary and deflected westward below the current dam and bridges
Manage Flood Risk	Includes an improved stormwater conveyance system and enhancement of the Heritage Park berm, and manual lowering of water levels at the Fifth Avenue dam prior to major storm events	Includes an improved stormwater conveyance system and enhancement of the Heritage Park berm; construction of retaining wall at an elevation that would accommodate future flood risks	Improves stormwater conveyance system and enhancement of the Heritage Park berm; promotes management through restoration of natural system; eliminates required management of the existing Fifth Avenue dam during major storm events
Improve and Support Recreational Opportunities	Maintains existing recreational activities; constructs a pedestrian bypass around the Fifth Avenue dam; restores boat launch in the South Basin	Protects Heritage Park; provides 39-acre reflecting pool; includes riverine recreation in south and middle basins; includes a pedestrian path on the center line retaining wall; replaces many of the existing trails with elevated boardwalks	Maintains passive activities that exist above the tideline (walking, bird watching, bicycling, picnicking, etc.); enhances water-related activities (kayaking, swimming, etc.) by eliminating invasive species; restores natural beaches (beach combing, etc.)
Improve and Support Aesthetics and Visual Quality	Maintains existing views and reflection of the Capitol within the Capitol Lake basin	The Capitol would be reflected 75% of the time with restored tidal flow; provides enhanced intertidal habitat around edge of estuary, which may provide enhanced aesthetics	The Capitol would be reflected 75% of the time with restored tidal flow; enhances aesthetics by eliminating algal mats that currently form during the summer months; introduces dynamic visual change with estuary conditions
Support and Maintain Historical and Cultural Resources	Maintains civic pride in the Capitol area and historical use of the last half-century; does not support Tribal and pre-lake construction historical values	Supports salmon habitat; restores historical Tribal values; could provide restored shellfish habitat that could be used similar to historical and cultural harvesting	Restores historic Deschutes Estuary; supports salmon habitat; restores historical Tribal values; supports treaty rights; could provide restored shellfish habitat that could be used similar to historical and cultural harvesting; restores water access to brewery
Avoid Negative Impacts and Maximize Economic Benefits	*Identified data gap*	Separates estuary from Heritage Park; maintains green space and open water area; enhances an outdoor recreational site for public use and potential increased tourism	Implements the long-term management plan that was determined to be the lowest cost by CLAMP; enhances an outdoor recreational site for public use and potential increased tourism; increases potential for federal matching grant funds
Minimize Long-Term Costs	*Identified data gap*	Includes annual maintenance dredging in Budd Inlet with lower costs than maintenance dredging throughout lake basins	Off-sets the initial construction cost by reducing on-going costs in later years for dam maintenance and continued maintenance dredging; designs with nature to reduce costs

Notes:
1. **These three options and the information included on this figure are a result of the Capitol Lake Adaptive Management Plan (CLAMP) process and have been through preliminary technical analysis and review from CLAMP participants and the consultant team. While some of the CLAMP information may represent conditions or findings that have changed, it serves as the initial design and feasibility review and still represents a basis of work that could be built upon.**
2. Identified data gaps will be evaluated as part of the future Environmental Impact Statement in Phase II, and do not preclude the long-term management option from consideration or discussion as part of Phase I. In fact, data gaps exist for all long-term management options due to the lack of preliminary or advanced design.
3. Long-term costs will be discussed in a forthcoming effort as part of Phase I, and further analyzed, along with potential economic impacts and benefits from the long-term management options, as part of a future Environmental Impact State in Phase II.

Abbreviations:
CLAMP = Capitol Lake Adaptive Management Plan; CLIPA = Capitol Lake Improvement and Protection Association; DERT = Deschutes Estuary Restoration Team; WRIA = Water Resource Inventory Areas

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<u>Existing</u> Long-Term Management Options
Reported Consistency with Goals,
Based on Technical Analyses from the CLAMP Process

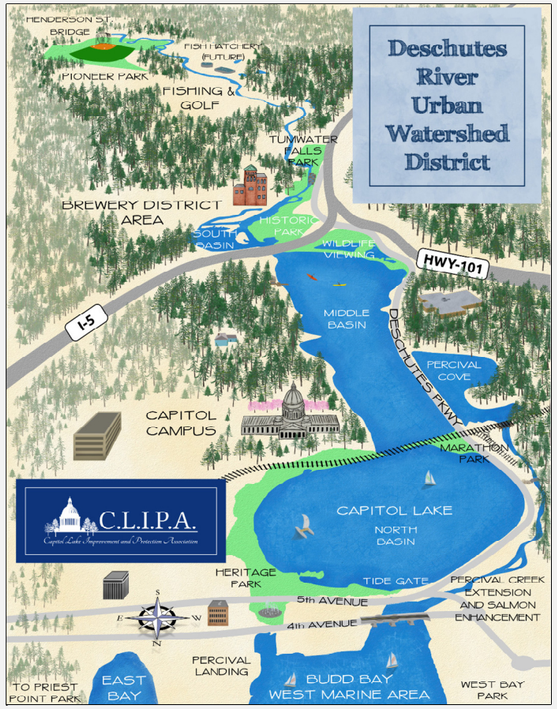
Managed Lake Sub-Option: Percival Creek Rechanneling and Salmon Habitat Rehabilitation Plan

Adaptively Manages the basin through selective dredging of Capitol Lake and freshwater plant harvesting. Maintains the historic Reflecting Pool and existing Capitol Lake and its basins. Improves Fish and Wildlife Habitat and Ecosystem Functions through construction of a new streambed west of the relocated Deschutes Parkway, removal of fish passage barriers, placement of engineered log jams and enhancement of riparian conditions.

Additional components:

- Retains existing Fifth Avenue dam and tide gate in its existing configuration
- Periodic dredging in the middle basin and routine maintenance dredging in the north basin
- Use of Capitol Lake for public swimming and construction of a boat harbor

Note:
The primary difference between the Managed Lake Sub-Option and the Managed Lake is related to the additional improvement of fish and wildlife habitat. The Managed Lake Sub-Option proposes construction of a new streambed, connecting Percival Cove and Budd Inlet.



Source: CLIPA 2016

Hybrid Option: Dual Estuary/Lake Idea (DELI)

Adaptively Manages the basin by establishing a tidal estuary in the western portion of the north basin, and throughout the middle and south basins. Maintains a 48-acre freshwater Reflecting Pool at the north end of the basin through construction of a rock containment wall. Improves Fish and Wildlife Habitat and Ecosystem Functions through natural reestablishment of saltwater plants within the estuary and management of invasive species.

Additional components:

- Construction of a 500-foot opening beneath a reconstructed Fifth Avenue
- Installation of sediment trap with pumping station and annual maintenance dredging
- Construction of new public swimming area and pedestrian walkway on top of containment wall

Note:
The primary difference between DELI Hybrid Option and the Dual Basin Option is related to the reflecting pool. The reflecting pool in the DELI Hybrid Option is approximately 9 acres larger and freshwater input is proposed instead of saltwater.

Source: Community Member 2016

Notes:

1. **These two options and the information included on this figure represent concepts from private citizens. The Department of Enterprise Services cannot confirm its accuracy, feasibility, or validity because these proposed long-term management options have not been through preliminary technical analysis, design, or feasibility review.**
2. All long-term management options will require additional design and technical evaluation. That work will be completed as part of a future Environmental Impact Statement in Phase II for the options that are selected for review in that process.
3. A conceptual hybrid option entitled “Season Hybrid” or “Capitol Lagoon” has been proposed by a member of the Technical Committee, and separately by a Community member. This option would establish a tidal estuary during the fall and winter seasons by lowering a reconstructed Fifth Avenue Dam. During the peak recreational seasons of spring and summer, the dam would be raised to allow for the formation and retention of the reflecting pool. However, the dam could be lowered for recurring short periods, such as nightly, during that time to ensure adequate mixing of freshwater and saltwater.
4. A conceptual sub-option to the Restored Estuary has been proposed by a Community member, and focuses on the protection and expansion of freshwater habitat near the Capitol Lake Interpretive Center once tidal hydrology is restored throughout the basin. This would be achieved by limiting the mixing of marine water to this freshwater habitat (potentially through construction of a retaining wall) and continuing input from the Deschutes River to this area of the lake.
5. A proposed sub-option to the Managed Lake has been proposed by a Community member, and would significantly expand park space on both sides of the reflecting pool through increased fill in the existing Capitol Lake, and additional fill along Deschutes Parkway. The intent of this option is to increase park and outdoor space and recreational activities such as swimming. A bridge between the expanded parks could be constructed for connectivity.
6. Several variations to the DELI hybrid option have also been proposed, including design variations such as maintaining the existing Fifth Avenue Dam to avoid infrastructure costs, increasing the size of the reflecting pool, or constructing additional pedestrian walkways in the north basin.

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Overview of <u>New</u> Long-Term Management Options

Concepts Provided by Private Citizens Without Further Design and Technical Review

9/22/2016

Conceptual Long-Term Management Option	Managed Lake Sub-Option: Percival Creek Rechannelization and Coho Rehabilitation Plan Source: CLIPA	Hybrid Option: Dual Estuary/Lake Idea (DELI) Source: Community Member
Improve and Support Water Quality	Existing lake intercepts Deschutes River nitrogen; prevents degradation from dissolved oxygen in Budd Inlet; maintains high dissolved oxygen in the basin and sustains fair dissolved oxygen levels in Budd Inlet; traps "clean" sediment in Capitol Lake	Tidal exchange throughout a majority of the Capitol Lake basin; supports improvement in dissolved oxygen conditions in Budd Inlet; introduction of artesian groundwater flows to freshwater lake and from lake to restored estuary
Improve and Support Sustainable Ecosystem Functions	Maintains freshwater aquatic insects, waterfowl, wildlife populations; reintroduces limited tidal processes through rechanneling; enables selective harvesting of aquatic plants to improve water quality	Restoration of 80% of the Capitol Lake basin to historic tidal estuary; creates clean freshwater lake for use by water birds
Improve and Support Fish and Wildlife Habitat	Creek rechanneling supports estuarine, riverine, and nearshore quality juvenile Chinook salmon rearing; improves Coho and other salmonid rearing and spawning habitat; increases stray juvenile access to rearing habitat; could encourage growth of kelp and eelgrass	Prefers natural reestablishment of saltwater plants with back-up engineered plantings if necessary
Control Invasive Species	Includes efforts to eradicate New Zealand Mudsnail; includes potential for native species to control invasive species	Includes efforts to eradicate New Zealand Mudsnail; back-flushing of the new lake with saltwater prior to introduction of artesian flows to control invasive species
Improve and Support Sediment Management	Provides initial maintenance dredging of northern basins using installed hydraulic dredge system; reuses sediment for landscaping; avoids mixing lake sediments with contaminated sediments in Budd Inlet; minimizes sediment accumulation in Budd Inlet and navigational channel	Initial dredging of Capitol Lake prior to estuary restoration; annual maintenance dredging from sediment trap in south end of the middle basin
Manage Flood Risk	Includes an improved stormwater conveyance system and enhancement of the Heritage Park berm; uses the Fifth Avenue dam to manage Capitol Lake levels during major storm events, which mitigates flood risks and impacts from sea level rise	Includes an improved stormwater conveyance system and enhancement of the Heritage Park berm; construction of retaining wall at an elevation that would accommodate future flood risks
Improve and Support Recreational Opportunities	Promotes long needed freshwater public swimming area; provides boat harbor; maintains attractiveness for basin's shoreline for recreational activities such as running, walking, dog walking, volleyball, soccer, etc.	Protects Heritage Park; provides 48-acre reflecting pool with sandy lake bottom and public swimming area; includes riverine recreation in south and middle basins; includes a pedestrian path on the center line retaining wall
Improve and Support Aesthetics and Visual Quality	Maintains Thurston County's #1 "Aesthetic Wonder" view; returns Capitol Lake to its pristine nature by dredging and harvesting undesirable aquatic plants; preserves popular returning Chinook "welcome home" viewing and outreach area	Cleaner surface waters of the freshwater pool would be excellent for reflecting the Capitol dome; restored estuary would not be visible from Heritage Park
Support and Maintain Historical and Cultural Resources	Consistent with federal and state historic preservation of the designated National Historic Landmark based on the Wilder and White and Olmsted Brothers design of the State Capitol Campus	Supports salmon habitat and population growth; restoration of historical Tribal values; could provide restored shellfish habitat that could be used similar to historic and cultural harvesting
Avoid Negative Impacts and Maximize Economic Benefits	Avoids impacts to the revenue-generating and economically stimulating activities such as recreational marine boating, Port of Olympia Marine Terminal, and the West Bay Waterfront	Separates estuary from Heritage Park; maintains green space and open water area; enhances an outdoor recreational site for public use and potential increased tourism
Minimize Long-Term Costs	Minimizes public expenditures and debt and protects funding for other needs	Small-sized, annual dredging operation in south end of middle basin, will maximize minimization of sediment control costs

Notes:
1. **These two options and the information included on this figure represent concepts from private citizens. The Department of Enterprise Services cannot confirm its accuracy, feasibility, or validity because these proposed long-term management options have not been through preliminary technical analysis, design, or feasibility review.**
2. Identified data gaps will be evaluated as part of the future Environmental Impact Statement in Phase II, and do not preclude the long-term management option from consideration or discussion as part of Phase I. In fact, data gaps exist for all long-term management options due to the lack of preliminary or advanced design.
3. Long-term costs will be discussed in a forthcoming effort as part of Phase I, and further analyzed, along with potential economic impacts and benefits from the long-term management options, as part of a future Environmental Impact State in Phase II.

Abbreviations:
CLAMP = Capitol Lake Adaptive Management Plan; CLIPA = Capitol Lake Improvement and Protection Association; DERT = Deschutes Estuary Restoration Team; WRIA = Water Resource Inventory Areas

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<u>New</u> Long-Term Management Options
Reported Consistency with Goals, Based on Opinion of the Proponents and Not Based on Technical Analyses

9/22/2016

Potential Components of Conceptual Long-Term Management Options

POTENTIAL COMPONENT FOR CONSIDERATION	CONSISTENCY WITH GOALS FOR LONG-TERM MANAGEMENT	BENEFIT OF INCORPORATION
Fish access management	Improve and support ecosystem functions Support and maintain cultural resources	Ensuring that fish have access and/or passage to upstream habitat would improve ecosystem functions and enhance cultural values, and would also meet regulatory requirements
Efforts to eradicate New Zealand mudsnail	Improve and support ecosystem functions Control invasive species	Eradicating the New Zealand mudsnail would improve fish and wildlife habitat and ecological functions, and could also result in restored opportunities for aquatic recreation
Control of the resident Canada goose population	Improve and support ecosystem functions Control invasive species (including nuisance species)	Controlling the resident Canada geese to a population of no more than 100 would improve ecological functions and may also improve water quality
Natural woody debris management plan	Reflect a sustainable watershed approach	Implementing a woody debris management plan, at any scale, would reflect a sustainable watershed approach by minimizing human-induced disturbances within the system
Initial dredging of existing sediment deposition within the lake	Improve and support sediment management	Dredging of the existing sediment accumulation could be the initial phase of a sediment management strategy and would minimize initial sediment transport into Budd Inlet if the Fifth Avenue dam is removed
Installation of an adjustable weir for sediment management	Improve and support sediment management	Installing an adjustable weir at the north end of the South Basin would minimize the current rate of downstream sediment accumulation and could be coupled with the installation of infrastructure in Budd Inlet to avoid sediment deposition near marine facilities and navigational channels
Improvement of stormwater conveyance system	Manage flood risk	Improving the stormwater conveyance system would minimize potential flood risks by more effectively conveying stormwater within the watershed
Enhancing the Heritage Park berm	Manage flood risk	Enhancing the berm in Heritage Park would minimize potential flood risks and other impacts associated with sea level rise
Installing interpretative signage at the shoreline	Support and maintain historical and cultural resources	Installing interpretative signage along the shoreline would provide educational opportunities about the past and present use of the resource, and could reflect the related cultural and historical values
Nutrient harvesting from surface waters	Improve and support water quality	Implementing mechanized (Rotating Photo Bioreactor) removal of soluble phosphorus and dissolved nitrogen from surface waters would improve water quality and ecological functions within the watershed

Notes:

1 This table is a product of discussions with the stakeholders (members of the Technical Committee, Executive Work Group, and the Community), whereby potential components that could increase consistency of a long-term management option with project goals were identified. The information included in the table is based on stakeholder feedback or is sourced from earlier project documents, and has not undergone additional technical or feasibility review. Depending on future technical and feasibility reviews, and general support from DES and other regulatory agencies, these potential components could be added to any of the potential long-term management options to increase consistency with project goals, or eliminated from consideration altogether.

2 Without design and/or additional technical evaluation, the Department of Enterprise Services cannot confirm the accuracy, feasibility, and validity of this information and the conclusions.