13. Develop and implement a comprehensive sediment management strategy for the Capitol Lake basin.

[For additional information regarding this objective, refer to pages 7-1 to 7-7 in the Capitol Lake Adaptive Management Plan - 1999 to 2001 (1999).]

BACKGROUND

Approximately 35,000 cubic yards of sediment are deposited in the basin every year from the Deschutes River. Since the Capitol Lake dam was built in 1951 almost 1.7 million cubic yards of material have found their way into the lake. This volume would fill a 160 ft. x 300 ft. football field 318 feet high and the annual sediment load would add another 6 1/2 feet every year.

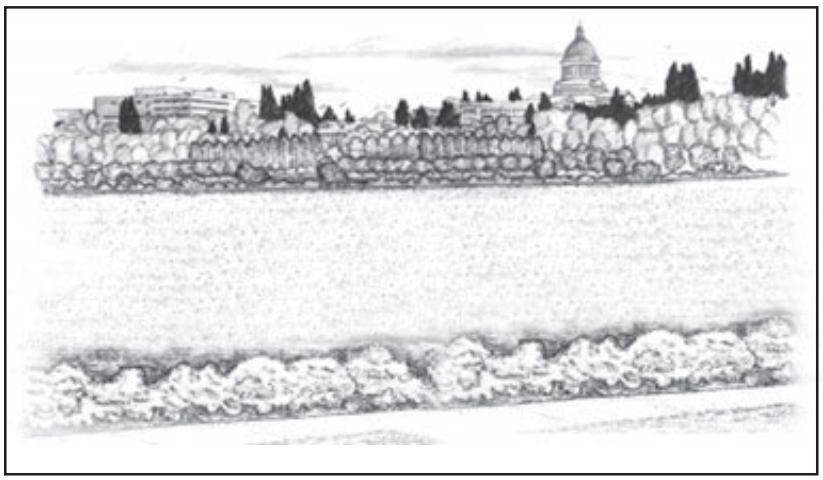
Sediment Management has been a focus of the CLAMP Steering Committee work program for the past several years. Efforts have targeted sampling the sediment, determining how it could be handled and disposed of, and whether a Pilot Sediment Removal Project was feasible or warranted. Cost estimates have been generated for these alternatives along with a list of required federal, state and local permits.

The last dredge operation in the lake occurred in 1986 in the Middle Basin Sediment Trap. Recent sedimentation characterization was limited to this area which lies just north of the I-5 bridge. None of the samples exceeded established limits, so it can be safely placed in an upland location outside of the basin. The US Army Corps of Engineers was extremely concerned regarding the possible spread of Purple Loosestrife (a noxious weed) from seeds in the lake sediments if placed in the marine environment.

These concerns eliminate the possibility of marine water disposal, without the eradication of Purple Loosestrife seeds from the lake sediments. As a result, GA has undertaken a plan to eliminate Purple Loosestrife from state owned shoreline areas. (See Objective #11) If this effort is successful, it may be in the 2010s before the sediments are considered "clean" and the marine water quarantine could be lifted.

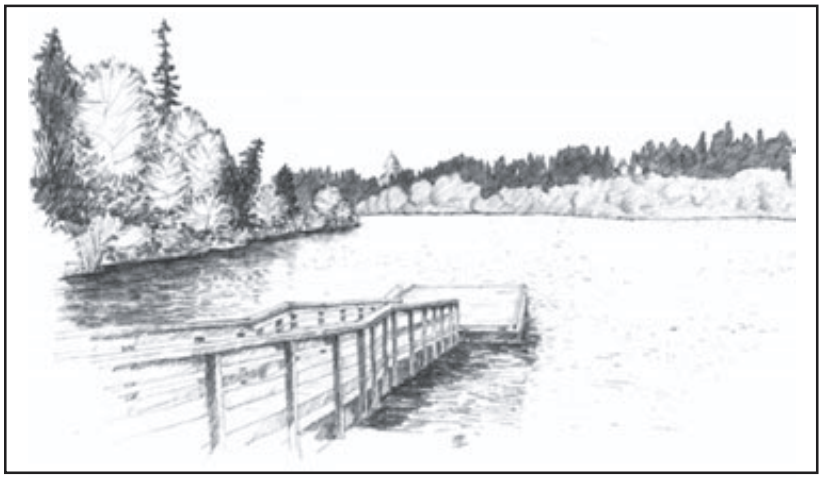
A variety of dredging, handling and disposal techniques have been evaluated. It was determined that the only feasible dredging technique was the hydraulic dredge (a.k.a. Mud Cat) used on the lake in 1979 and 1986.

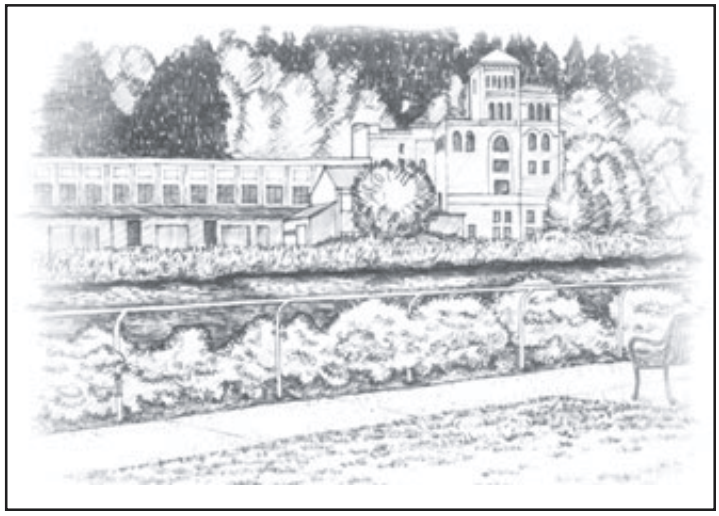
The only upland site adjacent to the lake which may be able to process the dredged material is an 11 acre site located west of Marathon Park. The cost of dredging will be significantly higher than the two previous events, because of additional review for the Endangered Species Act, and the potential need for a centrifuge to dewater the sediments and transport of the material out of the basin. Estimates to dredge in 2000 were about $30 per cubic yard. Cost estimates for marine disposal in Puget Sound are generally one-quarter of those of upland disposal.



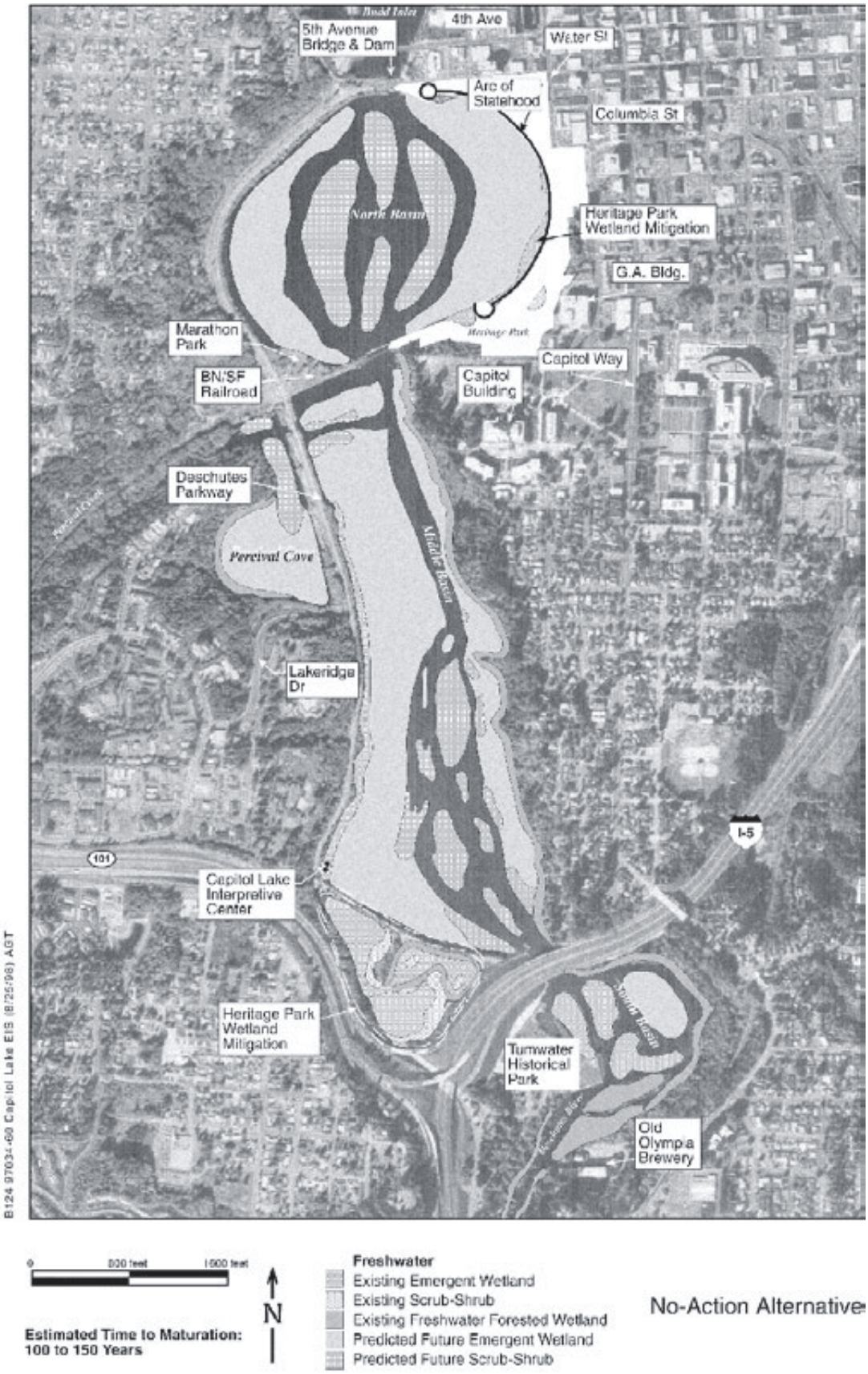
Over the next ten years views of the North Basin of Capitol Lake should not change other than the growth of trees planted along the shoreline of Heritage Park.

Over the next ten years views of the Middle Basin may include small gravel bars or islands forming just north of Interstate 5.





Over the next ten years views of the South Basin will be similar to today, with an expansion of the gravel bars and vegetated islands.


5th Avenue Bridge & Dam
4th Ave
Water St
Arc of Statehood
Columbia St
North Basin
Heritage Park Wetland Mitigation
G.A. Bldg.
Marathon Park
Capitol Way
BN/SF Railroad
Capitol Building
Deschutes Parkway
Percival Cove
Middle Basin
Lakeridge Dr
I-5
101
Capitol Lake Interpretive Center
Heritage Park Wetland Mitigation
Tumwater Historical Park
Old Olympia Brewery
B124 97034-60 Capitol Lake EIS (8/25/98) AGT
0
500 feet
1000 feet
N
Estimated Time to Maturation:
100 to 150 Years
Freshwater
Existing Emergent Wetland
Existing Scrub-Shrub
Existing Freshwater Forested Wetland
Predicted Future Emergent Wetland
Predicted Future Scrub-Shrub
No-Action Alternative

The figure on page 46 depicts how Capitol Lake may fill in over the next 100 to 150 years without a comprehensive sediment management strategy. The South Basin at the base of Tumwater Falls will fill in the fastest. It will continue to change from open water to a series of island and river bars. The Middle Basin north of I-5 will continue to become more shallow, and some islands may appear during the next 10 years. It is likely that Percival Cove may be cut off from the rest of the lake by sedimentation from Percival Creek. It is also likely that there will be few visual changes due to sedimentation in the North Basin adjacent to Heritage Park.

At the upland disposal rate, the cost to remove sediment from Capitol Lake equal to the rate it is being deposited would be about $1 million per year, and about $40 million if all the sediments that have been deposited in the lake since it was created were removed. It may be possible to use dredged material within the basin to create fish and wildlife friendly edges. (See Objective #9)

Remaining sediment management issues include:

- A better understanding of the sediment deposition rates in all the lake basins,
- A preliminary site design of the possible sediment handling site,
- Determining the permitablity of the possible sediment handling site, and
- Conceptual designs for use of sediments used to improve shoreline habitat.

Activities in Years 2003 - 2005:

A consultant will be hired to address the unanswered sediment questions and develop a comprehensive sediment management strategy. It is likely this strategy will involve the use of dredged lake sediment for shoreline enhancement. A second but related study would evaluate sediment budget and its impacts on southern Budd Inlet.

CLAMP Budget 2003 - 2005:

The budget to prepare the sediment managment strategy will be $65,000. The second sediment study for southern Budd Inlet will cost $100,000. Funding would be 50% from GA and 50% from an unspecified grant funding source, with the most likely source being the U.S. Army Corps of Engineers.

Activities in Years 2005 - 2013:

It may be possible to use dredged material within the basin to create fish and wildlife friendly edge.

CLAMP Budget 2005 - 2013:

The costs for dredging is described in Objective 9.