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Capitol Lake

RESTORATION AND RECREATION PLAN

Final Environmental Impact Statement

DEPARTMENT OF GENERAL ADMINISTRATION
STATE OF WASHINGTON

MAY 1977

GA

State of Washington
DIXY LEE RAY, Governor

DEPARTMENT OF GENERAL ADMINISTRATION

VERNON L. BARNES, Director

218 GENERAL ADMINISTRATION BUILDING, OLYMPIA, WASHINGTON 98504

This Final Environmental Impact Statement for the proposed restoration of Capitol Lake is presented for your information. The document incorporates the comments received during hearings and review of the Draft Environmental Impact Statement. The Department of General Administration would like to extend its sincere appreciation to all concerned agencies and citizens who participated in the development and review of this statement.

John E. Johnson, Acting Manager of Facilities Planning
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Capitol Lake

RESTORATION AND
RECREATION PLAN

Final Environmental Impact Statement

DEPARTMENT OF GENERAL ADMINISTRATION
STATE OF WASHINGTON

MAY 1977

SUMMARY OF PROJECT

NATURE OF PROJECT

Lake restoration program involving selective dredging within Capitol Lake, disposal of dredge spoils, and recreational enhancement of the lake.

SPONSOR

Department of General Administration, State of Washington, 106 Maple Park Drive, Olympia, Washington 98504. Contact person: Jerry W. Bachmann, Facilities Planning, (206)753-4406.

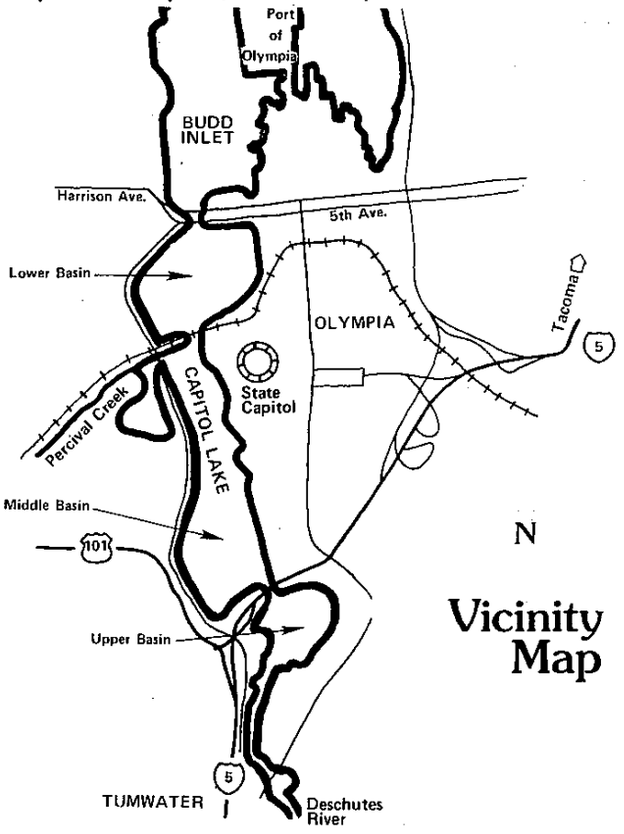
OFFICIAL TITLE AND DESCRIPTION OF PROPOSED ACTION

Title

Capitol Lake Restoration and Recreation Plan

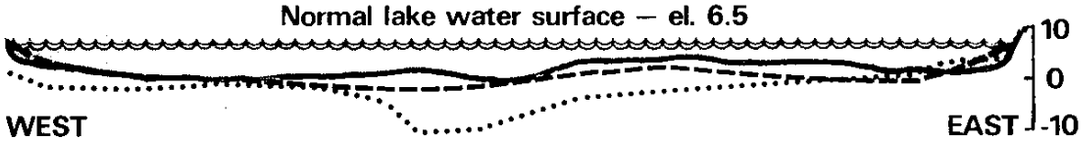
Description

Capitol Lake is located in Olympia and Tumwater, Thurston County, at the southern end of Puget Sound's Budd Inlet, as shown below. Formation of the lake was authorized by the state legislature in 1947 and was created by construction of a dam at the Fifth Avenue bridge. An extension of the State Capitol Campus, the lake provides an attractive setting for

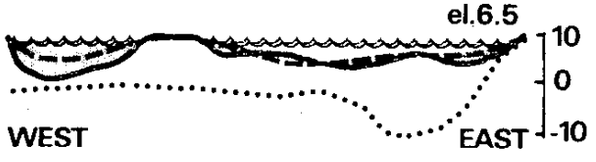


Washington's governmental seat. Because most of the lake's shoreline is publicly owned and remains undeveloped, many recreational activities take place in and around its waters. The lake is one of the state's most important fish rearing impoundments, with the annual fall migration of spawning salmon drawing crowds of spectators.

Today this unique biological and recreational resource faces ultimate extinction from sediment deposits that have been accumulating since the lake's creation. Since the lake was filled in 1951, it has accumulated 750,000 to 1 million cubic yards of sediment. The dramatic reduction in lake volume as a result of this sediment deposition is shown in the following figure.



SECTION-MIDDLE LAKE



City of Olympia datum
Elevation in feet

SECTION-UPPER LAKE

LEGEND

1975 Bottom
1970 Bottom
1949 Bottom

Sediment Deposition

A plan to remove a portion of the accumulated sediment and restore the lake's environment has been developed by the Department of General Administration with the active cooperation of various Federal, state, and local public agencies and citizens.

The proposed restoration plan calls for two main actions: initial dredging of a portion of the accumulated sediment in the upper and middle basins and a dredging maintenance program approximately every 2 years. Part of the removed sediment will be deposited in several carefully selected locations along the lake shoreline to provide additional recreational access to the lake. The remainder would be pumped to an out-of-basin disposal site.

The original plan called for moderately extensive changes in the upper basin to permit it to function more effectively as a sediment trap. This involved construction of a sediment trap, removal of a portion of the islands in the upper basin, and construction of a training groin and a protective groin. Because unavoidable impacts to wildlife and habitat would have resulted and because significant concern was expressed by many citizens and agency representatives, this plan was substantially changed to avoid most of the adverse effects anticipated. The revised upper basin dredging plan is described briefly on pages 7 through 10 and shown in figure 1. The engineering study[1] that analyzed alternatives to the original upper basin plan is included in appendix B.

The number of fill sites around the lakeshore was also drastically changed after extensive meetings with the Department of Fisheries and the U.S. Fish and Wildlife Service. Fill sites deleted as a result of this process are shown in figure 2; the remaining fill sites are shown in figure 3.* Fill deletions within the lake represent a reduction from the 644,400 cubic yards of fill volume originally proposed to 237,000 cubic yards.

Initial dredging will provide sediment traps in the upper and middle basins and will remove sediment from the shallow areas in the middle basin. Percival Cove will be dredged to allow complete drainage during lake drawdown and to provide a sediment trap at the mouth of Percival Creek. Debris and deadheads will be removed from the lake. A training groin will be built in the upper basin in accordance with the recommendations of the Washington State University report *Hydraulic and water quality research studies of Capitol Lake sediment and restoration problems*, Olympia, Washington, September 1975. Fill sites within the lake will be graded and seeded to protect against erosion.

The proposed action will develop a recreation plan for approximately 19 acres of new shorelands created by the dredging of Capitol Lake. The major objective of the plan is to provide recreational opportunities that meet public needs and enhance the lake's existing scenic qualities. Most of the recreational uses meeting these criteria are relatively quiet, passive activities.

ENVIRONMENTAL IMPACTS

Beneficial Impacts

- Reduction in aquatic weed growth as a result of increased depth and decreased sunlight penetration to rooted aquatics

[1] Mih, Walter C. 1976. *Sediment trapping efficiencies of maintenance dredge plans in the upper basin of Capitol Lake.* Albrook Hydraulics Laboratory, Washington State University.

* Subsequent to these meetings, the Department of Fisheries, in a letter dated 9 May 1977, also requested deletion of fill site No. 2 in Percival Cove. This change will be incorporated into the final plans and specifications for lake restoration.

- More pleasing visual appearance (middle basin)
- Increased access to and recreational use of shoreline
- Substantially improved conditions for Capitol Lake fishery (a potential increase of up to $450,000 annually in fish production because of improved natural fish food conditions)

Adverse Impacts

- Both temporary and permanent disturbance to some wildlife species and plant life
- Limited noise, dust, and air pollution associated with operation of dredging and earthmoving equipment
- Limited turbidity associated with dredging
- Minimal interference with water sports by the dredge
- Permanent loss of shallows in the upper basin in the area of the sedimentation basin and the dredged channels, and in portions of the middle basin

LIST OF ALTERNATIVES

1. The original Washington State University plan for the upper basin, which called for moderately extensive changes, including removal of a portion of the islands, consolidation of two smaller islands, and construction of a large sediment trap; middle basin plan same as revised recommended plan.

2. Extensive dredging of the upper basin (use of entire basin as a sedimentation trap, concentrating dredging efforts in that basin); middle basin plan same as with revised recommended plan.

3. No action in the upper basin, allowing the basin to evolve into a terrestrial environment; middle basin plan same as with revised recommended plan.

4. No action, allowing the lake to fill and gradually form a marsh and river channel.

5. Removal of the dam, allowing the lake to revert to an estuary.

These alternatives and the recommended plan (revised) were analyzed for their cost, engineering, feasibility, effectiveness, environmental impact, and compliance with established project goals.

RECORD OF PUBLIC AND AGENCY PARTICIPATION

During the course of the planning process for the restoration of Capitol Lake and development of the recreation plan, public comments and suggestions have been encouraged. Presentations were made to agencies and organizations known to have an interest in the project and to members of the public. The record of this participation is listed below. Minutes of these meetings are on file with the Department of General Administration.

Group	Type
Muskoxen (representing key Federal and state agencies concerned with projects of this nature)	Federal/state agencies
Tumwater Historical Commission	Local government
Tumwater Park Commission	Local government
Black Lake Audubon Society	Community group
Capitol Lakefair Committee	Community group
League of Women Voters	Community group
Tumwater City Council	Local government
Olympia Planning Commission and City Council	Local government
Thurston County Planning Commission	Local government
South Capitol Neighborhood Association	Community group
Westside Capitol Neighborhood Association	Community group
Open Public Workshop	Public
Thurston County Section, American Institute of Planners	Professional Society
DEIS Public Hearing	Public
U.S. Fish and Wildlife Service	Federal government
Washington Department of Highways	State government

Washington Department of Fisheries	State government
Operating Engineers and Laborers Union	Public
Olympia Brewing Company	Private company
State Capitol Museum	State agency

CONTENTS

TABLES

FIGURES

INTRODUCTION

This Final Environmental Impact Statement (FEIS) for the proposed restoration and recreational development of Capitol Lake is submitted for your information. The FEIS consists of the Draft Environmental Impact Statements (DEIS)[1,2] for the two related projects (dredging and recreational development), dated July 1976, and the supplementary material presented in this document. In the interest of minimizing publication costs, the DEIS's have not been reprinted. Copies of the DEIS's are available from the SEPA Information Center, Department of General Administration.

The supplementary material presented in this document includes a summary of the project, a revised project description, a description and an impact analysis relating to a major revision in the upper basin portion of the project, a description of changes in dredge spoils disposal, comments and responses to the DEIS's, new information that was requested by reviewers of the DEIS's, correspondence presented at the Department of Ecology's Environmental Coordination Procedures Act Hearing regarding the project, and correspondence concerning the Corps of Engineers dredging permit. The two major changes in the project since the DEIS's were circulated have been the upper basin revision and a substantial reduction in the amount of fill to be placed within the lake basin.

The upper basin revision, which eliminates disturbance of the islands in the upper basin and significantly reduces the potential impacts in that basin, resulted from the DEIS review process. Based upon concern expressed by the U.S. Fish and Wildlife Service, Dr. Jerry Cook, and others, Dr. Walter Mih of the Albrook Hydraulic Laboratory at Washington State University was asked to evaluate alternative sediment removal plans. This analysis, which is included as the last section of this FEIS, recommended the upper basin revision that is now part of the proposed project.

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[1] Washington State Department of General Administration. July 1976. *Capitol Lake restoration draft environmental impact statement.*

[2] _____. July 1976. *Capitol Lake recreation plan draft environmental impact statement.*

REVISED PROJECT DESCRIPTION

The project description provided below has been revised to reflect the decreased dredging activity in the upper basin and reduction in fills throughout the lake and to incorporate the statement that Capitol Lake is a manmade reservoir. This latter point is in response to a comment made by several DEIS reviewers.

BACKGROUND

Capitol Lake is a manmade reservoir that was created by an act of the Washington State Legislature in 1949. Since completion of the Fifth Street dam in 1951, sediment has accumulated in the lake and is gradually reducing its beauty as part of the Capitol Campus and its usefulness as a recreational and fish-rearing facility.

The goal of the proposed restoration and recreational development program is to improve the lake's recreational and visual resources, improve its fish production, and preserve its biological and wildlife resources.

RESTORATION PROGRAM

The program initially calls for selective dredging of existing sediment and dredging of deep sediment traps that can be cleaned out as required over the next 20 years. The program includes a plan for in-basin disposal of some dredge spoils in order to provide improved public access to the lake.

Initial Dredging Activities

Phase 1

The initial dredging work in the upper basin will involve provision of a sediment trap. In the middle basin, a sediment trap will be provided and sediment from selected shallow areas in the center of the lake will be removed. Percival Cove will be dredged to allow complete drainage during the annual lake drawdown and to provide a sediment trap at the mouth of Percival Creek. This incorporates initial dredging concept 1 as described in the Restoration Design Engineering Report.[1]

Part of the dredged material will be deposited in the southwest corner of the middle basin to improve water circulation, as recommended in the Washington State University hydraulic study report.[2]

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[1] Washington State Department of General Administration. July 1976. *Capitol Lake restoration design engineering report.* p. 6.

[2] Hydraulics Research Section and Environmental Research Section, Washington State University. September 1975. *Hydraulic and water quality research studies and analysis of Capitol Lake sediment and restoration problems.* A report for the Washington State Department of General Administration.

Debris will be removed from the lake basins and disposed of in an established landfill.

The state will acquire the existing gravel pit just north of Percival Creek for later development as part of the recreation plan. Additional details concerning the proposed work in the upper basin are presented in the final section of this FEIS (figure 9, p. 148).

Phase II

The disposal sites selected for biennial maintenance dredging will be prepared. At the end of each biennial maintenance period, some grading will be necessary at the disposal site.

Phase III

To prepare for out-of-basin disposal of dredge spoils, the state would acquire a disposal site within 2 miles of the lake, right-of-way to the site, and the additional pipe and pumps to transport the dredged material to this out-of-basin site. Potential out-of-basin disposal sites are shown in figure 10 of the Restoration Design Engineering Report.

Biennial Maintenance Dredging

Future accumulation of sediment will be removed from the sediment trap in the upper basin approximately every 2 years and from the middle basin sediment trap every 5 to 10 years, depending on rate of accumulation.

Timing

Initial dredging is expected to begin in 1977 and last 9 to 12 months if one dredge is used, and approximately 6 months if two dredges are used. Maintenance dredging schedules will depend on the results of periodic inspections to determine the condition of the sediment traps.

RECREATIONAL DEVELOPMENT

The proposed action would develop a recreation plan for approximately 19 acres of new shorelands created by the dredging of Capitol Lake. The major objective of the plan is to provide recreational opportunities that meet public needs and enhance the lake's existing scenic qualities. Most of the recreational uses meeting these criteria are relatively quiet, passive activities.

Upper Basin

Little change is proposed in the upper basin. The basin will retain its natural character and will remain a passive recreation site. A nature trail connected with the Olympia watershed will encircle the entire upper basin. However, this is a costly item, and may therefore take several years before implementation is completed. Pedestrian bridges will be located north of the old brewery building and under the I-5 structure. The Tumwater City Park site is not directly affected by this proposed recreation plan.

Middle Basin

The major fill of 17 acres in the southwest corner will be developed with 12 acres of landscaped grounds. The new areas will primarily accommodate picnicking and fishing. Major berms and extensive plantings will partially screen freeway and parkway traffic. A 600-foot beach and boat launch area will be constructed. The bicycle/foot trail will wind through wooded and open areas behind the beach, then continue along the west shore. Fills in Percival Cove will provide fishing access for a future "put and take" fishery during the period of the year when salmon are not being raised there.

The trail will cross the basin parallel and adjacent to the railroad bridge and rise along the east slope to the Capitol through an extensive planting of rhododendrons, azaleas, dogwood, and other Pacific Northwest ornamentals. At the Capitol grounds, the trail will divide and run to the Capitol Building and along the ridge crest to multiple view points and a street end connection. The parking lot at the northwest corner of the Capitol Campus would be modified to provide a major viewpoint and interpretive center.

Lower Basin

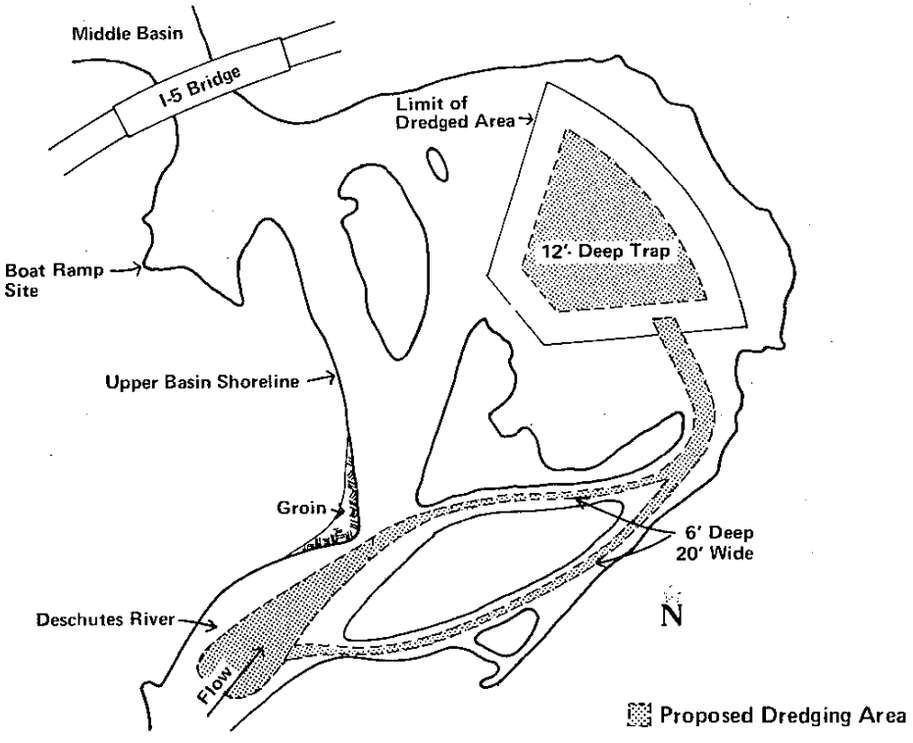
The Percival Cove gravel pit is a key element in the recreation plan. It is the only large, potentially level area near the lake, and offers an exceptional opportunity for a secluded family and group picnic area. This was identified as one of the most desired activities by respondents to the public opinion survey conducted as part of the recreational plan development. The area will be developed to provide a meadow and open playfield of over 4 acres. The site will also provide a children's play area and parking for about 40 cars.

DESCRIPTION AND IMPACT ASSESSMENT OF REVISED UPPER BASIN PLAN

DESCRIPTION

From field observation and modeling experiments, it was determined that deepening and slightly widening the two channels shown in figure 1 would achieve an acceptable alternative to the island modification originally felt necessary. The sediment trap and training groin would remain in approximately the same positions as with the original plan.

An effort was made to move the training groin to a less noticeable location. Modeling results, however, revealed a significant loss of efficiency with the attempted arrangement. With the training groin in place, 80 percent of the water entering the basin is deflected over the sediment trap. Without the groin, this drops to 30 percent. Channel widening is confined principally to areas now covered by water and will involve the loss of less than 1/4 acre of land (island) area. No fill will be added to the existing islands, as was originally proposed.



Revised Dredging Plan for Upper Basin 1

Relative efficiencies of sediment removal by the original and revised upper basin plans are:

Flow (cfs)[a]	Efficiency (percent)[b]	
	Original Plan	Revised Plan
3,000	54	53
5,000	61	53

[a] Cubic feet per second.
[b] Efficiency expressed in percent of sediment removed.

ENVIRONMENTAL ANALYSIS

All impacts associated with the revised upper basin plan are positive in relation to the original plan. Impacts are listed below in the same order as in the Restoration DEIS and are compared with those of the original plan where appropriate.

Physical Environment

Earth

Impacts on land areas in the upper basin will be minimal and are restricted to removal of less than 1/4 acre of island area for channel widening. No fill will be added to the two existing islands on the west side of the basin, as was originally proposed to replace lost marsh area. Bottom contours of the basin will vary slightly from those of the original plan.

Air

Impacts on the air quality will be slightly less than with the original proposal, due to decreased dredging activity.

Water

Minor water quality degradation associated with dredging will be minimized because of the lesser amount of dredging activity required.

Flora

Virtually no loss of terrestrial vegetation such as alders, willows, or grasses will occur. This represents a significant change from the original proposal. Some vegetation, principally cattails, will be lost as a result of widening and deepening the east channel. There will be no disturbance of flora associated with the two islands in the west side of the basin; these islands were to be joined under the original proposal.

Fauna

Significantly less terrestrial wildlife habitat will be disturbed, which will reduce the impact on upper basin wildlife. Fewer shallows will be affected by dredging or filling; this will benefit insect production, the upper basin fishing, and dabbling ducks.

Noise

Some slight reduction in noise is expected because of the reduced requirement for dredging and filling activity.

Light and Glare, Land Use, and Natural Resources

No change from the original proposal is anticipated.

Human Environment

Population

No change from the original proposal is anticipated.

Economics

Costs and benefits associated with the revised plan are comparable to those of the original plan. Slightly less dredging activity will be required, which will reduce these costs, but this will be offset by the need to export all of the maintenance dredge spoils out of the basin.

Traffic, Energy, Utilities, and Health

No change from the original proposal is anticipated.

Aesthetics

Less severe aesthetic impacts represent one of the more significant changes in impacts. The natural appearance of the upper basin will be largely retained in terms of land masses, related vegetation, and dependent wildlife.

Recreation

Recreation impacts will consist primarily of a very slight increase in terrestrial-related activity such as birdwatching and hiking instead of water-related activities. A significant advantage of the revised plan is that the channel dredging will separate and isolate the accreting islands. This will provide greater protection from predation and human contact than the present condition. The revised plan will result in less "new" water area than would the original

proposal, and consequently, will offer somewhat less opportunity for boating activity. Sport fishing will be essentially unchanged by the revised plan.

Archeological and Historical Significance

No change from the original proposal is anticipated.

Mitigation Measures and Unavoidable Adverse Impacts

This revised plan successfully mitigates the major unavoidable adverse impacts associated with the original proposal. Remaining adverse impacts that cannot be mitigated are restricted to some remaining loss of island area (less than 1/4 acre) and to changes in the two channel corridors from a shallowing, naturally accreting condition to that of a dredged, maintained channel. Other unavoidable adverse impacts related to the dredging of the sediment trap and construction of the training groin would be unchanged from those of the original proposal.

PROPOSED FILL REDUCTIONS

Major changes were made to the original in-basin disposal plan as the result of meetings with the U.S. Fish and Wildlife Service, the Department of Fisheries, and others to resolve concerns about impacts to the lake's natural fish-feeding capability. These changes are summarized in table 1.

The quantities of spoils to be removed during initial dredging approximately equal proposed fills. Deleted fills are shown in figure 2 and present fill locations are shown in figure 3.* The revised recreation plan is shown in figure 4.*

All maintenance dredge spoils will be disposed of at an established out-of-basin site to be selected from the potential sites shown in figure 10 of the Restoration Design Engineering Report.

Other modifications resulting directly from the DEIS review process include:

- Incorporation of equipment approaches for Department of Fisheries vehicles at Percival Cove
- Incorporation of a viewing area near the Temple of Justice on the Capitol Campus
- Provision of an additional boat ramp adjacent to the parking lot at the east side of the lower basin

Detailed descriptions of these modifications will be given in the final plans and specifications for the recreation plan.

* Subsequent to preparation of this figure, the Department of Fisheries requested deletion of fill site No. 2 in Percival Cove. This change will be incorporated into the final plans and specifications for lake restoration.

Table 1. MODIFICATIONS TO IN-BASIN DISPOSAL PLAN

INITIAL DREDGING

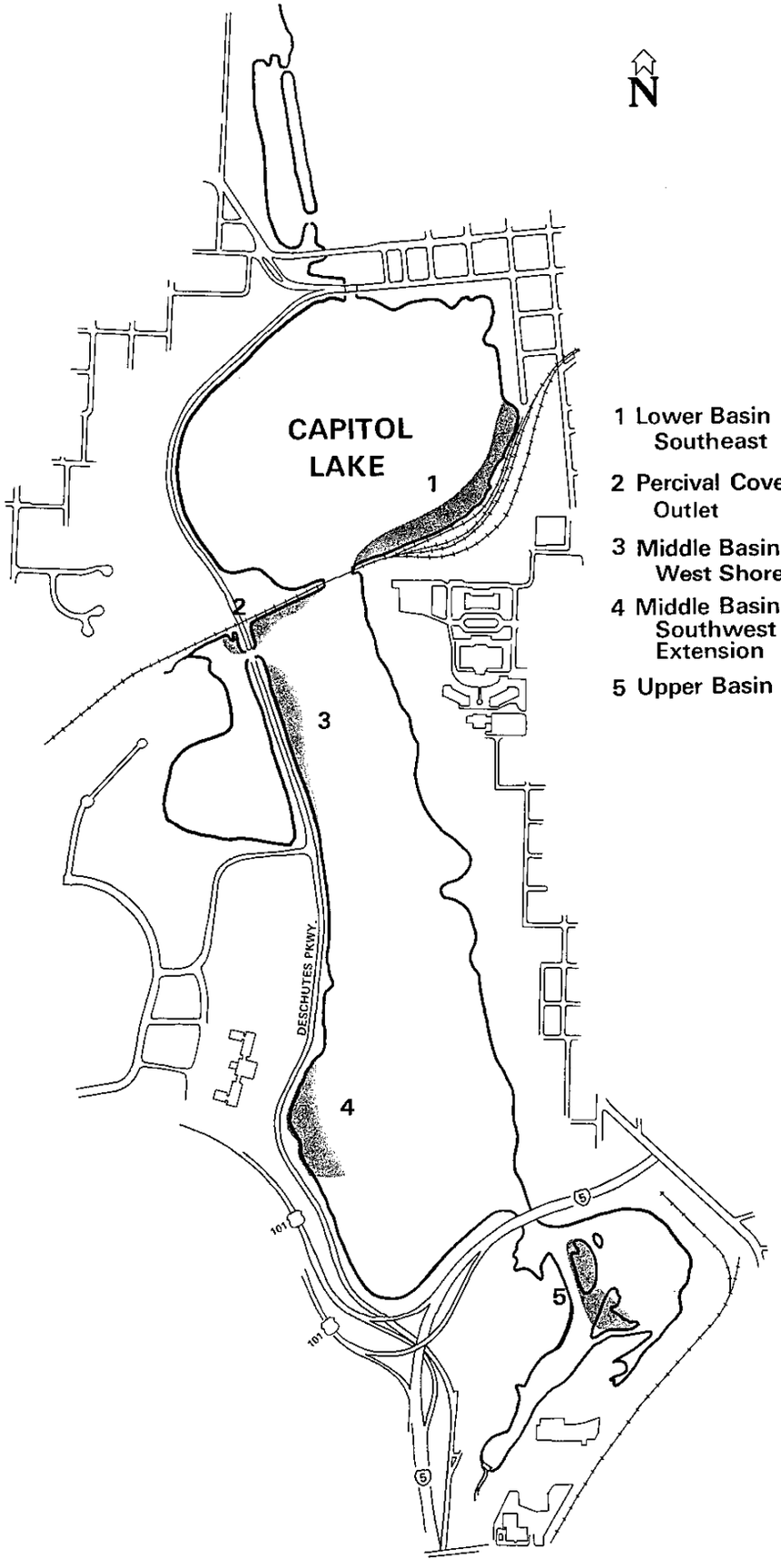
Disposal Site Identification No.*	Location	Modification
1	Northwest corner, middle basin	Deleted
2	East bank of Percival Cove	Deleted
3	Adjacent to powerhouse	Unchanged
4	Southwest corner, middle basin	Fill reduced from 286,600 cu yd to 224,200 cu yd
5	Upper basin	Island fill eliminated; fill behind gabion retained

* See: Washington State Department of General Administration. July 1976. *Capitol Lake restoration design engineering report.* Figure 8.

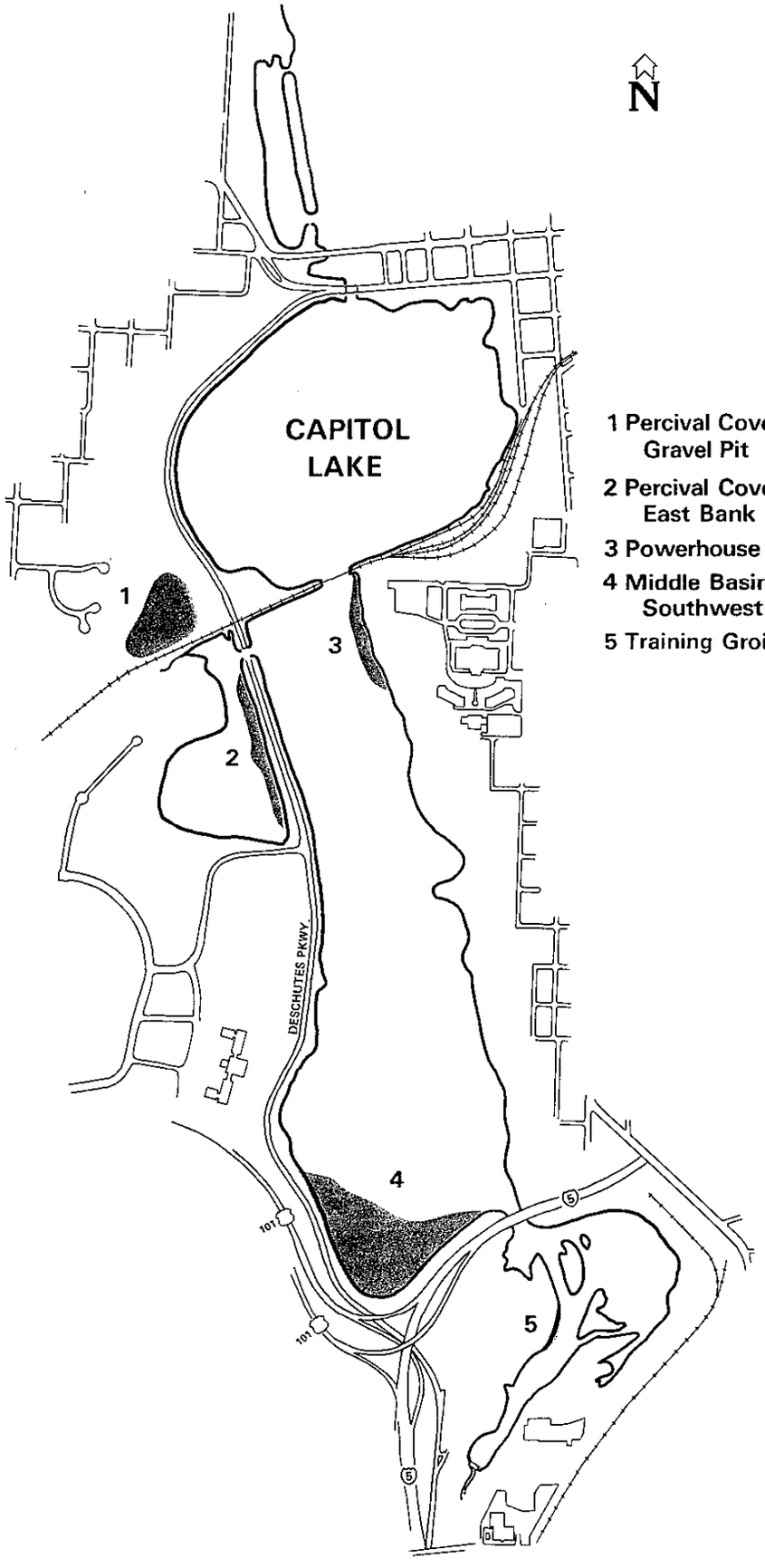
MAINTENANCE DREDGING

Disposal Site Identification No.*	Location	Modification
1	Percival Cove gravel pit	Unchanged
2	Southeast corner, lower basin	Fill deleted
3	West bank of middle basin, adjacent to Percival Cove	Fill deleted
4	Northerly extension to southwest corner fill, middle basin	Fill deleted

* Ibid. Figure 9.



Deleted Fill Sites 2



1 Percival Cove Gravel Pit

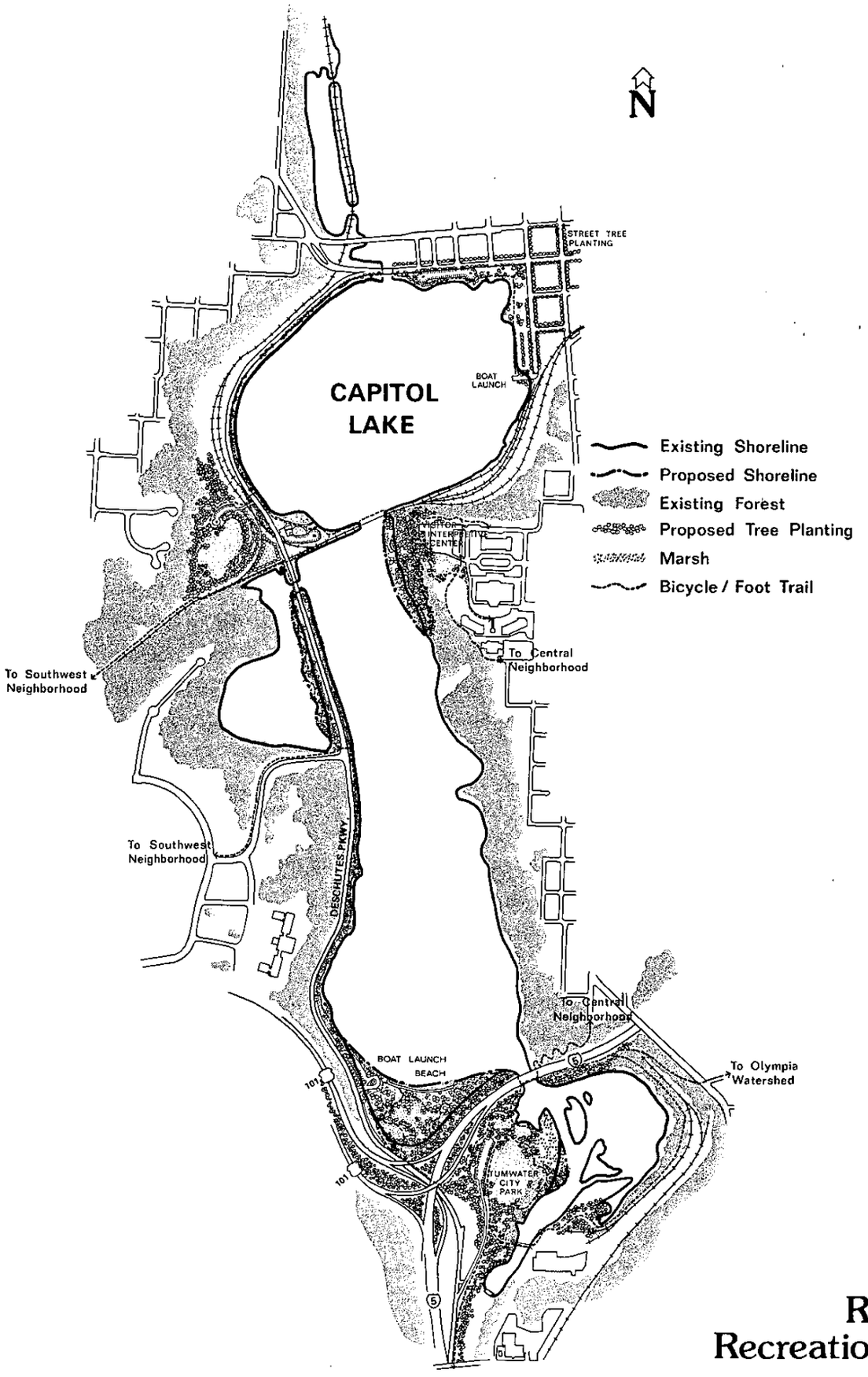
2 Percival Cove East Bank

3 Powerhouse Fill

4 Middle Basin Southwest Corner

5 Training Groin

Proposed Fill Sites 3



Revised Recreation Plan 4

Capitol Lake

Appendix A

Review Comments and Responses

Appendix A
REVIEW COMMENTS AND RESPONSES

A considerable number of comments, both written and verbal, were received during the EIS review. The obvious effort that went into review of the EIS documents and preparation of comments is sincerely appreciated. Comments received directly contributed to improvements in the plan and a reduction of anticipated adverse impacts.

WRITTEN COMMENTS

Each written comment is reproduced verbatim in this section, followed by a response.

WESLEY L. BARCLIFT
MAYOR

CITY OF TUMWATER
WASHINGTON

OFFICE OF THE MAYOR

August 23, 1976

Mr. Keith Angier, Director
Department of General Administration
General Administration Building
Olympia, Washington 98504

RE: Capitol Lake Restoration

Dear Mr. Angier

In response to a growing concern for the environment and the need to preserve, safeguard, and insure the quality development of Capitol Lake as a key scenic recreation area for all of the citizens of the state of Washington, various state and local state agencies have joined hands with private organizations in support of state funds to restore Capitol Lake. Funds for the study and engineering were approved by the 1975 First Extraordinary Legislative Session. Subsequently, a consulting firm was hired by your department and a specific action plan was prepared.

The above actions stem from two major concerns. First, that Capitol Lake be preserved for the use of all of our citizens, and secondly, that this most unique resource and part of the Capitol Campus not be destroyed by sediment deposits.

As Mayor of the City of Tumwater, one of the communities vitally concerned for the plans for the future of Capitol Lake, I would like to take this opportunity to fully endorse the Department of General Administration's plans for the dredging and restoration of Capitol Lake and the concepts expressed in its recreation plan.

Additionally, I believe that any further encroachment of commercial development involving Capitol Lake would be detrimental to the on-going study and future funding of this great natural resource. Therefore, I solicit your support and assistance in securing a moratorium on all commercial development adjacent to the lake.

I regret that a prior schedule prevents my attending this public hearing to discuss with you my concerns. If you have any questions please feel free to call on me.

Sincerely

Wesley L. Barclift
Mayor

WLB/st

Response

The City of Tumwater's concerns are considered to be adequately addressed in the Restoration DEIS, pages 24-28.

CAPITAL LAKEFAIR, INCORPORATED • *Second weekend in July*
Offices in Olympia Area Chamber of Commerce • P. O. Box 1427 • Olympia, Washington • Telephone 357-3362

August 24, 1976

Mr. Keith Angier, Director
Department of General Administration
218 General Administration Building
Olympia, Washington 98504

Dear Mr. Angier:

Capital Lakefair, Inc., is a non-profit organization which was created eighteen years ago. Over these past eighteen years, Lakefair has grown progressivly and steadily with the community and the State of Washington. Each summer Lakefair draws thousands of people to watch and participate in a wide variety of activities. The Capital Lakefair festival is an event which is a source of civic pride and tradition for our community and is the culmination of many months of planning and hard work by citizens of our area.

Capitol Lake is a valuable, versatile and unique resource to our area and to our state and the progressive accumulation of silt in the lake has become a probelm of increasing magnitude affecting many uses of this popular water area. Capital Lakefair is concerned about the heavy build-up of silt, mud, debris and pollution problems that are leading to the extinction of our beautiful lake.

We have reviewed the recommended plan to restore and preserve Capitol Lake which has been developed by the Washington State Department of General Administration and the Capitol Lake Coordinating Committee. Capital Lakefair, Inc., would therefore like to go on record endorsing the proposed restoration and recreation plans to restore and preserve Capitol Lake as set forth in the recommended plan by the State Department of General Administration and the Capitol Lake Coordinating Committee.

Sincerely,

DEE R. HOOPER
President
Capital Lakefair, Inc.

DRH:ga

Response

The primary concerns of Capitol Lakefair, Inc., are included in the Restoration DEIS, page 26.

PORT OF OLYMPIA

915 NORTH WASHINGTON STREET • POST OFFICE BOX 827
OLYMPIA, WASHINGTON, 98507 U.S.A. • AREA CODE 206 357-4433

August 23, 1976

Mr. George C. Garris, Manager
Facilities Planning
Department of General Administration
State of Washington
106 Maple Park
Olympia, Washington 98504

Re: Capitol Lake Rehabilitation

Dear Mr. Garris:

Olympia's waterfront is one of our community's greatest latent assets, be it salt water or fresh. Improvement of this urban asset for the benefit and enjoyment of the citizens of Thurston County is the Port of Olympia Commission's greatest challenge for the next decade. The Port feels strongly that your proposed rehabilitation of Capitol Lake is of utmost importance and urgency, and has offered its assistance in a spirit of cooperation to assure that the job gets done in a manner most beneficial to the community.

In reviewing the consultants' recent study and report on your project, we were amazed to find that nearly ignored and not recommended for use was a most obvious spoils disposal site immediately adjacent to Capitol Lake. We refer to the area on the west shore of West Bay behind the Burlington Northern causeway. This site has long been offered by the Port as a disposal site because of its proximity to the lake, its state of readiness to accept spoils, and its relative economy compared to other potential sites; further, we have been urged for years to remove the appearance of blight of this downtown mud-flat by filling and putting the area to a productive, sightly use.

Such West Bay improvement is consistent with Olympia's recently updated comprehensive plan and would complement overall Olympia City Center,

Re: Capitol Lake Rehabilitation

including Capitol Lake and harbor, rehabilitation.

We must suggest that planning for Capitol Lake renewal take a broader view of City Center improvement including the harbor. We urge your reconsideration of the improvement plan to include harbor disposal of dredge spoils at what must be very substantial cost savings.

Yours very truly,

PORT OF OLYMPIA COMMISSION

G. W. Sibold
Manager

GWS:h

cc: Olympia City Commission
Port of Olympia Commissioners
Project Engineer R. O. Malin

Response

The possible use of the West Bay site as a spoils disposal site was discussed in the Design Engineering Report, pages 29 and 30. The site was not included in the recommended plan because it is outside the jurisdiction of General Administration and is recognized as an environmentally sensitive area. Because the site was not included in the proposed project, the impacts associated with use of the site are not included in the Restoration DEIS.

Olympia Area CHAMBER OF COMMERCE

OLYMPIA, WASHINGTON
P.O. BOX 1427 - 98507
DIAL 357-3362
AREA CODE 206

August 26, 1976

Mr. Keith Angier, Director
Department of General Administration
218 General Administration Building
Olympia, Washington 98504

Dear Mr. Angier:

The Board of Directors of the Olympia Area Chamber of Commerce wish to reaffirm the Chamber's position in support of a restoration and beautification program for Capitol Lake.

Capitol Lake must not be allowed to degenerate to a useless, ugly mud flat. We are confident that citizens from every corner of the state will support you in your efforts to beautify the lake much in the way they support the beautiful Capitol Campus.

We urge that the Legislature look favorably upon this project in order that we may save this valuable, versatile and unique resource to our area and to our state.

Sincerely,

Robert L. Lovely

ROBERT L. LOVELY
President
Olympia Area Chamber of Commerce

RLL:ga

Response

The Olympia Area Chamber of Commerce's concerns are considered adequately presented in the Restoration DEIS.

LEAGUE OF WOMEN VOTERS

OF THURSTON COUNTY

Testimony given at a public hearing in the
General Administration Bldg. 7 p.m. Aug 25, 1976

On Restoring Capitol Lake

I am Irene Christy, representing the League of Women Voters of Thurston County.

The League of Women Voters of Thurston County endorses the concept of restoring Capitol Lake and we like much about the plans that have been drawn up. We do have a few recommendations.

The first step in restoration of the lake must be improvement of the water quality. Sources of pollution must be found and causes controlled if the lake is to be really usable as a unique fresh water and recreation resource.

A goal of the Capitol Lake Coordinating Committee has been to encourage land uses within the Deschutes River Basin which will decrease sediment loading. What actual steps have been taken by the committee to attain this goal? Have the various consulting firms studied methods of how to slow down silting into the river before it gets to the Falls? What plans are there for lessening the amount of sedimentation going into the lake? Or to diminish the amounts of fertilizer or road run-off that gets washed into the river?

The league agrees that the visual quality, wildlife, active and passive recreational uses and other environmental characteristics should be preserved. We agree that land uses should be encouraged within the Deschutes River Basin which would decrease sediment loading.

The Capitol Lake Committee is urged to purchase and include in the overall plan the parcels of privately owned land along the west side of the Lower Basin. This area should be included as park or recreational areas to encourage people to use Capitol Lake as well as to enjoy the visual aspects of having the lake adjoining the capitol complex.

The league recommends a viewing area in back of the Temple of Justice instead of the high hedges and weeds there now. A viewing area farther west from that site is already in the plans.

The league agrees with the goal that an attempt should be made to preserve and interpret the biological processes within the Upper Basin. But we disagree in the amount of dredging proposed. We feel the Upper Basin should be disturbed as little as possible. Some dredging is necessary for channelization but we cannot endorse restructuring much of the entire Upper Basin. That area supports wildlife not found elsewhere in the urban area.

- more -

LEAGUE OF WOMEN VOTERS

OF THURSTON COUNTY

The league has mixed feelings about deepening the lower and middle lakes. Some dredging is needed to make it a lake again. But hopefully, not as deep as the plans show.

There is continuing population growth on both the far west side and the east side of Capitol Lake. In order to maintain these as pleasant residential areas, noise standards must be strictly maintained. Many of our members feel that no motors should be allowed on the lake. What is presently proposed?

The League of Women Voters of Thurston County recommends that the Capitol Lake Coordinating Committee request funding from the Legislature to restore Capitol Lake including, of course, our recommendations for high water quality standards, slowing down sedimentation, less dredging, purchasing land on the west side of the lake, another viewing area, and either no motors on the lake or setting strict noise standards.

League of Women Voters of Thurston County
1063 Capitol Way, Room 202
Olympia, Wash. 98501

Response

This response to the League's concerns is organized under each major issue heading.

Water Quality

The Restoration DEIS points out (page 35) that the proposed dredging program will not correct the coliform contamination problem and that the Department of General Administration is currently studying this problem in cooperation with the Department of Ecology. The study is intended to identify sources of pollution, which will then be presented to the proper jurisdictions for correction of the problem.

Sedimentation Reduction

The idea of reducing sedimentation in Capitol Lake by adoption of an upstream solution is a valid concept and was presented in the Restoration DEIS, page 12. However, the problem is complex, and the DEIS recommended that further study be given to this possibility. The DEIS further points out that even if a 100-percent effective upstream solution is found, the sediment already accumulated in Capitol Lake over the last 26 years would still have to be removed if restoration is to be achieved. An upstream solution would reduce maintenance dredging but would not affect the need for initial dredging. The Department of General Administration is monitoring the rate of sediment accumulation in conjunction with the pollution abatement program, and results of this effort may help to identify possible upstream causes of sedimentation.

Purchase of Property, West Side of Lower Basin

The proposed recreation plan adequately meets identified recreational needs without use of the private properties referred to. The intent of the Department of General Administration is to achieve the overall recreational goals with the least disturbance to private property owners.

Additional Viewing Area, Temple of Justice

The suggestion for an additional viewing area at this location is well taken and has been incorporated into the recreation plan.

Upper Basin

Adverse impacts to plant and wildlife in the upper basin are discussed on pages 36 to 38 of the Restoration DEIS. Page 56 notes the advantages and disadvantages of the position

advocated by the League. As a result of the concern expressed by the League, Dr. Jerry Cook, the U.S. Fish and Wildlife Service, and others, a modification to the restoration plan for the upper basin has been developed. Figure 3 and the accompanying text in this document describe the revised plan and anticipated impacts.

Depth of Dredging, Lower and Middle Basins

The proposed plan involves dredging to a maximum depth of 6 feet (except in sediment traps), which is considered the minimum depth to discourage plant growth and to provide adequate depth for boating. This is considerably less depth than the original lake contours provided.

STATEMENT BY THE DEPARTMENT OF FISHERIES

CAPITOL LAKE RESTORATION PLAN

The Washington State Department of Fisheries strongly supports the objective of removing the accumulated sediment from Capitol Lake and Percival Cove. Our policy letter of November 18, 1975 to the Capitol Lake Committee well summarizes our feelings regarding various aspects of the project.

We do, however, have some questions regarding recent proposals for disposal of maintenance dredge spoils, and would like to defer comment at this time until more information is obtained.

At this time, I would like to present additional recommendations which reflect our more recent thinking regarding artificial production management in Capitol Lake and in Percival Cove.

Regarding a Capital Lake salmon rearing program, our present thoughts lean toward the use of a net enclosure in the north end of the middle basin near the mouth of Percival Creek and along the N.P.R.R. fill. This is toward the trestle separating the middle and lower basins. We see no particular problem with the land fill in that area, however, the boat launch site as proposed and shown in the sketch in the Recreation Plan, Design Report, Page 10, would alter this proposed fish rearing project.

Recommended land fills within Percival Cove shorelines are not objectionable. However, two equipment approaches should be included in the design. One located on the north end land fill near the mouth of Percival Creek, and a second one

mid-way along the cove where the feed barge and storage shed are located. Fisheries Department facilities within the cove are not shown or discussed in any design report to date. They would include such segments as the water deflector curtain in relation to the sediment basin, the fish retention nets, and the adult fish barrier rack under the Deschutes Parkway bridge.

Percival Cove is an excellent production facility and contributes well to the south sound salmon fishery. The present rearing program is a single release as determined by the inability to adequately drain the cove to force the young salmon out. Therefore, a heavy population of residuals remain in the cove, preventing repopulation with smaller size fish for a follow-up short term rearing program.

While a sediment trap at the north end of Percival Cove and deepening of the outlet under the Deschutes Parkway bridge has been suggested, further dredging within the cove to make the cove drainable has not.

A multi-release rearing program from Percival Cove would be highly desirable and feasible if the cove were to be made drainable.

Our staff will be available in the future to discuss details of any recommendations further if you have any questions.

We appreciate the opportunity to comment at this hearing, and trust that the above recommendation will receive consideration.

DEPARTMENT OF FISHERIES

Response

Boat Launch Site, Northwest Corner, Middle Basin

The department's future plans include initiation of a pen rearing program at the mouth of Percival Creek where the cove joins the middle basin. A fairly large pen is anticipated, and boat wakes and oil and gas films on the water are the department's primary concerns. This concern was considered serious enough to warrant deletion of the fill and boat launch in this area.

Equipment Approaches, Percival Cove

These features will be incorporated into the final design plans for the lake. The water deflection curtain, the adult fish barrier rack, and the fish retention nets were omitted from the recreation plan drawing only because they were not affected by the plan. They should be considered a part of the proposed project.

Dredging of Percival Cove

Dredging of Percival Cove to provide complete drainage is included in the proposed action. The Restoration DEIS, page 7, notes that ". . . Percival Cove will be dredged to allow complete drainage during the annual lake drawdown and to provide a sediment trap at the mouth of Percival Creek . . . ."

STATE OF WASHINGTON
Department of
Natural Resources

COMMISSIONER
BERT COLE

DON LEE FRASER
SUPERVISOR

OLYMPIA, WASHINGTON
98504

October 1, 1976

Mr. George C. Garris. Facilities Planning Manager
Department of General Administration
106 Maple Park
Olympia, WA 98504

Dear Mr. Garris:

Following are some general comments from the Department of Natural Resources Recreation Division relative to the Capitol Lake Recreation Plan Design Report, July 1976, and Capitol Lake Recreation Plan Draft Environmental Impact Statement, July 1976:

1. The Design Report and Draft Environmental Impact Statement are generally well done and are similar in content to earlier Capitol Lake recreational plans.

2. The Design Report assumes full legislative approval for the proposed dredging project. It is possible that the legislature may not fund, or only partially fund, the dredging project. It would appear that the Design Report should allow for this possibility.

3. We have not reviewed the Dredging Report, but believe that some emphasis should be placed on preventing siltation from the upper Deschutes watershed rather than a blanket assumption that the present rate of siltation will continue indefinitely.

4. Although cooperating cities, agencies and organizations are generally identified in the two reports, there does not appear to be a specific description of the actual responsibilities and future commitment, of each of these cooperating agencies to an overall development recreation plan.

   Specific letters of endorsement outlining each agencies position and expected future participation in an overall development recreation plan would add substance to these reports.

5. It appears that the Interagency Committee for Outdoor Recreation is being looked to as almost the exclusive funding source for the recreational developments within the plan. All funding sources listed on page 17 of the Design Report are administered through the Interagency Committee for Outdoor Recreation.

   It would appear that chances for successfully funding this plan would be improved if all of the agencies and organizations either directly or indirectly involved would be asked to make some type of funding commitment. The amount of funding commitment should

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probably be in approximately the same proportion as the relative responsibility for management of the respective land and water areas within the project boundaries.

6. Coordination with the cities of Olympia and Tumwater is referred to in the Design Report but not specifically identified.

A more direct description of how the Capitol Lake Recreation Plan could be coordinated with the city of Olympia waterfront park development and the Port of Olympia's East Bay development proposal would be helpful.

Little mention is made of how a trail system could be extended through the existing Tumwater City Park through the Tumwater Falls Park and on up the Deschutes River.

Sincerely,

BERT L. COLE
Commissioner of Public Lands

Gerald D. Probst

Gerald D. Probst
Resource Planning Coordinator

GDP:bjd

cc: Bruce Reeves
Al O'Donnel, Recreation
Bill Johnson, M.L.M.
Merl Stratton, Central

Response

Provision for Less Than Total Funding by Legislature

The proposal to be submitted to the legislature requests the minimum program to achieve the desired goal. If less than total funding is authorized by the legislature, this will seriously reduce the effectiveness of the effort and will ultimately result in higher costs to complete the job.

Prevention of Siltation, Upper Deschutes Watershed

The Restoration DEIS, page 12, notes the desirability of identifying sources of siltation in the upper reaches of the Deschutes and reducing the sediment load in the river if at all possible. The dredging maintenance program assumes a continuation of present siltation rates only to provide realistic cost estimates on a "average-case" basis, in the event that siltation cannot be slowed. Should siltation abatement prove practical, the maintenance program could be reduced accordingly.

Responsibilities and Commitments to Recreation Plan

The Capitol Lake recreation plan was developed in cooperation with adjoining jurisdictions to ensure its compatibility with other plans. It is hoped that the Capitol Lake recreation plan will serve as the focus for continuing cooperation in the development of an overall recreation plan for the entire basin.

Funding Commitment

Recreational funding sources have been extensively discussed with the Interagency Committee for Outdoor Recreation. The proposed program was agreed upon as the most direct and realistic of those investigated.

Coordination with Olympia and Tumwater

The Capitol Lake recreation plan was developed to be in agreement with plans by Olympia and Tumwater. Once the Capitol Lake plan is adopted, it is intended that efforts will continue to refine and coordinate the related recreation development plans.

The trail system referred to is dependent upon the City of Tumwater's final park development plan, which is outside the jurisdiction of the Department of General Administration.

Washington State Building & Construction Trades Council

AFFILIATED WITH

Building & Construction Trades Department, AFL-CIO

TELEPHONE 357-6778

211 CAPITOL PARK BLDG.
1063 South Capitol Way
OLYMPIA, WASH 98501

September 15, 1976

Mr. George C. Garris, Manager of Facilities Planning
Department of General Administration
106 Maple Park
Olympia, WA 98504

Dear Mr. Garris:

This letter is being written regarding the public meeting held August 25, 1976 on the Capitol Lake Restoration.

The Washington State Building & Construction Trades Council seriously objects to the state purchasing a dredge and using state workers to clean out the sediment in the lake. We feel this kind of work should be let out to bid.

Sincerely,

Robert L. Dilger

Robert L. Dilger
Executive Secretary

RLD:cw
opeiu23 afl/cio

Response

The proposed dredging program originally involved state purchase of a dredge, contracting out for the initial dredging and training of state operators, and state operation for maintenance dredging. In response to the concern expressed by the Council and key members of Local 612 of the Operating Engineers, this has been modified to specify private contracting for all dredging. State purchase of the dredge and related equipment is less costly over the 20-year study period and is still proposed.

INTERNATIONAL UNION OF OPERATING ENGINEERS

Locals No. 612, 612-A, 612-B and 612-C

James C. McClure, President

Dallas W. Stiegelmeyer
Business Manager and Financial Secretary

1555 Fawcett Avenue South
Tacoma, Washington 98402

Harold Newberg
Recording - Corresponding Secretary

Telephone: Area 206 572-9612

Affiliated with AFL-CIO

August 30, 1976

Mr. George C. Garris, Manager of Facilities Planning
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Dear Sir:

My name is Victor Padham, a resident of Tumwater, a member of the Operating Engineers, Local 612 for 25 years and presently Business Agent for the Local.

As I spoke at the public hearing, I also want to register my thoughts in written testimony. I do support the Capital Lake Restoration program. I think that a well maintained lake is a real asset to the community and the State of Washington. However, as I stated at the public hearing, I do not agree that the State should go into the dredging business. I believe the initial dredging and the maintenance dredging should remain in the private sector. Historically dredging has been done by the Operating Engineers. Every time a public agency buys more equipment someone else goes on public payroll and a man in the private sector stays home. We do have contractors in the dredging business. They depend on dredging business to survive and they employ Operating Engineers, who also depend on this work for survival. I firmly believe that this work contracted out will be cheaper in the long run to the taxpayers of the State of Washington.

Respectfully,

Victor W. Padham

Victor W. Padham
Business Agent

VWP/eh

Response

See Building and Construction Trades Council response.

August 30, 1976

George Garris
106 Maple Park
Olympia, WA

Dear Mr. Garris:

After attending the meeting August 25th I have different views on the restoration of Capitol Lake.

No. 1 There is no need for the State to go into the dredging business. I am an operating engineering, Local 612, and every time the State buys a piece of equiptment another operator is put out of work. If a contractor does the work he can also furnish the dredge that would be idle 8 to 10 months out of the year if the State buys there own. There will be a lot of opposition from the operators and also the A.G.C., and so on if the State goes ahead with the plans as they are now. There are several ways to do the job with a few changes that would save a lot of the tax payers money.

I would be glad to give my ideas anytime somebody would like to hear them. I'm all for restoration of Capitol Lake if done in the right manner.

I thank you.

James Truglio

James Truglio
Local 612, Tacoma

Response

See Building and Construction Trades Council response.

John W. James
2919 South Central Street
Olympia, Washington 98501

August 30, 1976

Mr. George C. Garris
Dept of General Administration

Dear Sir:

Last Wednesday I attended the hearing you held about Capitol Lake and thought you and your staff did a fine job. However, some valid points and questions were raised in the discussion which should be addressed in your final report and solutions provided.

The consulting engineer brushed off the lady who raised the question about downtown flooding but she was correct. During periods of heavy run-off and high tides, the lake level must be reduced at low tide to make capacity for the run-off which will be held back by the high tide. This capacity is the inches of lake level reduction times the surface area at this level.

Reducing the lake area with the fills you propose will substantially reduce this capacity and aggravate an already bad problem.

Two solutions come to mind. First, greater spillway width, a second spillway or pipe conduits should be installed at the dam to give greater volume release during low tides. Second, the lake surface area at the critical level should be increased, possibly by dredging the east side, the filled area near the brewery or other lake sections.

Sincerely,

John W. James

Response

The point mentioned concerning dam spillway capacity was discussed with the operators of the dam. They report that they have experimented with several different methods of operation to reduce flood damage, but with little success. Independent hydraulic calculations were also made to determine the magnitude of runoff and the ability of the dam to handle the volume. The problem is not spillway capacity, which is fully adequate to handle the volume of the lake, but the relationship between runoff volume into the lake and dam closure due to high tides. The lake's volume is simply not large enough to store a high volume of runoff during period of high tides.

August 31, 1976

George C. Garris
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Re: Draft EIS Capitol Lake Restoration -
Capitol Lake Recreation Plan

Dear Mr. Garris:

Thank you for sending the material on Capitol Lake to us for our review. The documents are well-prepared and generally seem to be quite complete. This agency supports the proposed dredging project and recreational use of the lake and its shorelines.

The proposed project is within the jurisdiction of the Shoreline Management Act. Thurston County has the authority to issue a permit, and the Department of Ecology has permit review responsibility. The proposed development is consistent with the Thurston County Master Plan, and as the situation now stands, we see no problem with this approval.

There is an established flood control zone on the Deschutes River, but the lower administrative boundary is located at the falls, which is not included in the project area. No flood zone permit will be required. However, since the Deschutes River does flood, the 100 year flood elevation in the Capitol Lake area should be addressed with respect to the proposed elevations of the fills and new construction for recreational purposes. Perhaps raising the grade one or two feet would effectively flood proof the planned improvements.

The following comments are specific to the indicated draft EIS:

Restoration

1. Perhaps the alternative of removing the dam and allowing the estuary to naturalize should be included .
2. The descriptions of the lake do not clearly state that the lake is a man-made reservoir.
3. From the point of view of aesthetics, and reduction of water surface area, a definite cutoff limit (time and amount) on in-basin disposal of spoils could be made.
4. The water quality study proposed by the Department of General Administration and the Department of Ecology should be described.
5. Specific plans for effluent discharge from dredge spoils disposal sites are to be submitted to this department for review and approval.

Recreation

1. Disposition of sanitary wastes from the proposed facilities and the resulting environmental affects should be addressed.

We appreciate the opportunity to comment on these proposals, and hope our comments will be of assistance to you.

Sincerely,

Rosemary L. Walrod

Rosemary L. Walrod
Environmental Review Section

RLW:bjw

Response

Floodproofing Requirements, Recreation Plan

This point will be considered in the preparation of final plans and specifications for grading for recreational areas. Structural improvements are extremely limited, and flood hazard should not prove to be a problem.

Alternatives

The alternative of dam removal was not included in the DEIS because it did not appear to be in keeping with legislative intent. It is a technically feasible alternative, however, and has been addressed on page 87 of this FEIS.

Project Description

The project description has been modified to explicitly state that Capitol Lake is a manmade reservoir. See page 3 of this FEIS.

In-Basin Disposal Limitation

The amount of fill originally anticipated to be disposed within the lake perimeter was 644,000 cubic yards (Design Engineering Report, page 26). As a result of modifications in fill locations and amounts at the request of the Washington State Department of Fisheries and the U.S. Fish and Wildlife Service, this quantity has been reduced to approximately 257,000 cubic yards. The time required to complete "in-basin" disposal has been reduced to the initial dredging period only. This could be 9 to 12 months if one dredge is used, or as short as 6 months if two are used.

Water Quality Study

The Restoration DEIS (page 35) notes that the proposed lake restoration program would not correct the lake's coliform problem. The water quality program referred to, which will address this problem, is underway under the direction of the Department of Ecology. The study is designed to identify the extent and sources of significant pollutants in the lake and recommend corrective action by the appropriate jurisdictions. The study will be completed in approximately 1 year.

Plans for Effluent Discharge, Spoils Disposal

We concur; no further response required.

Disposition of Sanitary Wastes

The Recreation DEIS (page 37) notes that the proposed restrooms will require connection to municipal sewerage systems. Impacts to this system would be comparable to those of other public installations and are not expected to be significant. Solid waste collection and disposal will be under the authority of the Department of General Administration (except for those facilities administered by Olympia and Tumwater), similar to the remainder of the Capitol Campus. Disposal will probably be by sanitary landfill; the magnitude of the waste contributed by the proposed recreational facilities is not significant in terms of total volume of waste processed at the landfill site.

2315 65th Court SW
Olympia, WA 98502

August 10, 1976

Mr. George C. Garris, Manager Facilities Planning
Department of General Administration
106 Maple Park
Olympia, WA 98504

Subject: CAPITOL LAKE RESTORATION:
Responce to Draft Environmental Impact Statement

Dear Mr. Garris:

I am sending to you, herewith, a rather hastely prepared responce to the Draft EIS on the Capitol Lake Restoration. I have devoted many hours and days investigating the problems, discussing them with CH2M-Hill representatives, and finally, reviewing the Draft EIS.

In view of this expenditure of time and effort, I wonder if it would be possible to circulate copies of this responce to those on the EIS distribution list as well as the State Labrary.

Unfortunately I will be unable to attend the public meeting August 25. I trust that my responce will be given just consideration in my absence.

Your cooperation and courteous attention in this matter is much appreciated.

Sincerely,

S.F. Jerry Cook, PhD

Enclosure

cc: CH2M-Hill ✓

CAPITOL LAKE RESTORATION:

Response to Draft EIS

S.F. Jerry Cook PhD
2315 65th Court SW
Olympia, WA 98502

August 9, 1976

IN GENERAL

The "problem" with Capitol Lake began in 1951, with the construction of the 5th Avenue dam. A decision was made at that time to sacrifice the Deschutes estuarine identity for the sake of a more aesthetic lake. Apparently the estuary had deteriorated to a point where little opposition could be found.

Underlying the aesthetic considerations, however, was the protection of the Port of Olympia from the constant threat of sediment deposition in the ship channels. Capitol Lake was constructed in large part as a sediment sump for the Port. Now the lake is undergoing a natural senescence that most assuredly was anticipated at the time of the lake's construction.

The I-5 constriction greatly accelerated the natural evolutionary process in the Upper Basin. This has created a riparian wetland community in this upper basin of the lake. Ironically, these habitats are so rapidly disappearing throughout the state that there are laws in effect to protect such wetlands from eventual extinction.

We are now faced with value judgements similar to those confronted in 1951. But this time the judgements must be made almost exclusively on the basis of aesthetic subjectivity. These include:

1) Is the wildlife and fisheries sanctuary in the Upper Basin worth preserving?

2) If so, should these wetlands be sacrificed for the sake of a few more years of open water in the delta region of the Middle Basin?

3) Is open water in the upper portion of the Middle Basin essential to its aesthetic qualities, or should it be permitted to follow its inevitable evolutionary course back to a semi-estuarine condition?

4) Does the cost of the project to the taxpayers justify the benefits and/or sacrifice?

5) Finally, is it possible to find some solution that would satisfy most aesthetic tastes and at the same time preserve the valuable fishery and wildlife resource of Percival Cove and the Upper Basin of the lake?

Unfortunately, these issues were not addressed in the Washington State study; their charge was to determine the engineering feasibility of physical modification to the basin. The subsequent draft E.I.S., prepared by CH2M-Hill,was heavily weighted in favor of defending the physical modification proposal presented in the Washington State report. CH2M-Hill, however, was well aware of objections and questions raised but chose to counter these with many rationalizations, half truths, and inferences. Their conclusions that proposed modifications to the Upper Basin (in particular) would have minimal environmental impact is open to serious question.

UPPER BASIN

Defence for retaining current identity.

The Upper Basin of Capitol Lake has essentially stabilized to a point where very little sediment is now deposited in this area of the lake. With this stabilization has come an ecological diversity characterized by a river channel and delta, wetlands marsh, nd riparian

woodlands.

This is a valuable resource. The area is developing into a small wildlife sanctuary where species of birds and mammals less tolerant of mans intrusions can seek refuge; where winter steelhead runs provide peace and solitude for a large number of local fishermen.

The river, from the old brewery to the falls, is suitable spawning grounds for upstream salmon and steelhead migrants. Both species have been observed spawning in the area; some of these are those that have been unable to negotiate the ladder.

Perhaps more important to the fishery resource are the shallows and marshy wetlands that provide such highly productive nursery areas for downstream juvenile migrants of these species as they head for the sea. Thousands of these natural-spawn young fish can be seen in this area during the springtime, gaining strength before venturing into the hostile open waters of the Middle Basin.

Other passive recreational uses are made of the area: bird watching, canoeing, sight seeing, or just wandering down to look around and talk with local fishermen. The area also provides a high educational potential with a great diversity of plants and animals. There is even a newly constructed beaver lodge clearly visible downstream from the old brewery.

There is nothing "wrong" with the Upper Basin; the current ecological, recreational, economic, and aesthetic identity of this basin of the lake IS worth preserving.

Potential adverse effects of dredging the Upper Basin.

The proposal to dredge the Upper Basin will destroy much of its current identity no matter how it is rationalized. Although some of the wildlife habitat may remain unaffected, much will be lost, as will those species with spacial and other requirements unable to adjust to the reduction in habitat and the disturbance.

It is more difficult to speculate on the effects of the dredging on the steelhead and salmon runs. Dredging, per se, should not impede upstream migration; these species have survived far greater obstacles imposed by man than this. But population levels of these important game species are regulated by many factors and the numbers of fish able to return to their spawning grounds are largely dependent upon recruitment from their spawning efforts. The potential destruction of spawning areas in the Upper Basin, and the destruction of nursery areas for juveniles returning to the sea, could seriously reduce natural-spawn fish. There are few enough fish now! Dredging can not help.

There are other potential adverse effects of dredging that should also be considered. The first is the possible effect of dredging on the up-stream river bed stability. Despite assurances by WSU engineers to the contrary, the possibility still exists that dredging will cause an upstream readjustment in the river bed. Even a slight lowering of the stream bed could be disasterous to the tentatively stabilized marsh areas and riparian flood plain. One good flood could wash a large portion of this area well into the middle basin. CH2M-Hill did not address this possibility in their EIS. They must be very confident.

Another serious concern is the deposition of dredge spoils. For all the rhetoric about a potential increase in wildlife habitat, rapid re-vegetation, and transforming the sediment dump into a natural component of the Upper Basin, such is not likely to be the case. This is particularly so in the case of periodic "maintenance" dredging which is proposed for every 2 years. Under these conditions, the sediment dump areas may become ecological, recreational, and aesthetic wastelands for many years to come.

Stream channelization with protective groins, rip-rap, or concrete may at times be necessary to prevent road washouts and similar problems. But such protective measures are frequently ecological disasters. A diversionary groin in this case will wipe out much of the protective and productive edge, or littoral zone, so necessary for fish and wildlife.

It is possible that some modifications in the Upper Basin could benefit the fishery and passive recreational pursuits; perhaps even enhance the area for wildlife and educational purposes. But the area would have to be properly managed for these purposes. SUMPING AND DUMPING IS NOT THE ANSWER.

MIDDLE BASIN

The Middle Basin "restoration" proposal does not present the ecological or recreational concerns of the Upper Basin, aside from the sacrifice of one for the other. The porposal does, however, raise another issue: Do potential benefits to be derived from the project justify the expense? At a time when the State is hard pressed to fulfill fiscal

obligations to education, general services, disaster relief, and other priority needs, it is difficult to rationalize a $2-$3 million expenditure for a face lifting for Capitol Lake*.

In a letter directed to local legislative representatives and the governor, the following points were raised:

> "...There is no doubt but that the lake is sedimenting in, particularly in the Middle Basin. But is this some kind of natural catastrophy? Does it affect the publics health or welfare? Does it cause the loss of jobs or other economic disasters? Or is this a purely aesthetic issue? If so, who's concept of aesthetics; at what price!.."

Aesthetics are relative to the beholder. In the minds of some, marshy wetlands or even tidal flats would be preferred over speed boats, water skiers, and sea planes. For the cost, it is likely others could grow to appreciate the aesthetic qualities of semi-esturine wetlands.

It is also possible that dredging the Middle Basin could create more problems than it is attempting to solve. The draft E.I.S. acknowledges the possibility of an increase in surface blooms of planktonic algae if the lake is dredged and the retention time of water in the Middle Basin is increased. Conspicuous and unsightly algae blooms have already been observed on Capitol Lake. This is a natural phenomenon characteristic of most relatively shallow and nutrient-rich lakes. These blooms will continue whether the lake is dredged or not. Nothing in the proposal suggests an enhancement of the visual qualities of the lake from this standpoint. Indeed, dredging could contribute to a worsening of this condition.

*Cost estimates for this project have fluctuated from a high of upwards to $4 million several months ago, down to a recently published estimate of $1.5 million.

It is also somewhat curious that a "restoration" project of this magnitude did not address itself to problems of water quality, especially in view of bacterial contamination that has led to the closing of the lake for swimming by public health interests. The likelyhood of an improvement of this condition as a result of dredging would be highly speculative.

PERCIVAL COVE

Percival Cove is another matter. No one can rationally argue against the need for protection and enhancement of this valuable resource. But the enhancement of Percival Cove has little to do with the dredging of Capitol Lake.

In his reply to the letter sent to him opposing the Capitol Lake project, Governor Evans responded as follows:

> "We are in obvious disagreement on the need for dredging Capitol Lake. Failure to dredge and restore the lake will result in its extinction as a fisheries development and recreational resource. Sedimentation has reduced the average depth of the upper basin from 8 feet to approximately 2 feet since 1951, has serverely restricted use of the middle basin for boating and water sports, and has reduced the lakes ability to provide natural fish food from over 100 pounds per acre to approximately 12 poinds per acre in some areas of the Lake. The Lake is one of the State Department of Fisheries' principal salmon rearing facilities; that Deaprtment estimates that the value of the State's sport and commercial salmon catches will be reduced by as much as $450,000 per year because of our failure to initiate dredging by mid-1976."

It is obvious that the governors primary concern is for the Percival Cove fishery. With all due respect for the governors concerns, the dredging of Capitol Lake will have little influence on the Percival Cove salmon rearing program one way or another except as it is directly related to that facility. The fish are reared and artificially fed in Percival Cove. When they are released, the lake level is lowered in an

attempt to get them out of the lake and into the Sound. Deepening the Lake would not aid in this effort.

The statement pertaining to "...the drop in the lake's ability to provide natural food..." due to sedimentation is debatable. It is also inferential and misleading. Does the Governor's advisor suggest by this statistic that were the lake dredged they could raise more fish in Percival Cove?

There is no doubt but that the Percival Cove fish rearing program could be enhanced with some selective dredging and physical improvements. Perhaps the dredging of a more effective release route from the cove to Budd Inlet would also be desirable. But aside from the fact that the financing of a Percival Cove restoration project may ride on the approval of the Capitol Lake project, the two projects are relatively unrelated and should be addressed as separate issues.

ANOTHER ALTERNATIVE

In view of the above concerns and considerations, it is suggested that another alternative to the "restoration" of Capitol Lake be considered:

1) Current plans to dredge, fill, and channelize the Upper Basin should be abandoned.

2) Dredging in the Middle Basin should be limited to a relatively shallow channel from the Interstate-5 constriction to

the Burlington-Northern bridge, and that necessary for Percival Cove egress.

3) The Upper Basin should be managed as a wildlife sanctuary, a fishing resource, and for passive recreation.

4) The Percival Cove project should be carried out as planned.

5) Studies should be initiated into the possibility of a sediment sump in the Deschutes River upstream from Tumwater Valley if a sediment trap appears inevitable.

6) Studies with a more ecologically oriented base should be considered to address problems of water quality and other issues raised as a result of the WSU report and the Draft EIS. Decisions are too important in this case to be left to cosmetic considerations alone.

Response

Because many of Dr. Cook's comments refer specifically to work by Washington State University on the proposed project, the Department has asked Dr. John Orsborn of WSU's Albrook Hydraulics Laboratory to respond to those comments. The following response incorporates Dr. Orsborn's comments.

Wildlife and Fisheries Sanctuary, Upper Basin

The original dredging plan considered for the upper basin involved extensive changes to the existing habitat. This was proposed as the most direct and cost-effective way of achieving the desired lake environment throughout the Capitol Lake system, as expressed by the Capitol Lake Coordinating Committee (Recreation DEIS, appendix B). Largely in response to the concern expressed by Dr. Cook, the League of Women Voters, the U.S. Fish and Wildlife Service, and others, an alternative has been developed that would limit dredging to deepening of the two main channels and providing the sediment trap. The existing larger island would remain intact (except where accreting to the shore), and the two existing smaller downstream islands would not be joined (see figure 1). The training groin originally proposed on the Tumwater City Park side would remain. This alternative not only has a higher sediment trapping efficiency than the original proposal but would avoid many of the adverse effects cited in the Restoration DEIS and by Dr. Cook. The efficiency of the present proposal and other alternatives considered are discussed in the WSU analysis included at the end of this FEIS.

The object of the original plan was not to "sacrifice wetlands in the Upper Basin for a few more years of open water in the delta region of the Middle Basin" (see Dr. Cook's letter, page 1, last paragraph) but to maintain a balance of uses between both areas through selective dredging. It is believed that the present proposal for the upper basin still manages to achieve this without the more severe biological impacts.

Scope of WSU and CH2M HILL Studies

Dr. John Orsborn made the following response. "The statement is made that 'these issues were not addressed in the Washington State (University) study; their charge was to determine the engineering feasibility of physical modification to the basin.' Although the sedimentation phase of the WSU studies was to follow up on the preliminary restoration study by Patrick J. Byrne and Assoc., and to determine 'how the Upper Lake could best be dredged so as to serve as a

settling basin for the rest of the lake,'[1] this was only one aspect of the total WSU studies. Emphasis was always placed on minimizing environmental impacts to the lake, and as the studies progressed the degree of Upper Lake dredging was reduced with each alternative.[2] Note that on page 75 of the WSU report item C-(4) is a basic consideration for the recommended dredging patterns. Item C-(4) states that 'the benefits of maintaining, or enhancing, the existing "natural" conditions of (the) Upper Lake which have developed since the construction of the highway fill.'

"The recommended changes in the Upper Lake on pages 77-80 were based on optimizing sediment retention in the Upper Lake while leaving in 'the rest of the Upper Lake in essentially its existing state' except for matters other than dredging such as land access improvements. On page 82 in paragraph 2, the alternative of dredging the entire lake to 1949 conditions was not recommended because 'it would remove valuable wetlands' in the upper lake (lines 6 and 7). The 'no dredging' Alternative No. 2 on page 82 emphasized accelerated eutrophication and decreased utility; it did not (in all honesty) mention marshes as a wildlife habitat benefit. Although wildlife habitat was not a designated part of the WSU study, brief follow-up hydraulic model studies of the Upper Basin were requested by CH2M HILL and performed by WSU. The primary objective of these studies was to look at alternative methods of dredging the Upper Lake <u>including the total abstinence of dredging there</u>."[3]

The Restoration DEIS attempted to portray as accurately as possible the impacts associated with the proposed action and each feasible alternative. It did not offer conclusions, and nowhere does it state or suggest that "proposed modifications in the Upper Basin would have minimal environmental impact." In fact, the section in the report covering unavoidable adverse impacts (page 59) states that "A permanent adverse impact will be the loss of some shallows in the upper basin. This will directly affect the productivity of that basin in terms of fish and insects, and the birds that prey on them. Loss of some marsh areas may result in the permanent relocation or loss of the wilder species of birds and mammals."

The statement is made by Dr. Cook that " . . . very little sediment is now deposited in this area of the lake." Dr. John F. Orsborn, comments: "This is a statement relative to the: (1) original volume of the Upper Lake as defined at

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[1] Page 71, paragraph 3, WSU report.
[2] Note especially recommendation 6a, page XX of September 1975 WSU report, and the common study objective in paragraph 1, page 5.
[3] Orsborn, John F. January 1976. *Supplemental sediment tests of Capitol Lake hydraulic model.*

the time of the Highway I-5 fill and bridge construction (an unknown); and (2) size of flood flows in the Deschutes River and their associated sediment loads. A peak flood of 6000 cfs will bring in almost four times as much sediment in the same time period as will a flood with a peak of 3000 cfs. The larger the floods, the more sediment that will be deposited in the Upper Basin. Larger sediment (sand) in the main channels will tend to be carried out of the Upper Basin. On page 3 (paragraph 22, line 2) of the WSU report, it is stated that 'the accumulation of sediment in the Upper Basin has come to a balanced condition with the Deschutes River flows.'

"What this means is that the deposition pattern has been established, but it does not mean that the sediment deposits are stabilized. The Department of Ecology is beginning to monitor the rate of sediment accumulation."

Upstream Bed Stability

With respect to the question posed of " . . . up-stream river bed stability," Dr. Orsborn also comments: "If channels and/or sediment accumulation areas are dredged in the Upper Lake, after the very next flood, the bed will be rearranged, but lowering the stream bed does not increase the gradient of the stream. Contrary to Dr. Cook's concern about the 'washing away of marsh areas' by floods after lowering the stream bed, the physical control of the flow through the lake is at the bridge outlet. The larger the flood, the higher the water surface rises in the Upper Lake, thus forcing water into flood plain areas and temporary storage. Also, the upstream control of the riverbed level is the scour hole at the base of the falls. The only relatively deep and steep channels are in the vicinity of the I-5 bridge and the north and east shores where the flow accelerates to get through the bridge opening and to turn the outside of the bend along the shore. Small, deep, local areas exist in limited parts of the channel upstream towards the falls. During the drawdown period, a considerable amount of deposited material and channel patterns are rearranged in the Upper Lake."[1]

Deposition of Maintenance Dredge Spoils

As maintenance spoiling in the lake is no longer contemplated, no response to this point is considered necessary.

[1] Orsborn, op. cit.

Impacts of Proposed Groin

Dr. Orsborn: "The groin, if installed, was necessary to provide for maintenance of the point at the entrance of the west secondary channel. The groin, and other bank protections, were to be built with rock-filled wire baskets which have a tendency to fill with sediment and promote vegetative growth for natural shoreline protection and habitat. Much of the littoral zone in the Upper Lake will not be 'wiped out' with the groin."

Variance in Dredging Cost Estimates

Dr. Orsborn: "Cost reductions for dredging are due to: (1) recommended reduced dredging by the WSU study, as opposed to dredging to 1949 conditions; and (2) local (in lake) dredge spoil deposition as opposed to the 'preliminary plan' of hauling it away. Also, there are no longer the costs nor the impact of a dredge spoils treatment facility on the south shore of the Upper Lake."

Retention Time

Dr. Orsborn: "The recommended dredging in the Middle Lake is only to provide a sediment trap downstream of the I-5 bridge and to remove shallow bar hazards just to the north. This will not significantly alter the retention time in the Middle Lake." Although the DEIS cited the possibility of some adverse effects due to slightly increased retention time, the probability is very low. Less than 1/500 of 1 percent will be added to the lake volume.

Water Quality

Dr. Orsborn: "Several aspects of the WSU studies did address the water quality problems in the swimming area of the Lower Lake. Verbal suggestions were made such as using low head circulation pumps to decrease stagnation in the swimming area. Supplemental studies in the hydraulic model showed that island fills in the Lower Lake would not improve circulation in the swimming area.[1] Improvement in swimming conditions was never suggested by anyone as being a dredging benefit."

Percival Cove Fishery Not Related To Dredging Of Lake

Dr. Orsborn: "Are not the small fish temporarily reared in the main lake after release from Percival Cove and prior to release to the Sound?"

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[1] Mih, W. C. 26 May 1976. *Supplemental flow and sediment tests of Capitol Lake hydraulic model.* Washington State University.

Upper Basin Management

Dr. Orsborn: "During the May 26th meeting (with Dr. Cook--ed), it was suggested that one alternative would be to maintain the Upper Basin in an 'untouched' condition, monitor its changes and utilize it as an environmental study center with Federal (HEW or other agency) support."

Upstream Sediment Sump

Dr. Orsborn: "The upstream sediment sump is not financially or economically (land price, deposition areas) feasible nor is it necessary, even if the Upper Basin is not dredged."

The present proposal for the upper lake should avoid many of the adverse impacts cited by Dr. Cook. By only dredging the two main channels and providing a sediment trap, shoreline habitat will not be significantly disturbed; yet the present wetlands characteristics of the upper lake will be maintained.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

September 28, 1976

Mr. George C. Garris
Manager of Facilities Planning
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Dear Mr. Garris:

We received your undated letters concerning the Capitol Lake Restoration and Recreation Plans and the accompanying draft environmental statements on August 6, 1976. We regret that we have not been able to supply formal comments by the August 31 date you requested. We trust that these comments will nevertheless be received and found useful in project planning and in the preparation of final EIS documents.

The comments which follow are the official comments of the U.S. Fish and Wildlife Service, but not necessarily of the Department of the Interior. They supplement our July 7, 1976 letter in regard to your working draft EIS on the restoration plan. Accompanying your letters were the following documents, evidently intended to be reviewed conjunctively.

A. Capitol Lake Restoration-Design Engineering Report. July 1976.
B. Capitol Lake Restoration-Draft Environmental Impact Statement July 1976.
C. Capitol Lake Restoration-Summary. July 1976.
D. Capitol Lake Recreation Plan-Design Report. July 1976.
E. Capitol Lake Recreation Plan-Draft Environmental Impact Statement. July 1976.

In addition, we earlier received the following documents:

F. Preliminary Report on a Sediment Removal and Maintenance System for the Upper Basin of Capitol Lake. August 15, 1974.
G. Hydraulic and Water Quality Research Studies of Capitol Lake Sediment and Restoration Problems. September 1975.

H. Saving a Beautiful Lake. circa 1975 (author unknown).

In connection with the Capitol Lake restoration proposal, the following references were found useful and instructive:

I. Diet and Growth of Juvenile Salmon in an Estuarial Impoundment. by Robert Engstrom-Heg. in Fisheries Research Papers. Washington Department of Fisheries. Volume 3, No. 1, August 1968.

J. Chemical and Biological Factors for Consideration in the Management of the Deschutes River-Capitol Lake. by Earl L. Finn Jr. and Marvin A. Tarr. Wash. Department of Fisheries. March 1975.

K. American Wildlife and Plants. by Alexander C. Martin, Herbert S. Zim, and Arnold L. Nelson. U.S. Fish and Wildlife Service. Dover Publication. 1961.

L. Common Marsh Plants of the United States and Canada. by Neil Hotchkiss. U.S. Fish and Wildlife Service. Resource Publication 93. Washington, D. C. Dec. 1970.

This letter will attempt to respond to both the restoration and recreation plans and impact statements together. Our review will not evaluate adherence to the SEPA guidelines format. We found review and commenting on this project to be difficult owing to the existence of 5 or 6 interrelated documents under separate covers. These comments will therefore take a topical approach. Where practicable, page numbers will be cited by referencing the applicable document (or reference work) identified above according to the letter preceding it.

While there may be a good tactical reason for publishing the several reports and plans as separate documents, their review is made confusing for the uninitiated reader, particularly if not read in the most logical sequence and the reader attempts to relate the material to earlier proposals (as in document F) which are no longer part of the project. We point out, for instance, that a clear picture of the totality of the proposed action cannot be obtained by reading any single section or any single document in the set. Consolidating the documents into one or two reports would eliminate the necessity to cross reference, reiterate, summarize, and duplicate drawings, etc. a better continuity would be achieved. In addition, the bulk of the documents could be greatly reduced by utilizing the full page and printing on both sides. All pages, including maps

and drawings, should be numbered for more convenient reference.

Illustrations - Generally speaking the maps and drawings are excellent. However, in some cases (especially A) they require better labelling to indicate which ones are no longer part of the proposed action. We suggest you include a map of the entire Deschutes River basin and that the river basin be designated a "watershed" or "drainage" to distinguish it from the lake "basins". The locations of Percival Cove, Tumwater Falls, Fifth Avenue Dam, the prospective "out of basin" disposal sites, Federal harbor lines or navigable waterways, property boundaries, and other such features could be more clearly shown. Additional drawings for recreation development proposals (as at J, p.11) could add greatly to an appreciation of the entire proposed recreation network for all basins.

General Assessment of Project - Our overall impression is that project formulation and planning have progressed greatly and the project, as now proposed, is considerably improved over earlier proposals--in terms of minimizing adverse environmental impacts and enhancing recreational opportunities. We are particularly pleased with the wildlife and nature interpretation oriented aspects--especially in relation to the upper basin. We do have some remaining concerns about fish production in the middle and lower basins--about which we will be making suggested modifications in the restoration and recreation plans.

At this point, I wish to reiterate the Services position relative to dredge spoil disposal in West Bay of Budd Inlet (A,pp.24 &29). The EIS has presented no data on the impacts of filling in West Bay. Also, contrary to statements in the EIS (B,p.39; C, p.14), we view such an action as effecting a change in actual land use. The Service will adamently oppose filling of West Bay until a necessary water dependent use is determined and provisions are made and agreed upon for compensation of fish and wildlife losses.

Public Involvement - We believe the Department of General Administration is to be commended for its initiative in using public opinion surveys and citizen workshops in formulating this project. To the extent that the proposal is successfully consumated, we believe that success can be attributed to the maximizing of citizen involvement and the full public airing this proposal is receiving.

Scope of Program and Studies - Although this project is an ambitious undertaking and reflects intensive studies, it is

conceptually lacking--owing to the arbitrary and jurisdictional restraints placed on its scope. What is abundantly clear from these documents is that any undertaking which addresses only dredging and recreation hinderances (A,p.10) is treating the symptoms and not the problems. It seems clear that unless something is done to drastically reduce the cause of sedimentation throughout the drainage basin and to correct recurrent water quality and health/sanitation problems, the project will be seen as having little merit or as being negated by these factors. Also, there must be a willingness to examine all truly feasible alternatives available for dealing with the problems presented by the fact of Capitol Lake's rapid siltation.

Heretofore, coordination with citizens and local governments by the Department has been quite close. What will be required, however, is State assumption of an overall program addressing problems and needs of the entire drainage basin. It will not be enough to look only at the Lake and to "study" sedimentation sources or "monitor" pollution discharges. A closely synchronized and cooperative effort between responsible State agencies is essential if expected benefits from this project are to materialize. Unless this is done, the Department (or State) may be compelled to close the Lake permanently to swimming and other water contact sports.

Need for Total Basin Management - A more carefully integrated and comprehensive management program for the entire drainage basin's management is needed. Indeed, this should be the premise from which the immediate problems and concerns are approached and held in perspective. More precisely, piecemeal and disjointed actions need to be brought together with a program that includes the following elements under some central or coordinated management system:

1. Erosion and sediment control-(roads, forest practices, etc.)
2. Water quality (pollution) control-(sewage, fertilizers, storm runoff, etc.)
3. Lake dredging & depth maintenance-(frequency, timing, methods, etc.)
4. Lake water level management-(periodic drainage, salt flushing, etc.)
5. Lake & river debris removal-(patrol, removal method, disposal, etc.)
6. Fishery management-(artificial propagation, passage, harvesting, etc.)
7. Wildlife management-(preservation areas, habitat enhancement, etc.)

8. Recreation use management-(intensity, type, enforcement, etc.)
9. Historic and cultural preservation-(historic, prehistoric, Capital, etc.)
10. Education and interpretation program-(history, trails, vistas, etc.)
11. Structural development regulation-(commercial, urban encroachment)

Unclear Objectives and Goals - Although the documents refer in several places to "preserving" Capitol Lake, "saving the Lake", and "restoring" the Lake, they are actually rather vague on what the inherent qualities are which warrant a restoration project of this magnituede. Probably the problem stems in large measure from certain misimpressions and a lack of candidness about the character of Capitol Lake and its unavoidable fate.

The most important misconception needing to be cleared up about Capitol Lake is the fact that it is not an ordinary or normal lake. In fact, it is not a lake, but a reservoir. As such, it is behaving much as all reservoirs behave; i.e., they tend to silt in very rapidly with the usual result being unsightly, exposed, and often sterile mud banks or bottoms. Even though Capitol "Lake" is actually a reservoir, we will continue to refer to it here by its commonly accepted name. To save a dying lake (B pp.45&46; and H) presumes that it once lived, or more accurately, contained and supported life as natural lakes do. Capitol Lake is not natural. There is little about it which is natural. Normal lakes do experience life and death on a geologic time scale. However, Capitol Lake is not "dying" in the sense that normal lakes go through successive ecologic stages until converted to dry land by accumulation of vegetation and silt. Nor can the rapid rate of filling be attributed to man caused eutrophication, although it is a factor.

Capitol Lake was formed artificially in 1951 (Engstrom-Heg. says 1950, I, p.5) by filling across Budd Inlet and constructing the Fifth Avenue dam (see A,p.1). In just 25 years, the basin volumes have been reduced by 77 percent in the upper basin; 13 percent in the middle basin; 6 percent in the lower basin; and an undetermined amount in Percival Cove (A,p.1). According to the 1974 U.S. Geological Survey report cited in A (p.1): the upper basin can be expected to fill almost completely by 1980 (6 to 8 years); the middle basin by 2035 (60 years); and the lower basin by 2105 (130 years).

Capitol Lake had less chance than most reservoirs of developing even the resemblance of a natural and stable, fresh-water ecosystem. This is because of the twice annual drainage for fish release and flushing with salt water to control aquatic "weed" control and prevent health hazards (see A,p. 8; B,p.2 & p.24; and J). Even for an artificially regulated reservoir, these are unusual practices where there is any expectation of sustaining self reproducing fish stocks and other aquatic life.

Reference is made to restoring the Lake's "original character" (C,p.14). Whatever this character was, it was surely transitory. Restoration implies bringing the Lake back to some pre-existing viability or equilibrium condition. This condition, in fact may never have existed for the short "life" of Capitol Lake. It is not at all clear what is supposed to be restored with the proposed action or what this restoration represents.

Reference is made also to "restoring" the Lake depth to 1949 contours (A,p.5;and H) and to restoring the long term usefulness of the Lake (A,p.6). However, 1949 was before the Lake even existed. Even with the proposed dredging program, long term usefulness in this context is less than 50 years. At some points (B,pp.41,45, and 52) it seems inferred that merely deepening the Lake is itself restoring or preserving it. At one point (A,p.8) restoration is almost equated with dredging. Dredging, however, will not restore the quality of the Lake's waters and the restoration effort will be largely wasted if people are unable to use this attractive Lake due to sanitation problems (B,p.24, and 35; E,p.38).

From the moment the dam went in, Capitol Lake has been filling up with sediment. This "degradation" (B,p.57) is inevitable and inexorable. It can be "halted" only by curbing the sources of sedimentation in the Deschutes River and Percival Creek drainage or by removing the dam. No dredging plan can provide "ultimate preservation of the Lake" (A,p.52). The EIS should be candid about these inescapable facts. One of the "suggested" goals for the Lake is to encourage Deschutes River Basin land uses that will decrease sediment loading (E,p.59), but, the documents contain no program or vehicle for doing this.

Contrary to the inference (C,p.11; B,p.1) that they are "established", the goals set for the Lake appear to be rather tentative and fluctuating and may not have been either

realistic or consistent with each other. The goals are variously stated or frequently left uncertain at different places (e.g. A,p.ii, & p.4; B,p.1). It is only when we get to documents D(pp.30and 31) and E(pp.59&60)that we find, explicitly stated, the goals which are said to have guided or determined the planning of this project. It would be helpful to either state these at the outset of each document or refer the reader to them at those points. Among the goals listed on page 59 are as follows:

1. Rehabilitate and enhance the lake as a recreational resource.
2. Preserve the visual quality, wildlife, active and passive uses, and other environmental characteristics.
3. Preserve the biological processes within the upper basin, except in the areas required for desilting operations. Note: We presume this includes the Capitol Lake Coordinating Committee goal calling for "--preserving the wetland environment in the upper basin while assuring its maintenance as a lake" (B,pp.55&56), Also, our impression is that desilting operations in the upper basin are no longer a feature of the project plans.
4. Conserve the terrestrial vegetation within the entire visual basin.
5. Protect the key fish propagation areas such as Percival Cove. Note: Among the project justifications are increased fishery benefits (C,p.14 etc.) predicated on restoring fish habitat in the middle basin and preserving that habitat in the lower basin.
6. Support Department of Fisheries and other programs to manage production of shellfish and salmon in both natural and artificial environments. We wish to discuss each of these goals in some detail as to how they are planned for and analyzed in the various documents and their compatibility with one another.

Recreation Use Enhancement - Although it is stated (A,p.ii) that restoration is the basis for the recreation plan, it is doubtful that present or past levels of water recreation on the Lake are sufficient justification for the restoration costs. However, the potential and planned urban recreation ought to be a most stressed project objective (D,p.29). Rather than emphasizing the restoration aspect with unfactual and emotional appeals, we believe the emphasis should go on the impressive

recreation use opportunities which go beyond restoration and tie in well with the Capitol Campus beautification, historic commemorization, and visitor attraction themes.

The recreation enhancement plans revealed in documents D and E are truly exciting. They reflect a sensitivity and creative solution to providing greater recreational diversity and bringing people closer to nature in an urban park situation. The desire and intent is to retain a lake environment, at least for the middle and lower basins. Dredging will be required to do this. More explanation is needed however, on the rationale for filling within a conservancy environment (D,p.29; and B,p.20). It is debatable as to whether the proposed work truly provides more or better access to the shoreline or provides better use of the Lake when it is considered that the total surface is to be substantially diminished.

Much of the passive recreation activity is to be oriented toward observation of fish and wildlife and flora of the basin. It thus will be important to maintain the right conditions of habitat and seclusion for wildlife and to regulate the dredging, boater use, and user activity accordingly. We suggest reexamination of any proposals to facilitate people access to the east side of the Lake, particularly in the upper basin (refer to E,p.30).

Lest there be a further perpetuation of misinformation, a point which should not be forgotten in relation to any nature interpretation program (D,p.9) is the fact that the Lake's biota is largely artificially maintained or governed. It is not accurate to say the Lake possesses "unique" (B,p.1) or "fragile" (C,p.1) biological resources. For these reasons also, preservation of biological resources in the Lake proper, in terms of maintaining natural systems as a controlling objective (see A, p.4) is not the concern it might ordinarily be with lakes and reservoirs. Thus dredging and filling are not expected to have the serious consequences they otherwise would, although they must still be regulated with regard to artificial production. The upper basin has succeeded to a near natural condition in terms of aquatic wildlife habitat, however, the waters can not sustain balanced, natural fish populations under present management practices.

Wildlife Habitat Management - The illustrations of vegetative communities or flora (B,p.14; D,p.51) and bird habitat (B,p.16; E,p.16) are generally quite good. Lists of birds, mammals, and fish are given but, there is no way of quantitatively relating these descriptions to the different basins and to specific

sites to be impacted. Thus it is difficult for the reader to evaluate the effects of various proposed activities. There is no information on the identification (such as lists), distribution, and significance of aquatic insects and other invertebrates (e.g. zooplankton) in relation to areas to be dredged, filled, spared, or restored by the project. References I and J may be helpful in this regard. More will be said about this critical item at a later point. Not much is said about the function of aquatic vegetation in the food chain of fish and wildlife using the Lake.

Emphasis on fish and wildlife resources has been given to the upper basin whereas impacts are likely to be substantial in the middle basin and possibly in the lower basin. For instance, much is made about sparing the marsh in the upper basin (A,p.8) and creating "new" marsh in the upper and middle basins (B,p.28 and p.49; C,p.3; D,p.v) but, not much (B,p.37 and p.57) is said about the fact that considerable marsh habitat would be lost in the process along the west shore of the middle basin (see B,p.14; A,p.25 and p.27). We disagree with your statement (B,p.36) that proposed dredging (and disposal) will have minimal impact on vegetation in the middle basin. We are doubtful that marsh restoration, etc. will increase breeding, nesting, and feeding areas for "those species temporarily displaced" (D,p.45).

We are pleased that your present plans call for doing as little work as possible in the upper basin, leaving it in a marshy state (B,p.41). We concur with your assessment that dredging of a Sediment trap (A,pp.4 and 6) is probably necessary and will tend to prolong the existence of a wetland environment for the upper basin (B,pp.28,53,55,56 &57), even though some shallow areas will be permanently lost. Dredging will slow the rate of siltation and suspend somewhat the accelerating process of vegetative succession to terrestrial plants which is now taking place (D,p.1; B,p.15 and p.28; A,p.10). Sport fishing would be improved in the Lake over current conditions (B,p.42).

We question, however, the requirement to place a protective gabion or groin and fill between the two islands in the upper basin (A,pp.6,13,and 14). We view this as "fighting nature" and question the advisability of groins in view of known flood forces (B,p.12). If on reanalysis it is decided that groins are necessary, we suggest they simply be carefully placed and the area between the islands allowed to accrete naturally. We had great difficulty trying to follow your discussion of aquatic plants, the weed problem, and whether or not marshes are valuable.

You have described cattails (Typha latifolia) as terrestrial vegetation (B,p.15 & E,p.12). However, cattails are customarily classed as aquatic or marsh vegetation (see L,pp.18&19). Because of this discrepancy, it is difficult to determine what is referred to in discussion contrasting aquatic and terrestrial habitats (see B,p.56). The implication is given (B,pp.39&49) that aquatic habitat will replace terrestrial and vice versa such that they balance out or there will be a net gain of needed terrestrial habitat (B,p.2 & p.36; E, p.28) with greater diversity of species (B,p.45). However, aquatic vegetation is scarcer in the basin and would suffer a net loss, contrary to implications at several points (E,p.29; C,p.3 & p.14) that "new" marsh being created with the project will result in a net gain. It is doubtful that more terrestrial habitat & less aquatic means greater diversity of wildlife.

The retention of aquatic vegetation or creation of marsh habitat is regarded in some contexts as providing a valuable biological resource (C,p.10; B,pp.52,55 & 57; D,p.6) and in other contexts as a nuisance requiring control (B,pp.13,35, 56 & 59). We are unable to determine from your discussion which plants are regarded as weeds (B,p.15 & p.57), but point out that Elodea canadensis and Potamogeton pectinatus are choice waterfowl food plants (see reference K).

Numerous references are made to the temporary redistribution (B,p.36), displacement (B,p.37), relocation (B,p.38), and migration (C,p.14) of wildlife species as a result of dredging disposal and other activity. In addition, assertions are made throughout the documents that nearly all impacts on fish and wildlife will be temporary, or insignificant, and rapidly restored or offset (see A,p.55; B,pp.2,36,37 & 38; C,p.14; & E,pp.41 & 43). These assessments understate the impacts. A net loss of aquatic habitats would definitely result. Where habitats are destroyed and a net loss of any habitat type occurs, there will normally be a corresponding net population loss for those species associated with and dependent upon the particular habitat type. Usually this is a far more significant factor than disturbances caused by proximity of people, automobiles, boating, etc. which is inferred as the most significant effect (B,p.42; E,p.30 & p.50; D,p.45).

It is doubtful that loss of shallows and marshy areas in the upper basin represents a significant impact for artificial fish propagation as suggested (B,p.59), because released juvenile salmon do not make much use of that basin. However,

the loss of this habitat (presuming it can be retained) would be felt by certain birds and mammals and possibly by downstream migrant fish from above the Falls. Also, the upper basin may serve as an insect regeneration area for when the Lake is flushed by salt water, since the salt water may not reach here.

Fish Propagation and Insect Production - Your list of fish species (B,p.65) contains 3 kinds. Heg-Engstrom (Reference I) lists 14 species. Improvement of fish production (B,pp.17 & 45; D,p.44) and fishing harvest (B,p.28) are given as major economic justifications for the restoration project, with a 40 to 50% increase in fish production benefits being predicted (B,p.40). Siltation of the Lake is said to have reduced insect production habitat resulting in reduced fish production (A,p.1 and p.10; D,p.27). Taking no action to restore the Lake would further curtail fish production (B,p.57), leading to its eventual demise (B,p.6; A,pp.57 & 58 and D,p.27).

Fish propagation should receive strong emphasis as a restoration goal. However, it depends on dredging and spoiling being done properly and in the correct locations. Maintaining or enhancing fish production is predicated on creating conditions which will lead to greater than present insect production. Thus increased fish benefits may not materialize if dredging and filling are done in the wrong place. According to Finn and Tarr (J,pp.5 & 6) "--Capitol Lake must be dredged to reclaim and preserve the lake for fish food production, recreation, and other uses. Much of the middle basin of Capitol Lake is no longer available for natural fish /food/ production because the deposits of sand are not a suitable substrate for insect (chironomid) production. Also "any dredging plan (1) should provide that the profile and cross sections of the lake bottom and the bottom materials be such as to enhance the very important chironomid population rather than to depress the population, and (2) should insure sufficient shallow area around the shoreline is available for smallfish to seek protection from larger predator species. Rehabilitative dredging to the 1955 condition in the middle and north (lower) basins of Capitol Lake, along with a long-term plan to prevent future sediment deposition in the two basins, is highly recommended."

Although you have quoted a portion of the above (B,p.18), your EIS and other documents do not indicate that any particular attention was given to insects and their former or present distribution in the development of dredging and filling plans. We are particularly concerned about dredging and filling along the west shore beyond the initial fill in the Lake's

southwest corner. Your Design Engineering Report (A,p.10) states that dredging should not be done within 150 feet of the west shoreline to protect fishery habitat. However, the filling proposed for that shoreline (see A,pp.25 and 27) would obliterate much of this habitat and is thus in conflict with a major restoration objective. As you have noted (B,p.17 and p.37), the shallows affect insect production and provide a highly productive nursery for juvenile salmon and migrant steelhead. Your EIS (B,pp.35 and 37) suggests only slight disruption of the habitat for the bottom organisms which are essential in the Lake's food chain. Although much of this discussion is directed toward the upper basin, it is no less true for the middle basin. Also, the lower basin is considered a good fish-feeding area (A,p.12).

Based on research in 1955 (Reference I) Engstrom-Heg found that the midge, Chironomus tentans, was by far the most important food item of chinook salmon fingerlings and most other fish species in the Lake. This midge comprised up to 95% of the salmon diet by volume. In 1955, midge production was almost 160 pounds per acre and was sufficient to raise 1,043,400 planted fingerlings to near maximum growth potential. Midge larvae were found only over sandy and clayey substrates containing silt and organic matter (I,p.21). The midge derives its food principally from the organic detritus derived from aquatic vegetation.

Engstrom-Heg made these observations prior to the Interstate highway fill which altered the Lake's hydrology and before serious siltation was evident. It was also prior to the proliferation of spiny ray fishes (principally the coarse scale sucker) which came out of the Deschutes and Percival Creek (Black and Trosper Lake) drainages and competed for food or altered bottom growing conditions.

Engstrom-Heg found midge production to be distributed throughout the Lake bottom; however, his charts (I,p.22) show production in the 0-12 feet depth to be greater than that below 12 feet. He also found that salt water intrusion caused greater mortality at depth (I,p.24) owing to the greater density of sea water which keeps it at Lake bottom. Thus shallower areas, and areas left shallow, stand a better chance of assuring greatest insect production and supporting fish by augmenting the artificial feeding done in Percival Cove. Percival Cove was found (I,p.24) to contain by far the richest midge and phytoplankton production. Dredging of hard

clay or clean sand areas could improve bottom habitat (B,p.42), provided it is not too deep (B,p.10).

Numerous references (B,pp.18,40,55,etc.) are made to the "natural"fishery production occurring in Capitol Lake. While it is appropriate to speak of natural insect or fish food production (B,p.18 and p.37;A,p.1), by and large it is incorrect to speak of natural fish production in connection with Capitol Lake. While there are some native runs of coho and chum salmon as well as steelhead and cutthroat trout into Percival Creek, and native rainbow trout above Tumwater Falls, that get into Capitol Lake, most of the fish (including salmon released and hatched above the Falls) were introduced by the agency of man and are propagated artificially.

Dredging and disposal plans need to identify and be supportive of Department of Fisheries needs, facilities, and management requirements. As with the need to coordinate timing of Lake drainage, the timing of dredging activity will have to be coordinated with fish raising and releases. The planned dredging period of June to September (B,p.49) appears to be in direct conflict with the periods of juvenile rearing and out migration as shown in the chart at B,p.19. Also, dredging at the season of lowest river flows generally presents a greater problem for aquatic organisms than in seasons of highest flows.

The mouth of Percival Cove has become silted in and the Department of Fisheries desires that the Cove be dredged out beyond the extent proposed in these documents. Care should be taken to avoid the mouth of the Creek, the archeological site, and shallows along the west shoreline of the Cove.

Discreet Unit Assessment and Management - For purposes of assessing environmental impacts, developing dredge and disposal plans, and managing the recreational use of Capitol Lake, it would be helpful to view each basin (and Cove) as a discreet unit. In addition, each unit needs to be related and compared to adjoining units for analysis of suitability and compatibility of systems and objectives.

For example, a spectrum of recreation activity from passive to more active and intensive use, which progresses from the upper to lower basin, is suggested by existing situations and vocalized preferences of local residents. Obviously, Percival Cove has to be dedicated primarily to fish propagation and fishing.

We generally concur with the recommendations of document D on boating use. Non-motorized boating in the upper basin is appropriate and we suggest the existing boat ramp, which still has utility, be left for use by row boats, canoes, etc. A no-wake provision would allow for slow troll fishing in the middle basin and not disturb other planned activities. Boat racing and water skiing should not be permitted in the middle basin, but might be allowed there and in the lower basin on special occasions and on strict schedules when not in conflict with sport fishing, sailing, etc.

We think it would be a good idea to provide a boat ramp in each basin. The ramp proposed for the middle basin (D,p.10) might be shifted further to the east if it conflicts with Department of Fisheries plans and operations; or placed in the lower basin just west of the Burlington-Northern Bridge. At first glance, it would appear that too many fishing piers are proposed for the middle basin.

Full Treatment of All Alternatives - Contrary to what is stated, the treatment of all feasible alternatives in the EIS (B,pp.51-59) and related documents has been truncated, perhaps owing to agency jurisdictional constraints. The proper question to be posed with respect to Capitol Lake is: What should be done with (to or for) that stretch of the Deschutes River Basin which lies between Tumwater Falls and Budd Inlet? Among alternatives not adequately treated in this EIS are:

1. No action (allow sedimentation to take its course)
2. Remove the 5th Avenue Dam (restore area to estuary)
3. Coordinated management program (discussed previously)

No Action Alternative - There are inconsistencies in the treatment of this alternative. On the one hand, allowing sedimentation of the middle basin to proceed to the point that weed growth and marshy conditions take over is regarded with dread (B,p.56,& p.45) as leading to the "ultimate extinction" of Capitol Lake (C,p.10). On the other hand, allowing precisely this process to go on in the upper basin has supposedly resulted in a unique and valuable wildlife area, at least for the upper basin. The creation of "new" marshes within the middle basin is treated as a justifying factor for the project. The statement has been made (B,p.45) that an objective of the restoration project is to restore the basin's use as a "lake environment" and prevent it from becoming a marsh (B,p.56) or channelled river delta--which it formerly was (B,p.58) and inevitably will become again without continual dredging.

The prospect of the middle basin, and subsequently the lower basin, eventually becoming large fresh water marshes need not be viewed as intrinsically repugnant, even though a variety of accustomed uses would eventually be pre-empted (E,p.20). Allowing this would result in eventual loss of the artificial fish runs above Tumwater Falls (B,p.18). It would create a new and not uninteresting environment. It would also be the least cost option (not mentioned in the matrix at B,p.53), but would result in loss of investments, social and economic benefits, as well as esthetic values attributable to retaining the lower and middle basins as open water areas. Some of these losses might be offset through such development as onshore public swimming pools, as one alternative.

The guiding rationale for the restoration, recreation, and beautification plans seems to be expressed best in the following statement at B,p.41:

"The relative visual appeal of a dredged lake versus a filled river delta is subjective. Many people who have considered the issue feel that the basin would be more esthetically pleasing if it were restored and preserved as a lake. The proposed dredging program attempts to achieve this goal in the middle and lower basin, while maintaining the major portion of the upper basin in its present marshy state to provide maximum diversity."

This choice is not an inappropriate one for providing a variety of recreational and other experiences in an urban setting with an artificial water body. It is most consistent with community goals and desires.

Dam Removal Alternative - With a concerted program to reduce sedimentation and erosion at their sources in the upper watershed, the rate of Lake siltation can be retarded; however, eventually the 5th Avenue dam will require replacement or removal. While removal of the dam may seem totally unacceptable as a solution to the present problem, nevertheless, it deserves thoughtful consideration in the EIS and before proceeding with the proposed project--if only to articulate why it is unacceptable. Dredging represents a continual drain of energy, money, and effort "fighting nature". At B,(pp.40&41), the energy consuption is quantified and described as "not insignificant" which contradicts with the assertion at B,(p.47) that energy impacts are not excessive; and the statement at C,(p.15) that energy consumed "will be insignificant". Also, there is only so much in-lake filling that can go on before there is no more lake. The attached map (attachment #1)

illustrates the total area of filling, past and proposed, since 1955 when the total surface area was 133 acres. The 1955 Lake configuration is illustrated in attachment #2 (taken from I). Even after this filling, all the problems existing today will still be there at the end of the planned 20 year maintenance program.

The only way the proposed project can be put into proper perspective is by examining the pre-lake history and conditions of this area. The subject is brushed over in most of the documents. Reasons for constructing the dam to start with, and its presumed merits, are not brought out. However, in documents D (pp.27 and 37) and B (pp.69-72) there are reasonably good discussions of the Olympia area's history. The chapter on the dam project needs to be inserted. In 1845 when the white man arrived, the entire "lake" basin area was an estuarine tidal flat, rich in clams and Olympia oysters, possibly on a par with Eld Inlet. Indian middens containing oyster shells are in evidence at the head of the upper basin and along the middle basin shores. Gradually, pollution wiped out most of the shellfish or prevented human consuption for sanitary reasons. A slum area developed in the vicinity of the present Capitol Lake Park. This was torn down and covered over. Creation of the Lake was apparently conceived partly to conceal the despoiled tidal flats. This action eliminated the possibility of shellfish production and destroyed the inherent natural aquatic production of the basin.

Restoration in the truest sense of restoring the area to its original, natural conditions would entail removing the dam and returning the area to tidal, salt water influence. With a concerted clean up program, it might well be possible to return the area to commercial quantities of shellfish production. At the same time, however, unless Percival Cove itself were to be dammed, the present, highly successful artificial production of salmon in the Lake would be lost--as would a number of lake-type activities already alluded to.

Dredging Disposal Techniques - In A(p.23) it is stated that, "about 360,000 cubic yards of material will be removed from the lake during initial dredging. Maintenance dredging over a 20 year period will remove 500,000 to 600,000 cubic yards based on an average removal rate of 50,000 to 60,000 cubic yards every 2 years." This would make a total of 860,000 to 960,000 cubic yards with maintenance dredging averaging 30,000 cubic yards over the 20 year period following initial dredging.

According to our computations, based on figures in the chart on disposal site capacities (A,p.26), the total capacity of sites for initial dredging is 405,000 cubic yards (45,000 excess), essentially all of which would be in-lake disposal (A,p.25). The maintenance disposal site capacity is 442,000 cubic yards (58,000 to 158,000 deficit), all but 203,000 cubic yards of which would be in the lake (A,p.27). If used where shown, this means that only 13,000 to 113,000 cubic yards would be exported from the Lake. The vast majority of spoils (about 690,000 cubic yards in total) would be used for in-lake filling, not actually removed from the Lake, as implied. We concur with the chosen method of dredging by hydraulic pipeline dredge (A,p.22), which would result in the least environmental impact. We also agree that dredging need not be greater than 6 feet in areas other than the 3 sediment traps (A,p.7). However, we are not in complete agreement on the disposal plans and sites (A,pp.23 to 34) and will make recommendations for modifications to those plans.

At several points (A,pp.ii,23,26,27,36,37&38; B,p.6&p.49), there is reference to special disposal techniques involving site preparation, diking, curtains, ponding, baffles, weirs, etc. being employed. However, there is little or nothing in the Design Engineering report (or elsewhere) which discusses these techniques in detail or divulges design specifications or illustrates their placement. We recommend more specific treatment of this aspect of the dredging operation be given in the final EIS. Any desilting sites and facilities should also be illustrated.

The development of the restoration plan is described in A (pp.4&5). The discussion on page 5 is extremely confusing because of its reference to optional dredging concepts; a "preferred" restoration plan including dredging, disposal and maintenance plans; and alternative restoration plans (which are actually contingency plans for the alternate disposal sites). It is difficult to sort this all out in the ensuing discussion and to relate it to the several illustrations and charts found in A and C.

Disposal Sites and Recommendations - This discussion will analyze various initial and maintenance dredge disposal plans and make recommendations for modifications in each of the Lake basins for fish and wildlife protection and for the overall effect of filling.

As you note (B,p.45), the removal or relocation of lake fill is, for all practical purposes, an irrevocable action. In 1955 the total Lake surface area was 133 acres (see attachment 1).

The total area of projected initial and maintenance disposal (filling) is illustrated in attachment 3 (see also E,p. 36). Apparently the railroad causeway and road fill crossing Percival Cove were placed prior to 1955. Mention is made of the prospect of additional highway filling for Interstate 5 expansion (A,p.28), but its location and extent are not shown. Attachment 1 illustrates all other past and projected in-lake filling. The area of total water surface reduction should be calculated and displayed.

The Department of Fisheries believes that dredging beyond 6 to 8 feet would destroy a significant amount of fish feeding area (A,p.10). The location and extent of dredging and filling are equally important, or more so. The Design Engineering Report (A,p.10) states that a 6-foot depth should include the east shore of the middle basin, however, this is not illustrated (A,p.7) and does not agree with the determination that the east side would not be developed owing to private holdings and trespass considerations (D,p.25). The Report also states that dredging should not be done within 150 feet of the west shoreline. However, if this same 150 feet perimeter is filled, the impact would be more severe to the Lake's environment and the loss irretrievable.

A discussion of a recommended disposal plan and two alternative plans is given in the Design Report (A,pp.36 to 43). The alternative plans (A,p.37) are to remain viable options on the prospect that "lakeshore" sites would not be available when needed. Since most of the Lake is in public ownership, this rationale requires further clarification. From our discussions above, it should be apparent that there are ecological constraints on too much in-lake filling. We believe a decision on filling in and around the Lake should be reached and definite plans included in the final EIS. We further submit it would be advisable to lease, or purchase the Percival and Highway 101 gravel pit sites for future handling and disposal areas at the earliest opportunity. Without explicity stating so, the preferred disposal plan apparently calls for in-lake disposal of all maintenance dredged spoils. Disposal alternative #1(A,p.37) calls for all initial dredging spoils to be taken out of the basin. Disposal alternative #2 calls for some maintenance disposal out of the basin. We support the latter, with revisions. Our suggested changes to the overall disposal plan are illustrated in attachment #4. Basically, we recommend deletion of two in-lake disposal sites and filling of most middle basin and Percival cove sites in conjunction with the initial dredging. Two other in-lake disposal sites could be filled from subsequent maintenance dredging.

All additional maintenance dredge disposal should be out of the lake basin. The most feasible and environmentally acceptable out-of-basin disposal site appears to be the Highway 101 gravel pit (A,p.31) with a capacity of 500,000 cubic yards (A,p.30).

The Percival gravel pit could be used for some fill deposition and as a handling and de-silting site. Following completion of all in-lake filling, a "permanent" pipeline and booster pump could be installed along Percival Creek leading to the Highway 101 site. Careful design and construction would be needed for the disposal site to allow only clean water discharge to return to Capitol Lake via Percival Creek.

By eliminating or greatly reducing filling between the islands and on shore in the upper basin, and by deferring filling at the northeast corner of the middle basin, the remaining disposal sites selected for initial dredging (A,p.25) will be able to nearly exactly accomodate the proposed initial volume of 360,000 cubic yards (see chart, A,0.26).

We recommend locating the sediment trap in the upper basin more to the north and west (see attachment #4) to minimize destruction of marshy areas utilized by wildlife (B,pp.16&17). Deleting maintenance dredging disposal sites 3 and 4 (A,p.27) and filling sites 1 and 2 (plus the deferred site in the middle basin) would accomodate approximately 350,000 cubic yards of maintenance spoils out of the 500,000 to 600,000 cubic yards projected for 20 years. At the rate of 50,000 to 60,000 every 2 years, it would take 8 to 10 years following initial dredging to complete in-lake filling. This would leave a remainder of up to 250,000 cubic yards to be taken out of basin over a period of 4 to 6 dredgings (8 to 10 years).

An inspection of the Recreation Design Report (D,p.8) reveals that angling the fill in the southwest corner back to the current shore just north of the proposed new beach, no essential recreation features are lost. By placing just a small fill near the Percival Cove outlet in the middle basin (see attach. #4), there would be sufficient area for placing the proposed footbridge (D,p.10). This revision would mean "relocating" all parking slips to the Percival Cove side of the Peninsula to leave enough room for a sidewalk and bike trail on the eastside. Filling along the railroad switchyard in the southeast corner of the lower basin is of some concern because the lower basin is considered by the Department of Fisheries to be an important fish feeding area (A,p.12).

Filling could eliminate significant insect production area here, although it is no known to be essential; whereas, most of the west shore shallows of the middle basin have been observed to be highly important to the young salmon. Also this area tends to be deeper and more subject to salt water intrusion, which would depress insect production. Shallow maintenance dredging could be extended into Percival Cove, as shown in Attachment #4.

According to the Design Engineering Report (A,p.12), the feasibility of improving circulation patterns in the lower basin by dredging a new river channel was investigated and rejected. As an alternative we suggest consideration of a training groin on the west bank at the railroad bridge (see attachment #4) to deflect currents in an easterly direction. West of this groin might be an acceptable location for a boat ramp, as mentioned earlier.

The modifications recommended above would allow recreation design to proceed with continuity in the upper and middle basins and with minimal interference to recreational activities after the initial disposal and site preparation. Pumping a major portion of maintenance spoils out of the basin, after lower basin filling, would result in the least long term disruption and unsightliness for the Lake. A trial leading to Black Lake Boulevard could be provided after the disposal pipeline is removed. Spoil material at the Highway 101 site could be sold for agricultural or construction use and this site ultimately graded, planted, and developed to be incorporated into the total recreation plan.

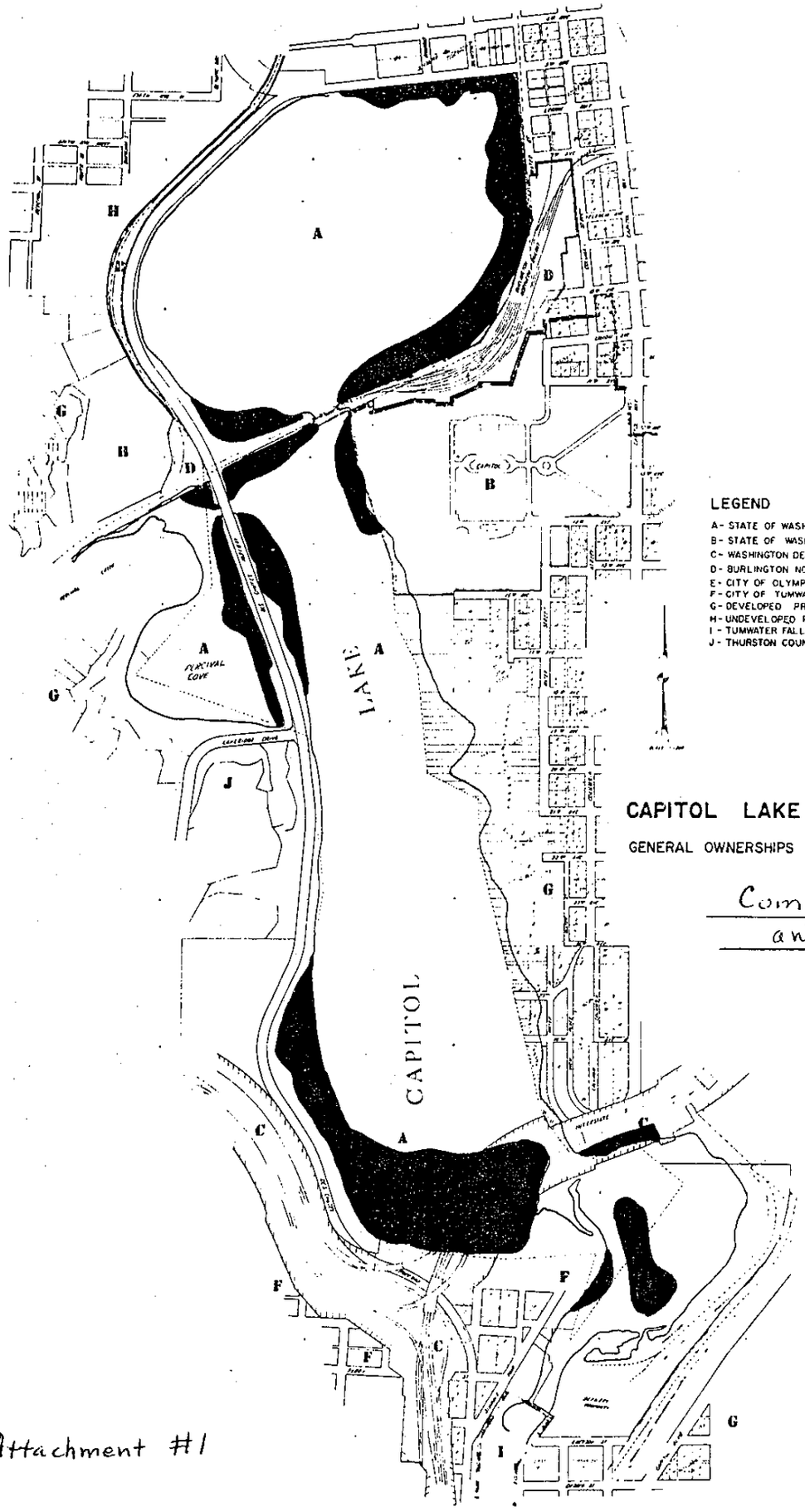
Thank you for the opportunity to comment on this draft EIS. We hope that project planning will remain amenable to revision and updating on the basis of review input. We look forward to receiving the final EIS.

Sincerely yours,

J. Norwell Brown

J. N. Brown

Attachments: Drawings 1 through 4
cc: R. O. (AE)



CAPITOL LAKE

GENERAL OWNERSHIPS

Composite of Past and Future Fills

Attachment #1

#1

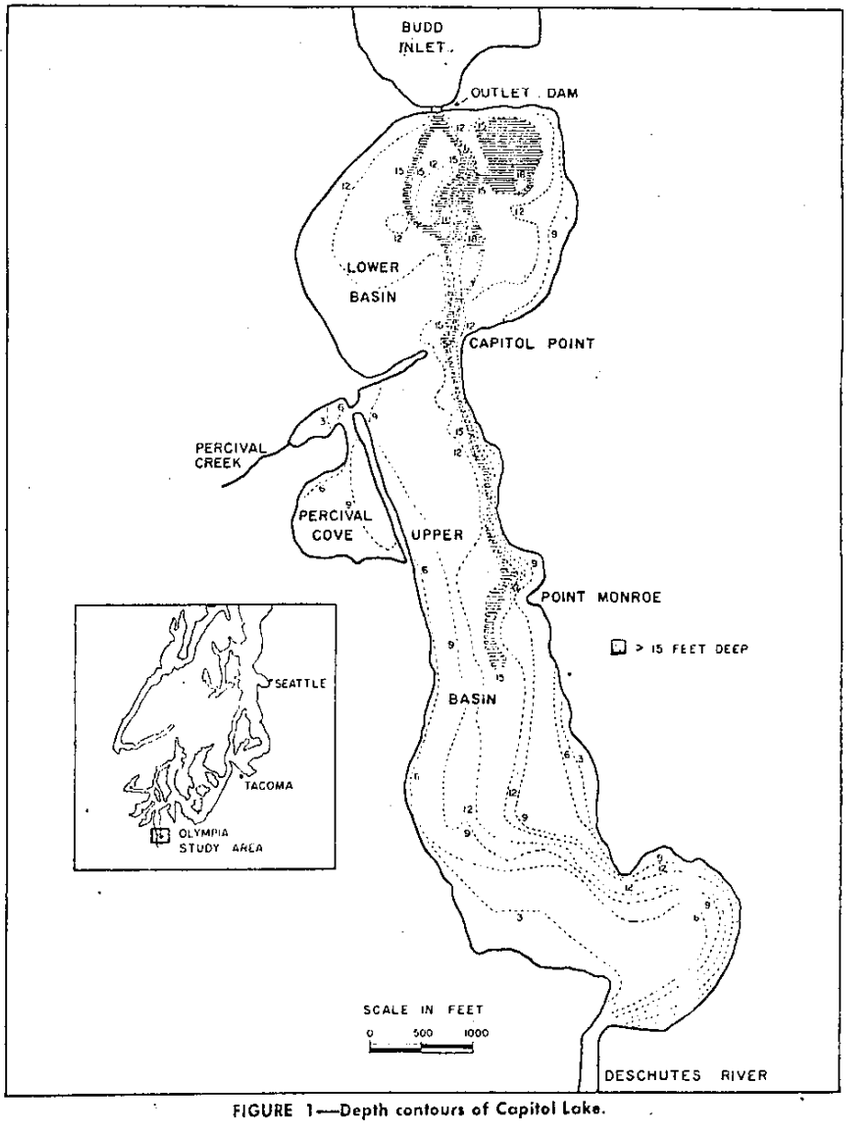
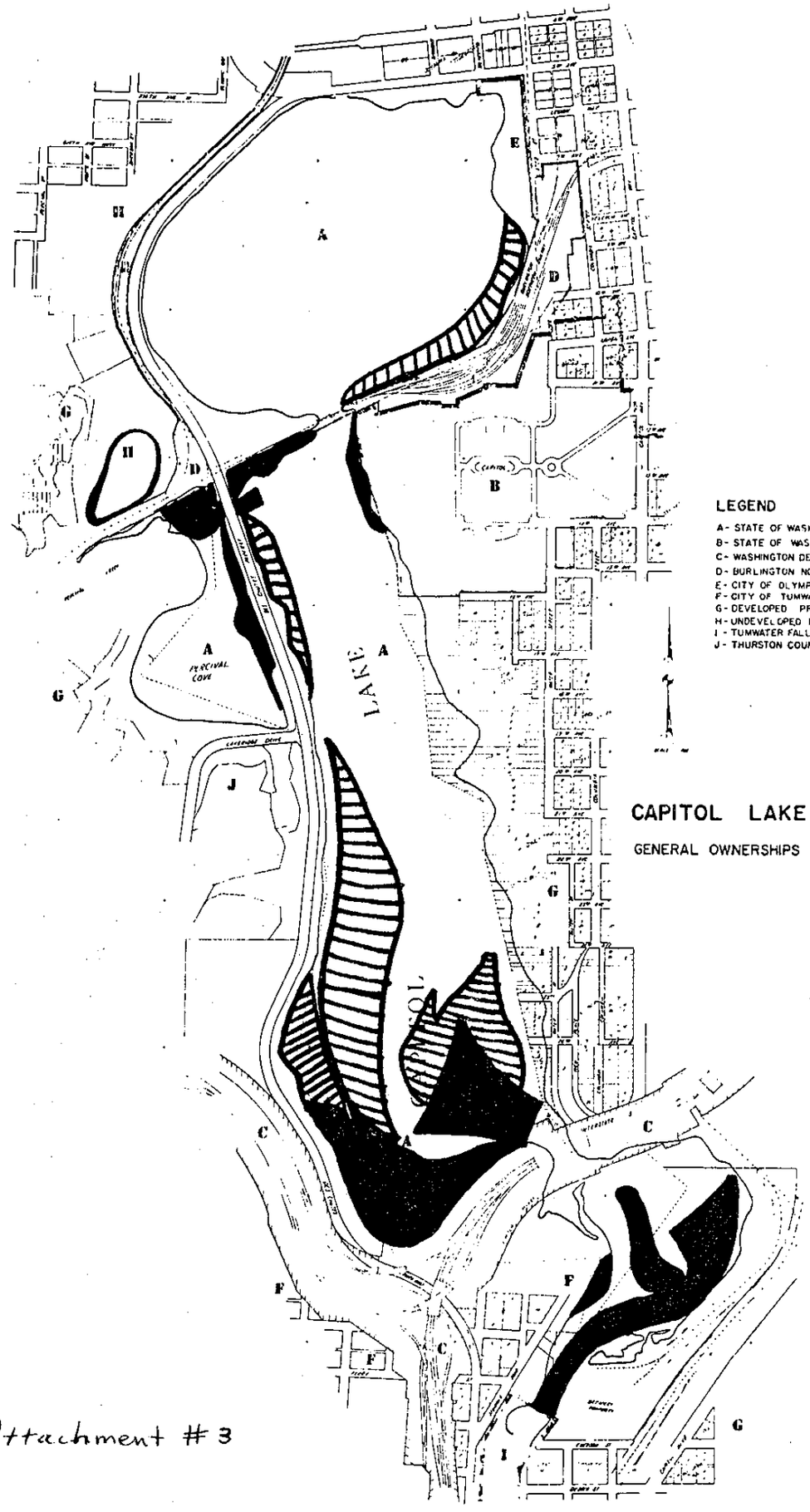


FIGURE 1—Depth contours of Capitol Lake.

Lake Configuration circa 1955

Attachment #2

#2

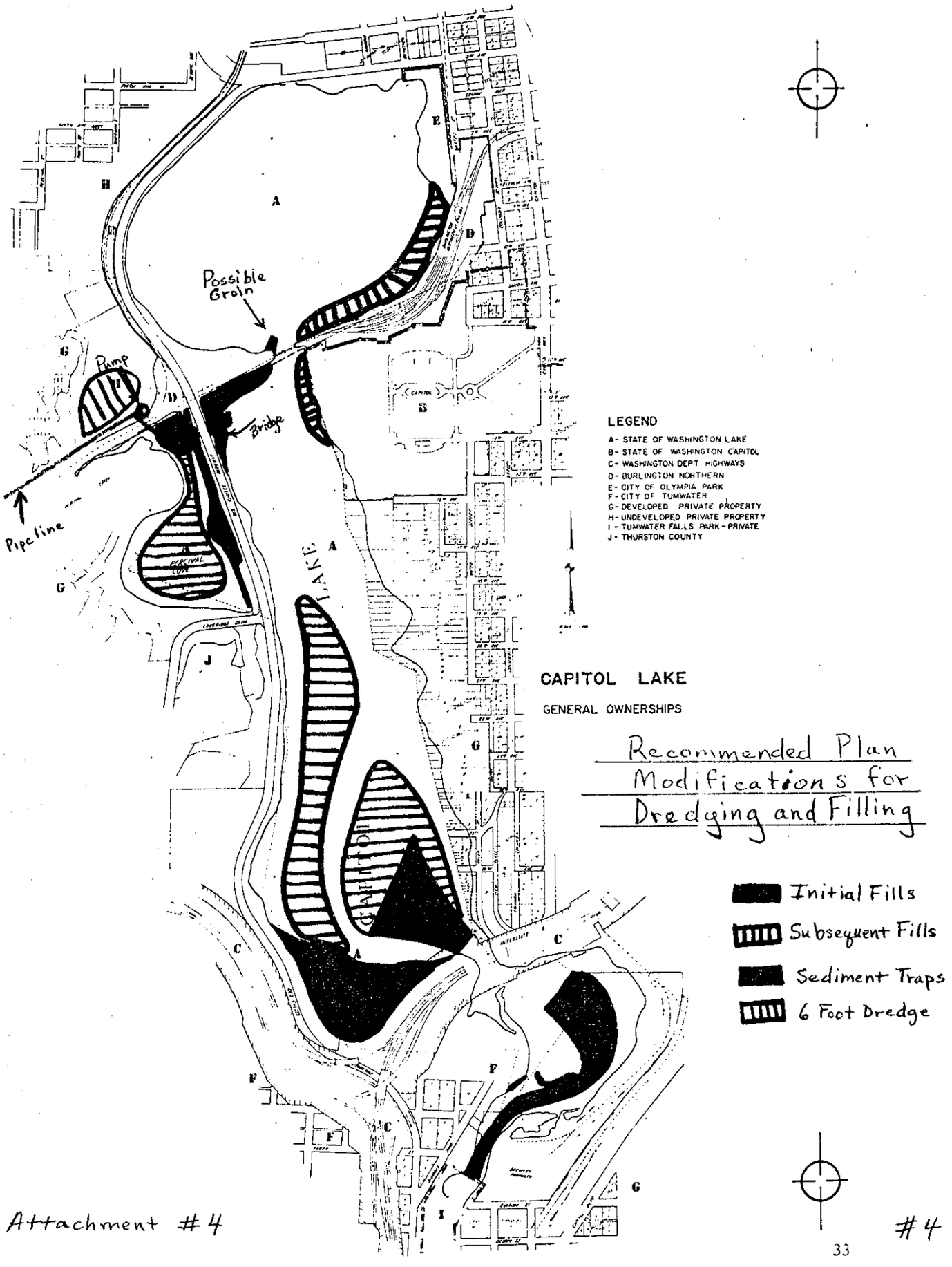


Composite of Proposed Dredge and Disposal Site Plans

Initial Fills
Maintenance Fills
Sediment Traps
6 Foot Dredge

Attachment #3

#3



Recommended Plan Modifications for Dredging and Filling

- Initial Fills
- Subsequent Fills
- Sediment Traps
- 6 Foot Dredge

Attachment #4

#4

Response

Responses are given to each of the major points presented in the letter. The extensive effort put into your comments is appreciated.

Format

The initial decision to provide separate documents for the Restoration Design Engineering Report and the Recreation Plan Design Report was dictated by the considerations that the restoration project is not dependent on the recreation plan (all dredge spoils could be exported out of the basin), and that funding sources for the two projects are separate (restoration would be accomplished by legislative appropriation, but recreational development would have to be accomplished by funding obtained through the Interagency Committee for Outdoor Recreation (IAC) or other sources). A separate EIS for each project was also required, and a brief summary of the restoration document and EIS was prepared for use by the legislature. Although these five documents could have been combined into a single document, it was considered that separate publication would be more convenient.

Illustrations

The suggestion of a drainage basin map of the Deschutes River is well taken and is included as figure 5, page 149, in appendix B.

General Assessment of Project

Disposal of dredge spoils in the West Bay of Budd Inlet is not part of the proposed project (see Restoration Design Engineering Report and Restoration DEIS, page 1) and therefore is not addressed in the EIS. Consequently, the statements in the Restoration DEIS regarding impacts on land use do not refer to the West Bay site but only to those lands involved in the proposal.

Scope of Program and Studies

As discussed in earlier responses (to the League of Women Voters and others), it is recognized that the proposed dredging program will solve neither the sedimentation problem in the Deschutes drainage basin nor the pollution problems of the lake. The Restoration DEIS notes both problems and identifies the need for solution. Even if upstream sedimentation sources can be found and successfully controlled, the *accumulated* sediment must be removed if the lake is to be restored. Sources of pollution in Capitol Lake are currently under investigation by the Department of Ecology and Department of General Administration.

Need for Total Basin Management

The desirability of the coordinated drainage basin management program suggested is recognized but is not a practical reality at this time, nor is it an alternative to the proposed lake restoration program. No single agency currently possesses the authority to manage the diverse resources and activities listed. The Department of General Administration certainly agrees with the need for such unified drainage basin management and will continue to work in this direction.

Unclear Objectives and Goals

It is believed that the Restoration DEIS Summary, on page 1 under Proposal and Objectives, clearly states the project goal, which includes the qualities that are desired to be retained or restored: "The goal of the program is to improve the lake's recreational and visual resources, improve its fish production, and preserve its biological and wildlife resources. These diverse uses are being threatened by sediment that has been accumulating in the lake since its creation in 1951."

We agree that some indication should have been made to the fact that Capitol Lake is actually a reservoir. This was omitted, not out of a lack of candidness, but because it is commonly known that the lake was artificially formed. It is not uncommon for impoundments to be designated as lakes; for example, Ross Lake, Long Lake, Banks Lake.

The reference to 1949 contours relates to the fact that dam construction was begun in 1949 with completion and filling of Capitol Lake in 1951. The 1949 contours represent the lake area without any sedimentation.

We believe the EIS is entirely candid in relation to the problem of continuing sedimentation of Capitol Lake. The program description, page 1 and pages 7 through 9 of the Restoration DEIS, clearly states the need for periodic maintenance dredging. Nowhere is it stated that initial dredging alone will "restore the lake."

With regard to the goal of encouraging Deschutes River basin land uses that will decrease sediment loading, it is acknowledged that no program for achieving this is presented. As noted earlier, the mechanisms for achieving this are complex and outside the authority of the Department of General Administration. However, mention of this goal does serve the purpose of calling attention to the problem so that a solution can be worked toward.

Contrary to the assertion made, the goals for the lake as established by the Capitol Lake Coordinating Committee have been neither tentative nor fluctuating. They have received serious reexamination during the planning process, but have remained unchanged since their initial formulation.

Recreation Use Enhancement

It is considered that the Restoration DEIS (page 34) adequately presents the rationale for filling in a conservancy zone. The statement in the DEIS that an increase in total accessible shoreline will increase as a result of the project is considered accurate. Much of the western shoreline of Capitol Lake is riprap immediately adjacent to the Deschutes Parkway, and not conducive to a quality shoreline experience. It should be noted, however, that a substantial amount of fill has been deleted from the plan in order to mitigate adverse effects upon the lake's natural fishery.

With regard to access to the eastern shore of the lake, the Recreation DEIS notes that access in the middle basin is not considered feasible and therefore not proposed. The trail along the eastern shore of the upper basin was intentionally removed from the shoreline (see Recreation Plan Design Report, figure 1 and page 7).

Regarding the "unique" and "fragile" qualities of the lake cited, the reference in the Restoration DEIS was to the upper basin, which does possess biological resources *unique in an urban setting*. Similarly, the resources are considered fragile in the sense that relatively small changes in the upper basin can have a major impact because of the small scale of the basin.

Wildlife Habitat Management

Quantitative inventories of wildlife were not presented in the Restoration DEIS because of the slight impacts anticipated. Limited field observations were conducted which included counts, but this level of detail was not considered appropriate in the EIS. However, contrary to the point that the EIS does not make it possible to quantitatively compare wildlife habitat among basins or within basins, figures 2 (terrestrial and aquatic vegetation) and 3 (bird habitat) of the Restoration DEIS do present quantitative information. The location and frequency of symbols were intended to convey relative abundance. The point on identification of aquatic insects and other invertebrates is well taken, and has been added to this FEIS on page 177. Other site specific data relating to relative abundance of juvenile salmon and natural feeding

areas are shown on figures 6, 7, and 8 of this FEIS (pages 163, 165, and 167).

The comment disagreeing with the Restoration DEIS statement that proposed dredging (and disposal) will have minimal impact on vegetation in the middle basin is correct. The statement should have noted that while *dredging* would not affect existing shoreline vegetation, *filling* would obliterate such vegetation in those areas where spoiling takes place. It should be noted, however, that much of the filling originally proposed has been deleted.

The gabion proposed in the upper basin is a training groin and is intended only to divert the major water flow past the islands into the sediment trap and not to prevent erosion of the shoreline. During development of the alternative plan for dredging in the upper basin, it was felt that this groin could be moved so as to be less obvious. Model runs showed that this resulted in a serious loss in efficiency, and the groin has been retained in the new plan.

We concur in your observation that "it is doubtful that more terrestrial habitat and less aquatic means greater diversity of wildlife." It is hoped that creation of an irregular rather than even shoreline in the fill areas and replanting of aquatic vegetation will avoid a net loss. This level of detail normally will occur when plans and specifications are prepared and will be further ensured by engaging the services of an aquatic and terrestrial biologist during construction supervision. The Recreation DEIS (page 47) recommended retaining a terrestrial biologist during the appropriate portion of construction; this should be expanded to include an aquatic biologist as well.

The statement is made in your letter that "It is doubtful that loss of shallow and marshy areas in the upper basin represents a significant impact for artificial fish propagation as suggested..." The cited reference (page 59) did not use the word "artificial" and in fact referred to the extensive "natural" steelhead and salmon nursery.

The list of fish species has been revised in this FEIS (page 169) to include those noted. The citation is appreciated.

The Design Engineering Report should have stated that dredging was not contemplated within 150 feet of the west shoreline *to avoid bank erosion and slippage* rather than for protection of fishery habitat.

The proposed periods of dredging were rechecked with the Department of Fisheries and are correct in terms of significant fish activity. The period June through September does not

conflict with most juvenile outmigration (except fall chinook) nor with spawning runs, and represents the best time for dredging the main stem of the Deschutes River. It is also the best time for dredging Percival Cove, because fish are reared in the cove from 15 September to 1 June. The levels of turbidity and biological oxygen demand (BOD) in Budd Inlet are also of concern during the summer months, and it may be necessary to adjust this schedule. The Department of Fisheries will establish firm standards covering this concern and will require conformance as a part of the hydraulics permit.

It is felt that the boat ramp in the upper basin should be abandoned to discourage use of motorized boats. Rowboats, canoes, kayaks, and other nonmotorized boats could still be easily launched from that point or any other. The boat ramp is within the Tumwater City Park site, and final determination would be up to the City of Tumwater.

Full Treatment of All Alternatives

It is felt that the "no action" alternative is adequately addressed in the Restoration DEIS. The prospect of the middle and lower basins becoming freshwater marshes is not viewed "with dread," only with the observation that this appears to be in conflict with the goals of the Capitol Lake Coordinating Committee. Your point that this alternative is the least-cost alternative and this fact noted in the matrix, page 53, Restoration DEIS, is correct; this fact was noted in the text, page 57.

The dam removal alternative is described in this FEIS, page 175. The comments in the Restoration DEIS regarding energy consumption attempted to indicate that fuel requirements for dredging were not excessive compared to the necessary earthmoving operations (less energy per cubic yard moved than with bulldozers, trucks, and similar equipment). Over the life of the project, this nevertheless represents a sizeable quantity of fuel.

Additional information concerning the creation of the lake is included in this FEIS, page 173. The suggested need for this information in the EIS is acknowledged.

Dredge Spoil Quantities

It is not planned to dispose of more than 257,000 cubic yards of initial dredging spoils in the locations shown on figure 3 of this FEIS. These sites have ample capacity for the original dredge spoils and will allow flexibility in establishing final contours of the fill areas. All maintenance dredge spoils will be exported from the lake basin.

Special Disposal Techniques

Disposal techniques were investigated to the point of preparing preliminary cost estimates. Detailed plans and specifications for containment and treatment of dredge spoils will be prepared with the final bidding documents.

Water Surface Reduction

The point concerning the need for graphic illustration of total water surface reduction is correct. This is shown in figure 9 of this FEIS (page 171).

Limits Of Dredging

General dredging along the east shore of the middle basin is not planned, and the corresponding statement on page 10 of the Design Engineering Report should be eliminated. The dredging limitation of 150 feet from shore was recommended to protect the shoreline or Deschutes Parkway from potential slides caused by the excavation.

Suggested Plan Modification

The modifications of dredging and disposal sites, as suggested by the U.S. Fish and Wildlife Service, have been accomplished in the revised proposal.

Location Upper Basin Sediment Trap

The revised upper basin dredging plan (see figure 1, p. 7) does locate the sediment trap and channels to minimize destruction of the existing marshy areas.

Lower Basin Training Groin

The training groin proposed for the west bank of the railroad bridge was tested on the lake model at WSU. Results of the tests indicate that the groin would be ineffective in improving the swimming area water quality.

FEIS Review Comments

The following letter was received following review of the draft FEIS.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
2625 Parkmont Lane S.W., Bldg. B-3
Olympia, WA 98502

Reference: 444

April 21, 1977

Mr. John E. Johnson, Acting Manager
Division of Facilities Planning
Department of General Administration
218 General Administration Building
Olympia, Washington 98504

Dear Mr. Johnson:

In response to your letter of April 14, 1977 requesting review of your draft final EIS on the Capitol Lake Restoration and Recreation Plan, our comments are hereby being furnished. The comments which follow are the official views of the U.S. Fish and Wildlife Service but not necessarily of the Department of the Interior.

To start with, we would like to express our appreciation for the cooperation shown by your agency in endeavoring to make the Capitol Lake project as environmentally acceptable as feasible. Through extensive consultation, a number of misunderstandings have been corrected and potential conflicts have been resolved resulting in what we feel is a much improved proposal over some of the very early plans. We still see some minor adverse impacts for fish and wildlife, but our principal concerns at this point are less with the substantive issues than with how the information on impacts and the overall project is being presented.

The following suggestions and comments are offered for your consideration in preparation of the final version of the EIS document.

Format and Organization - We recognize that the EIS has been prepared in accordance with SEPA procedures which may allow or dictate otherwise, however, a major concern we have is with the organization of this document. Essentially, the document is a supplement (p. 1) to the two separate draft statements and accompanying engineering reports prepared on the restoration and recreational aspects. We think the document would far better serve its intended purpose if it were able to stand alone as a complete statement of the project, its impacts, etc. as it stands today.

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

We recognize that the recreation features are contingent on the restoration work being accomplished and might not be funded. Frankly, the provision of public access and recreational features figured into our evaluation of the total project and is viewed as a justifying basis for incurring some of the anticipated losses to fish and wildlife habitat. Our preference would be to see the restoration and recreation aspects treated as two parts of the same project in one document with a caveat that recreational development may not materialize.

Treatment of Alternatives - This EIS has an "additional alternative" (p. 87) of removal of the Fifth Avenue Dam Gate which would allow the Lake bed to return to estuarine conditions. Although advantages and disadvantages are given, the EIS does not discuss in that section why this alternative is not being pursued rather than the proposed action. One must infer from a comment on page 45 that the only reason is that such a course does not appear in keeping with legislative intent, which does not provide an environmental or other explanation for rejecting this "technically feasible" alternative.

Page iv lists four alternatives covered in this EIS, however, these are not all of the alternatives that have been posed in relation to the project and the reader must have recourse to earlier documents for a discussion of the "no action" and other alternatives. Another problem is that some alternatives refer only to variations on the treatment of the upper basin without regard to the rest of the Lake and the overall siltation and impact problems. One of the implicit alternatives in need of explicit treatment is utilization of the middle basin exclusively for a sediment trap (thus avoiding all construction in the upper basin). Our recommendation is that the full spectrum of alternatives be treated comprehensively in the final EIS to show how they have been considered and why they were ruled out.

Summary of Impacts - Page iii gives a listing of beneficial and adverse short term impacts. We find debatable the claims of a reduction in aquatic weed growth; improved conditions for the fishery; temporary "disturbance" of some wildlife and plant species; and limited turbidity. The principle control on weed growth (submergent and emergent aquatic vegetation) will remain the salt water flushing practice. In some respects, the artificial fishery is expected as a result of shoreline filling. A net, permanent loss of wildlife can be anticipated. Although less in-lake filling is now proposed than in previous plans, a net loss of marsh vegetation along the periphery can be expected and is not truly replaced by introduced terrestrial plants.

On page iv the loss of shallows in the upper basin is described as a permanent adverse impact. Actually, this impact is to the associated fish and wildlife and other resources and is not limited to the upper basin. A considerable area of the middle basin shallows is to be lost and will not be partially offset by creation of new marsh as was previously proposed in this area.

Part of the adverse impact to the upper basin will be to waterfowl habitat lost to channel dredging between the existing islands. However, it is uncertain whether this would eventually disappear anyway, owing to accretion and vegetative succession. At the same time this dredging will serve to maintain the islands as isolated terrestrial habitat which will benefit other wildlife forms requiring islands.

Other Fish and Wildlife Considerations - On page 18 it is stated that wildlife resources are to be enhanced with the project. Taking into account the above discussion, we have yet to see any indication of how wildlife will benefit in an overall sense and we reiterate our expectation of a net decrease in wildlife over the present conditions.

We are pleased with the additional appended data on fisheries including the listing of species and their origins (p. 81) and especially the maps of juvenile chinook salmon (p. 75) rooted aquatics (pp. 77 and 79). We think these maps, coupled with the explanatory text on page 73 provide a good explanation of the value of shallow mud areas in the various Lake basins and permit a correlation with proposed dredge and fill areas to evaluate the extent to which these might conflict.

We were already familiar with the information provided on aquatic insects and invertebrates (p. 71 and 6 pages following). However, this does not provide as good a picture as would distribution maps. We agree that the project would have a substantial impact on benthic organisms. Though the long term effect would probably be an increased standing crop, that increase would be lessened by the amount of shallow water area removed by filling. We are pleased to see that in-lake filling is planned in consideration of the known high value fish food production areas and is limited to the amount necessary for disposal of initial dredging spoils and providing that needed for recreational and access features linking the three basins.

Maintenance Dredge Disposal - On pages 9 and 18 you mention that future spoil disposal is to be out of the Lake basin at a site within 2 miles. The prospective disposal sites or chosen site should be identified and located on a map.

Dredge Plans for the Upper Basin - The discussion of optional engineering plans and tests appended to the end of the EIS presents a series of subalternatives within the general proposed action plan. This information is very instructive in showing how dredge plan #4 was selected. However, this does not exactly correspond with the dredging plan in your revised permit application drawings which call for removal of an upstream gravel bar in the Deschutes River channel.

Protective Groins in Upper Basin - A statement on page 5 infers that the proposed training groin shown with dredging design plan #4 is the same as originally proposed. However, an inspection of your July 1976 Design Engineering Report (p. 14) will show that the mid-lake groin has been eliminated.

Boating and Boat Launch Sites - On page 64, in response to a public hearing comment, you state that active sports, including water skiing will not be permitted in the middle basin and you make reference to a future comprehensive lake management program. We suggest this information should be in the body of the document and some discussion of what the management program will cover should be given.

One of the recommendations of the appended dredge plan for the upper basin is that the boat launch approach be dredged at two year intervals. On page 57 you indicate the boat launch is to be abandoned, but could still be used for small boats. On unnumbered page 15 you indicate new boat launches are to be placed in the middle and lower basins. Some clarification is needed on how potential conflicts with the nearby wading beach and the "active sports" prohibition are to be avoided.

Thank you for the opportunity to review this draft of the final EIS on the Capitol Lake Restoration and Recreation Plan. We would appreciate receiving the final EIS document which you intend to file.

Sincerely yours,

J. Norwell Brown

J. N. Brown
Field Supervisor

WRITTEN COMMENTS THAT REQUIRED NO RESPONSE

The following comments were received during review of the two DEIS's and required no responses.

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Columbia Fisheries Program Office
P. O. Box 4332, Portland, Oregon 97208

August 16, 1976

Mr. George C. Garris, Manager of Facilities Planning
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Dear Mr. Garris:

We have reviewed your two Draft Environmental Impact Statements for Capitol Lake Restoration and Capitol Lake Recreation Plan that were issued July 1976. We have no comment on either of them.

Sincerely,

Fred Cleaver

Fred Cleaver
Program Director

cc: Environmental Protection Agency, Seattle
Fish and Wildlife Service, Olympia
Washington Dept. of Game
Washington Dept. of Fisheries

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX C-3755
SEATTLE, WASHINGTON 98124

22 SEP 1976

NPSEN-PL-ER

John R. Christofferson, AIP
Manager of Planning
CH2M Hill
1500 114th Avenue Southeast
Bellevue, Washington 98004

Dear Mr. Christofferson:

We have received your letter of 2 September 1976 advising us that the review period for the draft environmental impact statements (EIS's) for the Capitol Lake Restoration Program and Recreation Plan is being extended to conform to the National Environmental Policy Act (NEPA).

A 45-day review period is part of the NEPA requirements, but the requirements for a Federal EIS are predicated on other factors. If one should be required, the state EIS normally cannot be substituted, and the review period does not begin until after the draft Federal EIS is submitted to the Council on Environmental Quality and published in the Federal Register.

At this time, we do not know whether a Federal EIS will be required. In our letter of 3 September 1976 (inclosure 1), we advised Mr. George Garris of the Washington Department of General Administration that a Department of the Army, Section 10/404 Permit would be required and perhaps a supporting Federal EIS.

If you have any additional questions, please feel free to contact Mr. Robert R. Spearman, telephone (206) 764-3493, Regulatory Functions Branch.

Sincerely yours,

John A. Poteat

JOHN A. POTEAT
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

Copies furnished w/incl:
(See attached page)

NPSEN-PL-ER
John R. Christofferson, AIP

Copies furnished w/incl:
Mr. George Garris
Washington Department of
General Administration
106 Maple Park
Olympia, Washington 98504

Mr. Jerry Bachmann
Washington Department of
General Administration
106 Maple Park
Olympia, Washington 98504

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX C-3755
SEATTLE, WASHINGTON 98124

NPSEN-PL-ER

3 SEP 1976

George C. Garris, Manager of
Facilities Planning
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Dear Mr. Garris:

We have reviewed the draft environmental impact statements on the proposed Capitol Lake Restoration and Capitol Lake Recreation Plan, with respect to the U.S. Army Corps of Engineers' areas of responsibility for flood control, navigation, hydropower, and the activity which is subject to Corps of Engineers permit authority. We have the following comments.

A Department of the Army, Section 10/404 Permit will be required for the proposed work, and perhaps a supporting Federal environmental impact statement (EIS). In our letter of 19 July 1976, we advised your consultant, Mr. Dale L. King of CH2M Hill, that a cursory analysis of the working draft, on which we assume your statement is based, indicates that additional environmental evaluation will be needed to support a Federal EIS.

Mr. Robert R. Spearman, telephone (206) 764-3493, can provide you with information about the EIS procedural requirements and any assistance that will be available.

Thank you for the opportunity to comment on this report.

Sincerely yours,

John A. Poteat

JOHN A. POTEAT
Colonel, Corps of Engineers
District Engineer

WASHINGTON STATE
PARKS & RECREATION COMMISSION

LOCATION: THURSTON AIRDUSTRIAL CENTER PHONE 753-5755

P. O. BOX 1128 OLYMPIA, WASHINGTON 98504

August 8, 1976

IN REPLY REFER TO:

35-2650-1820

Draft EIS -
Capitol Lake
Recreation Plan (E-65

Draft EIS -
Capitol Lake
Restoration (E-660)

TO: George C. Garris, Manager of Facilities Planning
Department of General Administration

FROM: John Purcell, Environmentalist
Environmental Coordination Section

RE: CAPITOL LAKE DRAFT ENVIRONMENTAL IMPACT STATEMENTS

The Washington State Parks and Recreation Commission has reviewed the above-noted documents and does not wish to make any comment.

Thank you for the opportunity to comment.

sg

WASHINGTON STATE
PARKS & RECREATION COMMISSION

LOCATION: THURSTON AIRDUSTRIAL CENTER PHONE 753-5755

P. O. BOX 1128 OLYMPIA, WASHINGTON 98504

August 25, 1976

IN REPLY REFER TO:
35-5650-1975

TO: George C. Garris, Manager, Facilities Planning
Washington State Department of General Administration

FROM: David W. Heiser, Chief, Environmental Coordination

RE: STATE ENVIRONMENTAL POLICY ACT OF 1971: AMENDMENTS TO GENERAL ADMINISTRATION'S IMPLEMENTING WAC

The Washington State Parks and Recreation Commission has reviewed the above-noted document and does not wish to make any comment.

Thank you for the opportunity to review and comment.

sg

WASHINGTON STATE
HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
Highway Administration Building
Olympia, Washington 98504 (206) 753-6005

Daniel J. Evans - Governor
W. A. Bulley - Director

August 31, 1976

Mr. George C. Garris, Manager
Facilities Planning
Department of General Administration
106 Maple Park
Olympia, Washington 98504

Department of General Administration
Capitol Lake Restoration and
Capitol Lake Recreation Plan
Draft Environmental Statement

Dear Mr. Garris:

We have completed our review of the Draft Environmental Statement for the above project and have no objections to the proposal.

We would, however, like to express our interest in maintaining close coordination with your Department, particularly in the area of the Capitol Lake interchange on Interstate 5, which is a part of an interdisciplinary study of modifications to I-5 from Trosper Road in Tumwater to Martin Way in Lacey.

Coordination with our Department concerning this project can best be maintained by contacting Mr. Jerry Zirkle, District Engineer, P. O. Box 327, Tumwater, Washington 98504. His phone number is 753-7200.

Thank you for the opportunity to review this information.

Sincerely,

H. R. GOFF
Assistant Director for
Planning, Research and State Aid

By: R. B. DAVIDSON
Environmental Planner

HRG:eh
RBD/CEM

cc: J. D. Zirkle

OFFICE OF CLERK-TREASURER

CITY OF TUMWATER

TUMWATER, WASHINGTON 98502

August 23 1976

Mr. George Garris

Manager Facilities Planning

State of Washington

Dear Sir:

The Tumwater Historical Commission has reviewed the preliminary plans for the restoration of Capitol lake.

We agree with your concept and you have our endorsement.

What has happened to the lake in the last twenty years is a shame and should be corrected.

The Commission is considering a number of ideas that have come forth for the preservation of history that is locked up along the shores of the upper basin, the site of the first American settlement north of the Columbia.

Some of these ideas may be dreams and some may see the light of day soon.

Such as; Restoration or some of the early day industry, 1845-90.
Replica of blockhouse
Museum
Marking historical sites
Including this area in National Register of Historic Sites.

The Restoration of Capital lake will be one more plus in the efforts to preserve history along its shore.

Thank you

Dewitt Henry

Dewitt Henry
President
Tumwater Historical Commission

PLANNING AND COMMUNITY DEVELOPMENT

CITY OF TUMWATER, WASHINGTON 98502 USA

August 25, 1976

General Administration
Planning Division

Gentlemen:

We, the Tumwater Parks Board, would like to inform you of our endorsement of the broad scope of restoration plans for Capitol Lake.

Purchasing of the property around the upper basin or south end of the lake by the city of Tumwater is an indication of our interest in the restoration of Capitol Lake. With restoration of the middle and upper basins and their perimeters, the city of Tumwater will be able to proceed with its plans to develop a park to extend and augment the restoration plans for Capitol Lake.

We believe that Capitol Lake is an area of beauty for all to see and enjoy, and restoration is essential to attain this goal.

Respectfully yours,

Howard M. Brooks, Chairman
Parks & Recreation Board
City of Tumwater

HMB:sb

ROTARY CLUB

OF

TUMWATER, WASHINGTON

JOHN SWANSON
PRESIDENT

JAMES BROWN
SECRETARY

August 24 1976

Mr. George Barris

State of Washington

Facilities Planning Manager

Dear Sir:

The Tumwater Rotary Club is a service oriented group of business and professional men in the City of Tumwater.

The club members endorse the plan for the restoration of Capitol lake.

The restoration of this lake will again make it a place of beauty and permit recreation for all to enjoy.

The City of Tumwater intends to develop a park on land they have purchased and additional land they have leased adjacent to the upper basin.

We consider the redevelopment of the lake a must.

Thank You

John Swanson

John Swanson
President, Tumwater Rotary Club

VERBAL COMMENTS

Verbal comments received during the conduct of the EIS public hearing on 25 August 1976 are given below along with responses.

Mr. Lewis Charles

Comment and Response

Mr. Charles' comment is similar to the written comment made by Washington State Building and Construction Trades Council concerning state purchase and operation of dredge equipment. See the response following that comment, page 49.

Ms. Ann Avery

Comment

Is there any way to leave the tide gates open all winter to reduce the potential for flooding?

Response

During the winter season at flood stage, the lake level has been measured as rising 12 inches per hour. Efforts have been made in the past to lower the lake before expected flood conditions, but have not been successful because of the length of time the gates must be closed when the saltwater level is above the lake level. The gate is set to open automatically when the saltwater level is 1 to 2 inches below the lake level; it may be possible to manually open the gates under flood conditions to drain the maximum amount of water most expeditiously, but this will not make a significant difference.

Comment

Is there any market for the humus material dredged from the lake?

Response

Some of the dredge spoils will have good organic value. However, the problems of segregating, drying, storing, and marketing the material outweigh the economic value. The organic content will be used in providing a good growing medium for the landscaping in the proposed recreational areas.

Ms. Eleanor Price

Comment

Ms. Price supported proposed planning efforts and additional recreational areas accessible to the public; expressed concern for upstream causes of sedimentation. Asked the question, "When will the water quality study of Capitol Lake be completed?"

Response

Approximately December 1977

Rep. John Hendricks

Comment

Pledged continued support of Capitol Lake restoration efforts.

Response

None required

Mr. Oliver Jeffer

Comment

Would it be possible to use some of the dredge spoil sites for state plant nurseries?

Response

While the idea is technically feasible, problems such as vandalism and theft, as well as competing recreational uses for the land, probably rule it out as a practical alternative.

Mr. Colum Liska

Comment No. 1

Expressed the thought that question of public access and controlled development along the east shore of the middle basin should be explicitly dealt with.

Response

Page 39 of the Recreation DEIS notes that the plan does not provide an opportunity for public access along this portion of the lake but also recognizes the practical problems in attempting to do so. These problems include the fact that the area is considered environmentally sensitive by the City of Olympia; is prone to slope instability; is within the shoreline management zone; and is zoned exclusively for single-family residential use.

Comment No. 2

Requested that dredging in the upper basin be limited to the absolute minimum.

Response

It is hoped that the modified restoration plan for the upper basin will answer Mr. Liska's request.

Comment No. 3

Stressed the need for an answer to the water quality problem.

Response

Acknowledged; this has been answered previously.

Mr. Mat Newnen

Comment

Strongly concurred in the need for a solution to the water quality problem. Agreed that the state should contract out dredge rental and operation. Reiterated desirability of reducing upstream siltation.

Response

Answered previously.

Mr. Chuck Lindberg

Comment

Expressed the feeling that an obligation exists to maintain the lake. Advocated that middle basin be left open for more active sports, including water skiing.

Response

This point of view was given careful consideration during development of the recreation plan. However, it was recommended against based on the potential conflict with other recreational pursuits because of noise, hazard to swimmers, and similar concerns, and based on the relatively small scale of the basin itself. The Department of General Administration is in the process of preparing a comprehensive lake management program. This question will be fully addressed at that time. A Washington Administrative Code public hearing will be required for the management program and will afford adequate review of this issue.

Mr. Bob Eye

Comment

Reiterated the need for the water quality problem to be solved.

Response

Answered previously.

Mr. Jim Brown

Comment

Urged enough flexibility in the plan to allow swimming in the lake at Tumwater City Park site and other nonpassive recreation.

Response

Adequate flexibility exists in the plan for the City of Tumwater to develop its park as it sees fit. The Capitol Lake recreation plan should be compatible with the most probable uses that may be considered for the park site.

Capitol Lake

Appendix B

Additional Material Requested

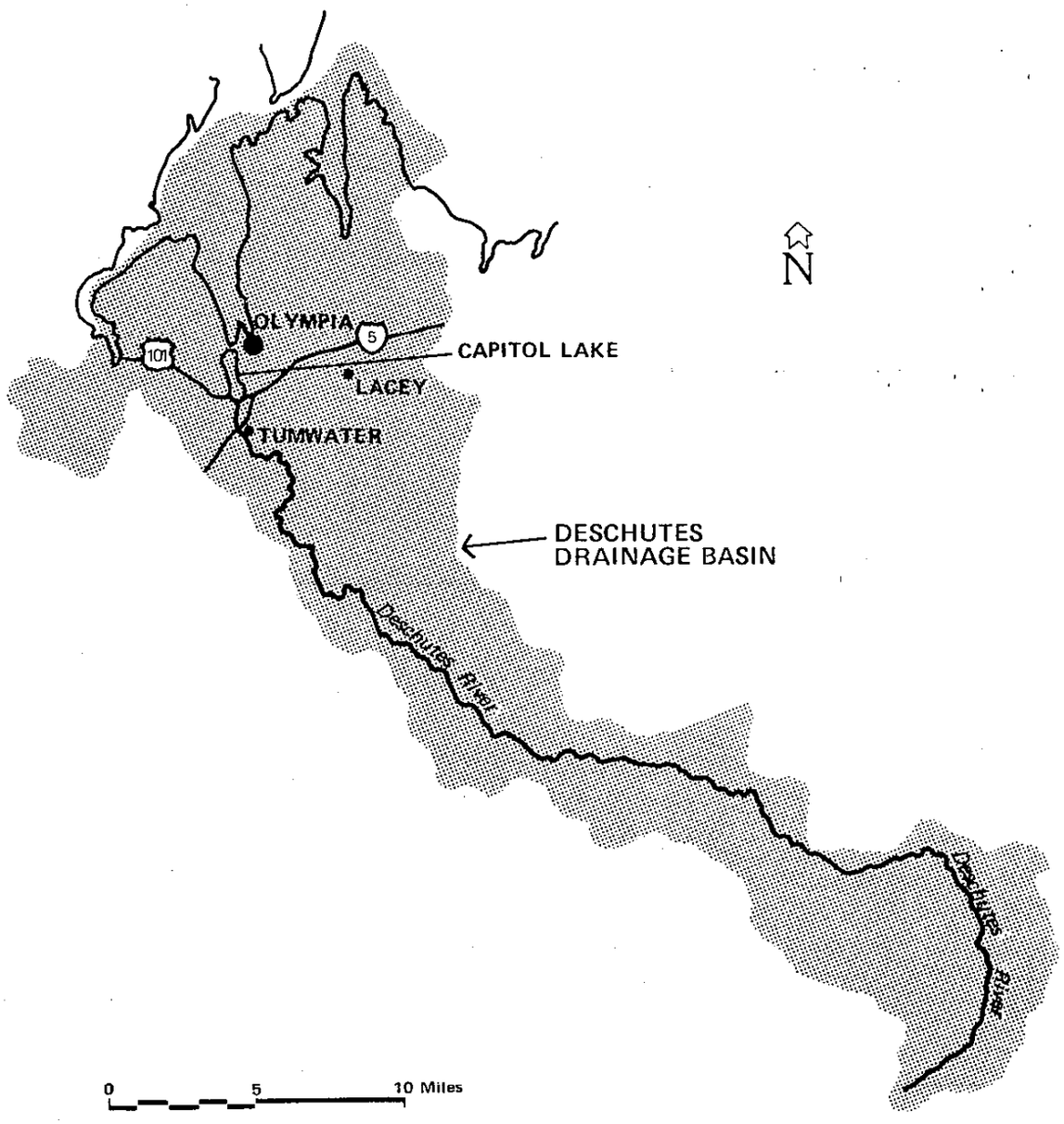
Appendix B
ADDITIONAL MATERIAL REQUESTED DURING THE DEIS REVIEW PROCESS, OR PRESENTED FOR INCLUSION IN THE FEIS

This section contains:

- Material regarding the Deschutes River drainage basin
- Locational data on the relationship between juvenile chinook abundance and rooted aquatics (figures 6, 7, 8)
- A list of Capitol Lake fish species (table 2)
- A map showing the total water area reduction (figure 9)
- Additional material on the history of the creation of Capitol Lake
- A description of an additional restoration alternative consisting of removal of the Fifth Avenue dam gate
- Additional material on Capitol Lake aquatic insects and invertebrates
- A statement of the Thurston County Native American Community Association, Inc.
- *Sediment Trapping Efficiencies of Maintenance Dredge Plans in the Upper Basin of Capitol Lake,* report prepared by Albrook Hydraulic Laboratory, Washington State University

DESCHUTES RIVER DRAINAGE BASIN MATERIAL

As requsted by the U.S. Fish and Wildlife Service, the area covered by the Deschutes River drainage basin is shown in figure 5. Following this figure is correspondence regarding the potential for sediment control in the basin.



Deschutes River Drainage Basin 5

State of Washington
DANIEL J. EVANS, Governor

DEPARTMENT OF GENERAL ADMINISTRATION
KEITH A. ANGIER, Director

218 GENERAL ADMINISTRATION BUILDING, OLYMPIA, WASHINGTON 98504

December 23, 1976

R. A. O'Neal, Director
Thurston Regional Planning Council
Court House Annex
Olympia, Washington 98501

Dear Art:

I am writing to request your assistance in the State's effort to restore and preserve Capitol Lake. One of the State's explicit goals is to "encourage land use within the Deschutes River Basin that will decrease sediment loading" in Capitol Lake which is accumulating, according to the United States Geological Survey, at a rate of 25-30,000 tons per year. I am specifically interested in any programs or land use regulations that you have or could implement to control the amount of sediment being transported by the Deschutes River into Capitol Lake. Such programs could be of measurable assistance in our collective efforts to reduce and control the cost of routine maintenance dredging of the Lake.

Governor Evans' 1977-79 budget request includes a new appropriation of $1,662,000 to General Administration to fund the restoration of Capitol Lake as necessitated by the accumulation of silt in the Lake since its creation in 1949. The restoration program is based upon the complete results of the planning and engineering study approved previously by the Legislature.

Our restoration program calls for selected dredging of the Lake, construction of settling basins, diking, disposal of sediment and general waterway improvement. An on-going maintenance program has also been developed which will maintain the Lake in its restored condition at an annual cost of approximately $38,000.

Please advise me at your earliest convenience of any land use programs or regulations pertinent to this program, and of any questions you may have about the State's plans for Capitol Lake.

Copies to:
Wesley L. Barclift
Marj Yung
Bert Cole
John Biggs

Sincerely,

Keith A. Angier

george l. barner, jr.
district one

del pettit
district two

marj yung
district three

thurston county commissioners

olympia, washington 98501

January 25, 1977

206-753-8031

Department of General Administration
General Administration Building
Olympia, Washington 98504

Attn: Keith Angier

Dear Sir:

The enclosed letter from the Thurston County Planning Department summarizes the programs and regulations in effect in Thurston County which may control the amount of sediment being transported by the Deschutes River into Capitol Lake.

Very truly yours,

C. WESLEY LEACH, County Auditor
and Ex Officio Clerk of County
Commissioenrs

By [illegible] Deputy

rp

encl.

THURSTON
COUNTY
PLANNING
DEPARTMENT

3RD FLOOR
COURTHOUSE ANN
OLYMPIA, WA 985
206 753-8131

January 18, 1977

RECEIVED
COMMISSIONERS
JAN 1 [illegible] 1977
DIST. #1☐ #2☒ #3☐
OTHER review

Board of Thurston County Commissioners
Thurston County Courthouse
Olympia, WA 98501

Dear Commissioners:

Subject: Response to Keith A. Angier
Department of General Administration

Following is a summary of the programs and regulations in effect in Thurston County which may control the amount of sediment being transported by the Deschutes River into Capitol Lake. This summary may be used in response to Keith A. Angier's letter requesting this information from you.

The Thurston Region Shoreline Master Program is the principal ordinance which regulates development within the floodplains on the Deschutes River. Shorelines of the State extend from the mouth along the Deschutes River through the entire County. The Shoreline Master Program regulates land use within 200 feet of either side of the river or over the entire floodplain of the river. The Master Program regulates the following kinds of land uses which are pertinent to soil erosion:

1. Residential Densities
2. Landfilling in the floodplains
3. Mining
4. Flood control structures
5. Agricultural practices.

Regarding residential densities along the Deschutes River, the Master Program classifies the environments along the river into three different zones. The first one-third mile from the mouth of the river upstream the floodplain is classified as urban; which allows residential lots having a minimum size of 12,500 sq. feet. A 200 foot wide corridor along both sides of the river in this urban section is classified as conservancy, which allows no greater densities than one unit per acre. Further upstream to the east section line of Section 2, Township 17N, Range 2W, the floodplain is classified as rural, which allows densities as great as two units per acre. Beyond that line the floodplain is classified as conservancy.

It should be stated that the National Flood Insurance Program which is implemented partially at the county and city levels in Thurston County, requires that all structures have their first floor level one foot above the 100 year flood elevation. After certain flood engineering studies have been completed on the Deschutes River by an agency of the federal government, Thurston County and Tumwater will be required to implement a floodplain management ordinance.

In the part of the Deschutes River floodplain which has been classified as urban in the Master Program, there are no restrictions on landfilling in the floodplain except those contained in existing zoning and building codes. In the rural environment landfilling is only allowed in the floodplain to raise a structure and is not to exceed the area of the structure by more than three times. Landfilling is not permitted in the conservancy environment.

Mining in all three shoreline environments requires a Shoreline Permit and a plan for erosion control and site reclamation.

Flood control structures may be constructed in the urban shoreline, are somewhat restricted in the rural shoreline, and must be located landward of the 100 floodplain in the conservancy shoreline.

In any shoreline, agricultural practices must not be of the type that would allow large amounts of silt to enter the stream.

It should be mentioned that the Department of Ecology administers the flood control zone permit which regulates construction of any structure in the floodplain. The purpose of this permit is to prevent damage or alteration to property downstream from newly constructed structures. The Department of Ecology is now considering the possibility of transferring the responsibility for administering the flood control zone permit to local governments.

In summary, Thurston County and the City of Tumwater are or may become responsible for administering three different programs which relate to control of development in floodplains: the Shoreline Master Program, the Flood Insurance Program, and the flood control zone permit.

If you need further information, please let me know.

Sincerely,

THURSTON COUNTY PLANNING DEPARTMENT
Art O'Neal, Director

Eric Davidson, Associate Planner

January 4, 1977

Mr. Keith Angier, Director
Department of General Administration
Olympia, Washington 98504

Dear Keith:

I have received your letter regarding Capitol Lake and the Deschutes River. I personally believe that restoration and maintenance of Capitol Lake will be an outstanding project for the state and this area with substantial benefits for the citizens of this area.

The need for programs to reduce the amount of sediment accumulating in the lake is obvious. As you know, we have undertaken detailed studies in the upper Deschutes River basin to more precisely define the location and probable causes of erosion which results in the heavy silt load to Capitol Lake. These studies are a logical precusor to directing programs of erosion control in the basin.

There are some statutory authorities available to the Department to bring about erosion control and limit river and lake siltation. These include the Shoreline Management Act, the Forest Practices Act, and the State Water Pollution Control Act. Each of these laws provide some authority either directly or indirectly to regulate sources of water pollution, including sedimentation.

It is clear, however, that the uncoordinate use of these laws, particularly in relation to local government landuse controls, could result in many efforts with little overall effect. Because of this, I am instructing staff in the Department, as a matter of high priority, to consult with your department, local officials and major landowners in the Deschutes River basin as the first

step toward developing a major coordinated environmental clean-up program for the Deschutes River and Capitol Lake. There are many facts regarding the basin about both the natural run-off conditions and landuse activities that must be understood thoroughly before effective erosion control and prevention can be achieved. But it does appear to me that the Deschutes River could become a model in Washington State for a coordinated and cooperative program to improve small but highly prized recreational and aesthetic rivers.

Staff from the Department of Ecology will be in contact with you in the near future to discuss the mechanics of initiating such a program.

Sincerely,

John A. Biggs, Director

JAB:sm

WESLEY L. BARCLIFT
MAYOR

CITY OF TUMWATER
WASHINGTON

OFFICE OF THE MAYOR

January 13, 1977

Mr. Keith A. Angier
Department of General Administration
218 General Administration Building
Olympia, Washington 98504

Dear Mr. Angier

This letter is in response to your letter of December 23, 1976, regarding the proposed plans for the Restoration and Preservation of Capitol Lake and the role that Tumwater can play in helping to reduce the need for maintenance dredging of the lake.

As I believe you are aware, much of the natural drainage basin for the DesChutes, which is in the City of Tumwater, is in either public or semi-public open space. As such, the amount of downstream sedimentation attributable to these areas is minimal. For other areas also within Tumwater's portion of the basin, which are either developable or currently developed, the City does have some control. Probably the largest opportunity for review and control comes from those projects which fall within the Shoreline Management Jurisdiction. However, for all projects requiring a building permit in the City, all surface run-off generated from private property must remain on private property. The most common methods of meeting this requirement are the use of drywells, "french drains", settling ponds, etc. Where possible, the City also uses the above methods to handle storm water generated from our streets and roads.

Specifically, on the land use question, Tumwater is fortunate to have its large amount of "permanent" open space, which will be encouraged to remain in its current use. Other uses, such as intensive logging, surface extraction, and the like, which would contribute significantly to the sediment loading, will be discouraged.

Your department has studied the problems and possible solutions to the problems in some depth. If this is in fact the case, perhaps it would be very helpful for you to propose methods beyond our current practices which would help to lessen the sedimentation contributed by the Tumwater area. I would appreciate receiving information in this regard.

If you have any further questions, please let me know. I look forward to hearing from you further on this matter of vital interest to all of us.

Very truly yours

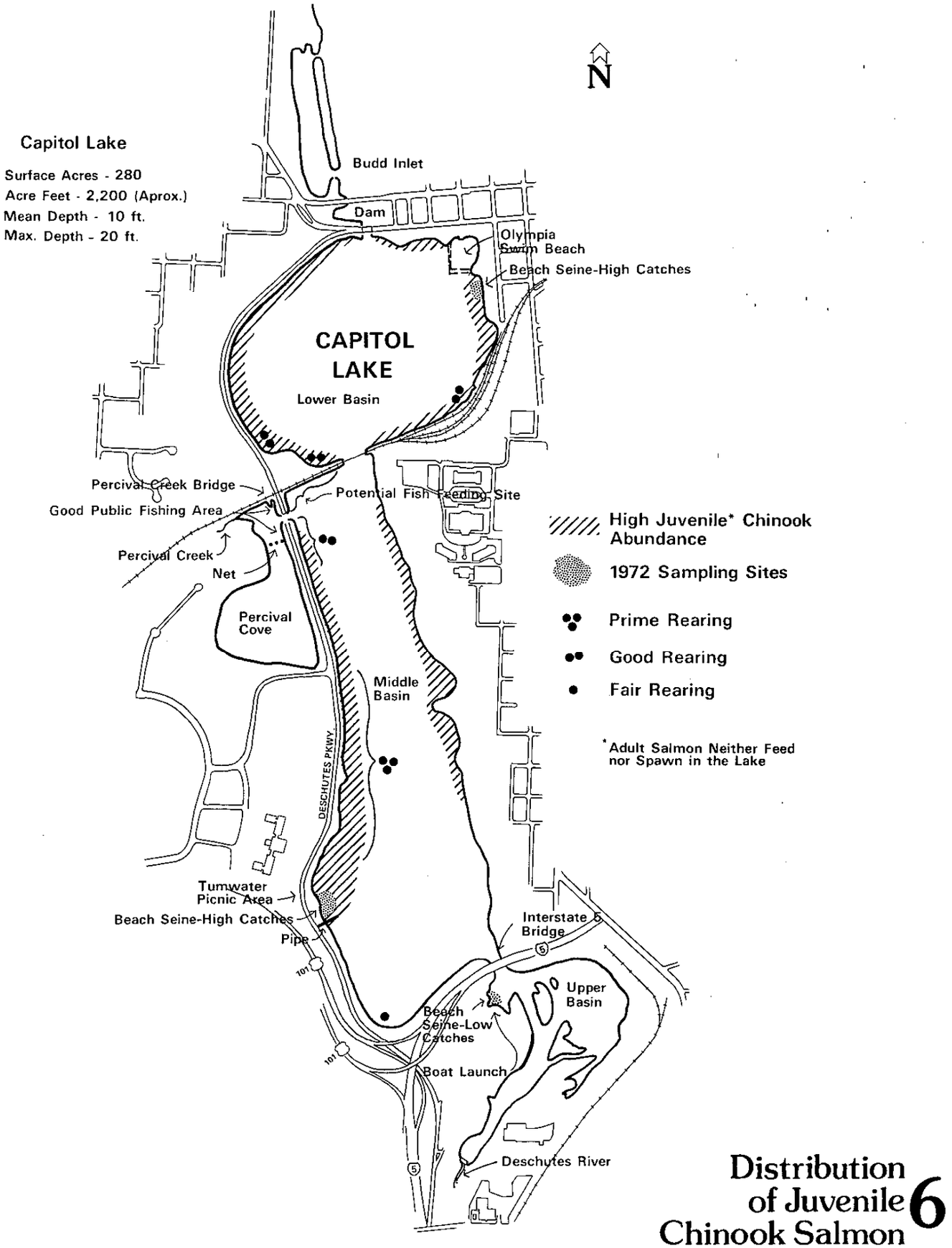
Wesley L. Barclift
Mayor

WLB:cll

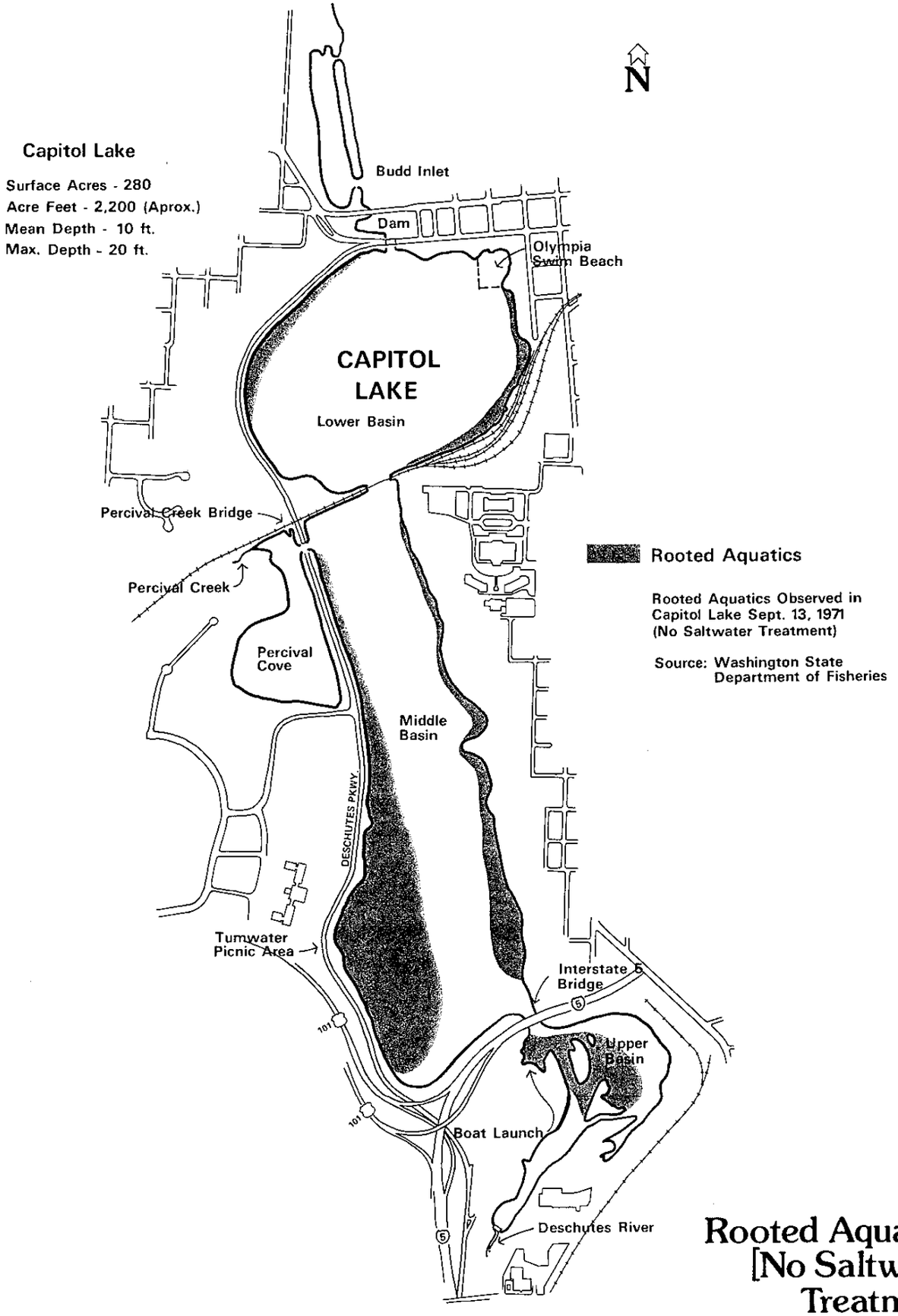
RELATIONSHIP BETWEEN JUVENILE CHINOOK ABUNDANCE AND ROOTED AQUATICS

Figure 6 shows the general distribution outside Percival Cove of the majority of surface-dimpling chinook under natural rearing conditions. Few fish were observed, or seined, in the upper basin in 1971-73 because of the extreme shallows and subsequent avoidance by fish at the seine site. The middle basin was primarily used for rearing, and high catches of chinook parr (150-500/lb) dominated the seine catches. The lower basin was also used for rearing, but seine catches and visual observations were predominantly of larger chinook smolts (65-80/lb) obviously moving towards the Capitol Lake dam in the evenings. The department did not conduct stomach sampling during 1971-73 because of manpower limitations and the unnecessary destruction of prime fish that were obviously growing well.

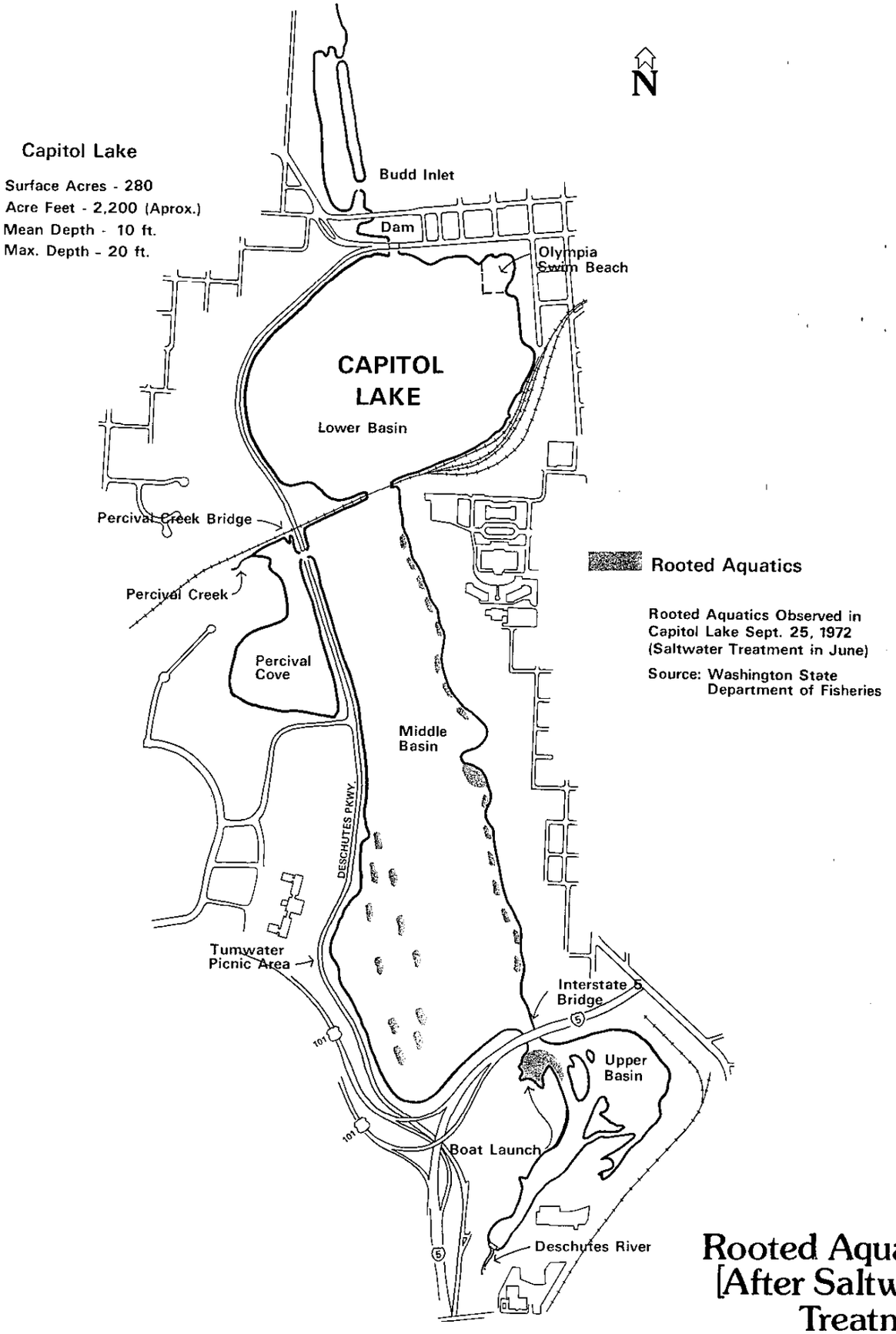
Of interest is the apparent relationship of rooted aquatics (figures 7 and 8) and the distribution of naturally reared chinook. This relationship occurs because rooted aquatics prefer semi-shallow mud substrates, and chironomids, a major constituent in a smolt's diet, prefer a similar condition. The Department of Fisheries' position has consistently been to remove sand bars while retaining the mud bottoms for insect production.



Distribution of Juvenile Chinook Salmon 6



Rooted Aquatics [No Saltwater Treatment] 7



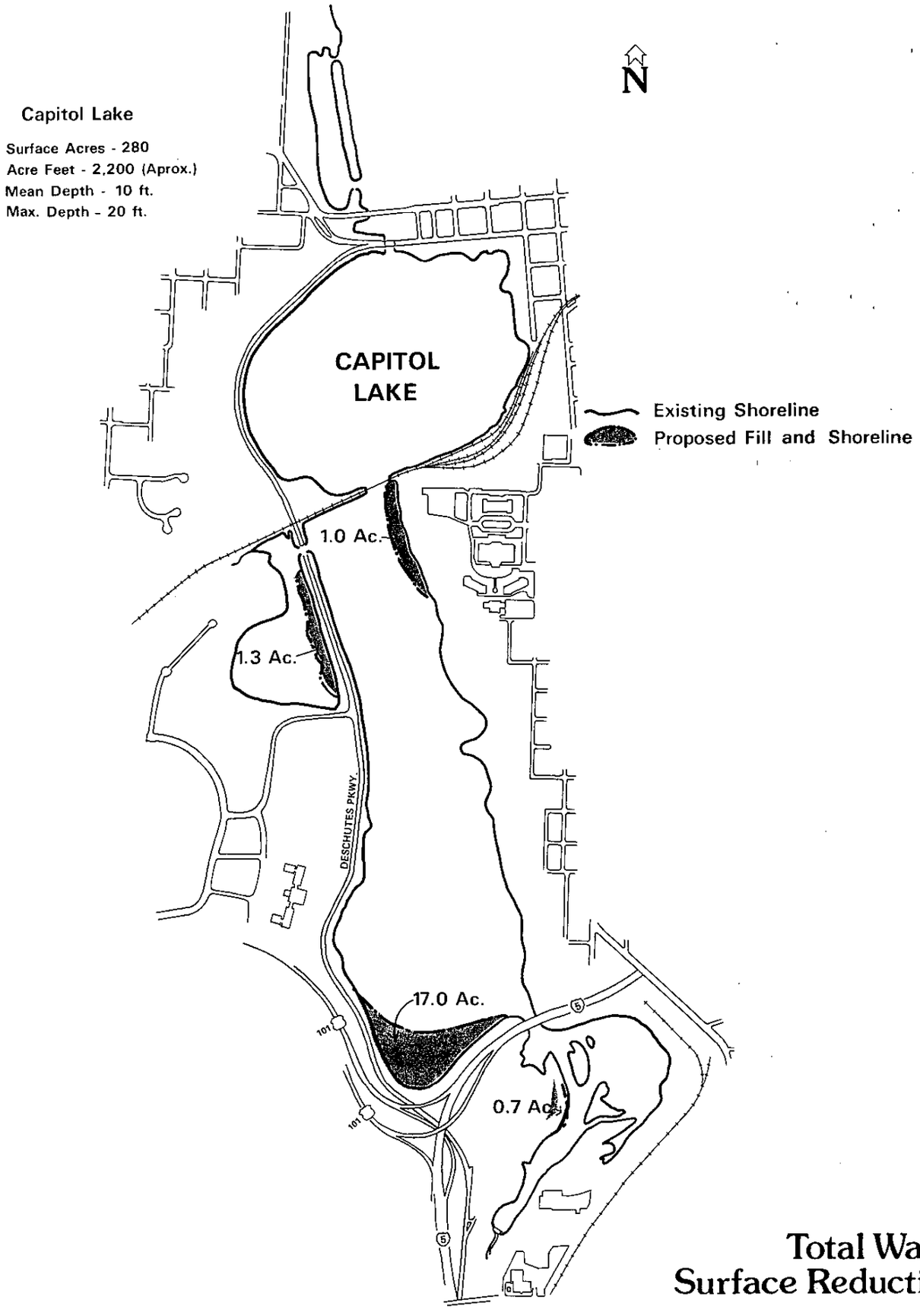
Rooted Aquatics [After Saltwater Treatment] 8

Table 2. FISH SPECIES OCCURRING IN CAPITOL LAKE

Common Name	Scientific Name	Abundance		Origin[a]
		Main Lake	Percival Cove	
Chinook salmon	*Oncorhynchus tshawytsha*	abundant	abundant	1
Coho salmon	*Oncorhynchus kisutch*	common	common	1,3
Chum salmon	*Oncorhynchus keta*	probably absent	probably absent	3
Rainbow or steelhead trout	*Salmo gairdneri*	common	common	1,2,3
Cutthroat trout	*Salmo clarkii clarkii*	common	common	1,2,3
Red-sided shiner	*Richardsonius balteatus*	common	abundant	2,3
Carp	*Cyprinus carpio*	common	common	3
Coarse-scaled sucker	*Catostomus macrocheilus*	abundant	abundant	2,3
Catfish	*Ameiurus nebulosus*	uncommon	uncommon	3
Three-spined stickleback	*Gasterosteus aculeatus*	common	uncommon	2,3,4
Large-mouth black bass	*Micropterus salmoides*	uncommon	uncommon	3
Pumpkinseed sunfish	*Lepomis gibbosus*	probably absent	probably absent	3
Yellow perch	*Perca flavescens*	common	common	3
Starry flounder	*Platichthys stellatus*	occasional	uncommon	4
Bullhead	*Cottus asper*	common	common	2,3

[a] Origin:

1. Introduced by man.
2. Emigrated from Deschutes River.
3. Emigrated from Percival Creek and Black Lake.
4. Marine relic.



Total Water Surface Reduction 9

ADDITIONAL MATERIAL ON HISTORY OF CREATION OF CAPITOL LAKE

In March of 1947, the State Legislature passed House Bill 236, which authorized the issuance of bonds for the construction of a dam at the Fifth Avenue Bridge, the acquisition of tidelands, and the construction of Deschutes Parkway.

Construction began in 1949, and the dam was completed in 1951. Sedimentation from the Deschutes River, Percival Creek, and tributaries, which was formerly carried into Budd Inlet, began to be trapped within the newly created lake basin.

The distribution of sediment was further modified by construction of the I-5 bridge fill, which formed the upper basin in 1956. This fill slowed the river's flow sufficiently to receive a major portion of the sediment entering the lake system and has been responsible for creation of the wetlands environment that has rapidly developed in the upper basin.

ADDITIONAL ALTERNATIVE: REMOVAL OF FIFTH AVENUE DAM GATE

This alternative would allow the gate of the Fifth Avenue dam to be removed and Capitol Lake to revert to the estuary it once was. The area now occupied by the lake would change from a freshwater to a saltwater environment that would be subject to tidal action. Silt that now accumulates in the lake would be largely carried out into Budd Inlet.

Positive aspects of this alternative include:

- Elimination of the need for a dredging program with attendant costs
- Elimination of other costs and problems, such as aquatic weed growth related to the maintenance of an artificial freshwater system
- Elimination of energy needed for the dredging and pumping equipment
- Elimination of the possibility of a diesel oil spill during dredging operations
- Avoidance of engine emissions and noise associated with the dredging and pumping equipment
- Potential revitalization of shellfish culture in estuary waters

Negative features of the alternative are:

- An aesthetically less desirable setting for the Capitol Campus
- Loss of recreational opportunities associated with a freshwater environment
- Loss or substantial reduction in the artificial salmon-rearing program in Percival Cove and the lake
- A probable decrease in property values around the lake
- Shifting of the sedimentation problem to the Port of Olympia

ADDITIONAL MATERIAL ON CAPITOL LAKE AQUATIC INSECTS AND INVERTEBRATES

The following data regarding zooplankton and benthic organisms in Capitol Lake are reproduced from the Washington State University study[1] in response to questions raised by the U.S. Fish and Wildlife Service.

Zooplankton

Zooplankton counts (tables 38 and 39) show a dominance of cladocerans consisting of *Bosmina sp.*, *Ceriodaphnia sp.*, and *Daphnia sp.* Copepod genera present were *Cyclops sp.* and *Diaptomus sp.* The highest density of zooplankton was observed in the 25 July 1974 sampling. Engstrom-Heg reported peak densities for the summer and fall of 1955 on 18 July, 18 August, and 12 September. Data from the current study agree with data from the Department of Fisheries (1955) showing very low counts in October. Observed low counts in November and January are the result of high runoff and turbidity during this period.

A numerical comparison of observed zooplankton counts with comparable sampling dates of the 1955 study (table 53) indicates a much greater density of zooplankton during 1974. Some of this difference, however, is probably due to differences in sampling methods. Engstrom-Heg used oblique tows with a Clarke-Bumpus sampler fitted with a #0 (0.569-mm mesh) net. Current sampling was done to the top 2 meters using a Van Dorn sampler as a trap and filtering through a #20 (0.05-mm mesh) net. Assuming that the zooplankton were only in the top 2 meters and that the current-sampling method was 100 percent more efficient, there still appears to have been a real increase in zooplankton numbers since 1955.

Zooplankton composition appears to have remained stable since 1955 except that the *Epischura sp.*, the dominant copepod in 1955, was not observed in the current study. Zooplankton numbers may increase slightly and show earlier seasonal peaks after the lake restoration measures are completed, but composition will probably remain the same.

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[1] Hydraulics Research Section and Environmental Research Section, Washington State University, op. cit. pp. 178-180 and 207-215.

Table 38.
Capitol Lake Zooplankton Count, Middle Basin; number/liter

	6-28-74	7-25-74	8-28-74	10-16-74	11-22-74
ROTIFERS					
Asplanchna	104	36	171	--	--
Brachionus	4	--	--	3	--
Kellatella	2	20	--	--	--
Polyarthra	49	288	--	--	--
Synchaeta	22	59	2	--	--
Trichacerca	1	--	2	--	--
CLADOCERA					
Alonella	19	--	--	--	--
Bosmina	118	40	--	--	1
Ceriodaphnia	--	1	14	--	--
Daphnia	--	8	2	--	--
COPEPODS					
Cyclops	--	1	--	--	--
Diaptomus	1	--	4	--	--
Nauplius (stage)	6	10	--	--	1
Chiromomidae	--	--	--	--	1
Total organisms/liter	326	463	195	3	3

Table 39.
Capitol Lake Zooplankton Count, Lower Basin, number/liter

	6-28-74	7-25-74	8-28-74	10-16-74	11-22-74
ROTIFERS					
Asplanchna	9	71	160	--	--
Brachionus	2	5	--	69	2
Keratella	1	15	--	--	--
Polyarthra	25	218	--	--	1
Synchaeta	9	203	2	--	1
Trichocerca	--	5	1	--	--
Unidentified	84	5	--	--	--
CLADOCERA					
Alonella	--	--	--	--	--
Bosmina	149	41	4	--	--
Ceriodaphnia	--	8	39	--	--
Daphnia	--	112	8	--	--
COPEPODS					
Cyclops	--	--	--	--	--
Diaptomus	--	--	2	--	--
Nauplius (stage)	2	31	--	--	1
Total organisms/liter	281	714	216	69	5

Table 53.

A Comparison of Zooplankton Counts for 1955 and 1974 (in number/l)[27]

Date 1955	Cladocera	Copepods	Date 1974	Cladocera	Copepods
		LOWER BASIN			
6/28	4.3	0.64	6/28	149	2
7/18	6.1	2.7	7/25	161	31
8/30	0.2	0.8	8/28	51	2
10/20	2.1	0.2	10/16	0	0
		MIDDLE BASIN			
6/28	1.8	0.1	6/28	137	7
7/18	0.1	1.3	7/25	49	11
8/30	0.3	6.1	8/28	16	4
10/20	0.4	0.1	10/16	0	0

[27] Engstrom-Heg, R. 1955. *Environmental relationships of the young chinook salmon in Capitol Lake and the Descutes River System.* State of Washington Department of Fisheries.

Benthic Organisms

Benthic samples (Table 40) show differences in numbers and composition of benthos between the lower and middle basins. The June 28, 1974, sample indicates marine polychetes dominant in both the lower and middle basins. This sampling was conducted immediately after the salt water flushing of the lake and these organisms probably migrated in with the salt water. The distinct separation of the two polychetes in the lower and middle basins may reflect their degree of mobility or their degree of salinity preference. The polychete Nereis sp. is much larger and appears much more mobile. These polychetes are brackish organisms and their survival in Capitol Lake until January is surprising. The October sampling again showed a distinct difference between the lower and middle basins with the ostracod Typhlocypis sp. dominant in the middle basin and the amphipod Corophium sp. dominant in the lower basin. Chronomid larvae which were absent or present at low densities during the June and October sampling were dominant in both the lower and middle basins in January.

Table 40. Benthic Organisms of Capitol Lake, Washington (Organisms per m^2)

	MIDDLE BASIN						LOWER BASIN					
	6-28-74		10-16-74		1-17-75		6-28-74		10-16-74		1-17-75	
	#/m^2*	#/ft^2	#/m^2	#/ft^2	#/m^2	#/ft^2	#/m^2	#/ft^2	#/m^2	#/ft^2	#/m^2	#/ft^2
Hydrozoa												
Unidentified											43	(4)
Plychaeta												
Ampharetidae					–		1376	(128)	129	(12)	43	(4)
Nereidae												
Nereis	215	(20)	258	(24)					86	(8)		
Oligochaeta												
Enchytraeidae											43	(4)
Unidentified					129	(12)						
Insecta												
Chironomidae	86	(8)			258	(24)	86	(8)			215	(20)
Tipulidae	344	(32)										
Crustacea												
Ostracoda												
Typhlocypris			860	(80)	43	(4)						
Amphipoda												
Corophium							43	(4)	3784	(352)		
Microprotopus			43	(4)								
Arachnida												
Hydracarina			43	(4)								
Total	645	(60)	1204	(112)	430	(40)	1505	(140)	3999	(372)	344	(32)

*m^2 = 10.76 ft^2

#/m^2x0.9294 = #/ft^2

Benthos

Observations of the benthic organisms of Capitol Lake during 1974-75 indicate a greater diversity (Table 40) than found by Engstrom-Heg.[27] Although chinonomid larvae were abundant, ostracods, amphipods, and marine polychates were found to be equally abundant. The abundance of all organisms varied seasonally and by station. No samples were taken at the south station because of the rock and gravel substrate, but there are probably some lotic-type organisms (mayflies, caddisflies) at this station.

Stomach analysis of fish by Engstrom-Heg indicated that polychates were present in 1955 even though none were detected from his bottom samples. The two polychates found were generally separated with Ampharetidae in the lower basin and Nereis sp. in the middle basin. A few Ampharetidae were found in the lower basin in January indicating there is some carryover from one year's salt-water flush to the next. Whether the polychates, ostracods and amphipods constitute a significant portion of the chinook diet depends on whether or not the fish will adapt to bottom feeding. It may be that the preference of chinook for surface feeding and the annual salt water flushing have increased the mortality of the chironomids so that they are not as competitive ecologically. More probable is the fact that the ostracods and amphipods are slower to colonize than the chironomids and have become established in the period since 1955.

The proposed lake restoration project is not expected to shift benthic composition since all types of bottom organisms should benefit from a more stable lake bottom. Total numbers will probably increase after the project.

Summary and Comparison with Past Studies

Biological parameters indicate Capitol Lake is eutrophic but does not exhibit many common symptoms because of its unique natural characteristics and management procedures. Without the low residence time and periodic salt water flushing it appears that Capitol Lake would experience severe algae and macrophyte problems assuming the nutrient concentations remain at their present levels. Compared to 1955 conditions,[27] Capitol Lake appears to be supporting more biological activity. Shifts in some species have also become apparent.

Chlorophyll observations from the current and past studies are too infrequent and variable to permit direct comparison. However, the early Department of Fisheries study[27] did not note any heavy algae growths except for the Spirogyra sp. and Volvox sp. as previously noted. Current Volvox counts were higher though--this may be due to normal variation. Volvox commonly appears where nitrogen concentrations are high.

Zooplankton standing crop as an indication of primary production was comparable for 1955 and 1974 although methods differed somewhat. The comparison of zooplankton numbers for similar sampling dates is given in Table 53. It appears that cladoceran numbers have increased substantially, however biomass may be the same for the two periods if the mean size has shifted to smaller organisms. Composition has remained the same except that the copepod genus Epischura was not found in the 1974 sampling.

Benthic organism composition appears to have changed considerably from an almost 100-percent dominance by chironomid larvae to a composition of polychates (marine), amphipods, ostracods and dipteran larvae. It might be expected that dipteran larvae would be first to colonize a new impoundment because of their mobility. Engstrom-Heg[27] reported a standing crop of 159 lb/acre (17.8 g/m^2) of chironomid larvae. Wet weight of samples from current observation (Table 52) indicates a mean standing crop of 19.0 g/m^2.

The planned restoration project will probably have the most substantial effect on the benthic portion of the biological community. With reduced deposition of coarse sediments, food material will be more readily available and smothering of young larva should be reduced. This should result in an increased standing crop of benthic organisms.

Primary production will probably not be affected by the project since retention time will not be increased to any significant extent.

Table 54.

Benthic Weight (Preserved Samples)

Sample Location	Date	Sample Weight (g)	Standing Crop (g/m^2)
Lower Basin	6/28	0.357	15.4
Middle Basin	6/28	1.733	74.6
Lower Basin	10/16	0.207	8.9
Middle Basin	10/16	0.295	12.7
Lower Basin	1/17	0.04	1.7
Middle Basin	1/17	0.02	0.9

THURSTON COUNTY NATIVE AMERICAN COMMUNITY ASSOCIATION STATEMENT

The Capitol Lake DEIS's were prepared in recognition of the lake's historical and prehistorical resources that could be incorporated into an overall recreational plan. Information provided by the State Capitol Museum included data relative to the historical significance of the New Market townsite at the Tumwater Park. The museum would like to see both the prehistorical and historical sites restored for the cultural and educational benefit of state citizens and visitors.

During the DEIS review process, an additional statement regarding development of Native American cultural resources as part of the Capitol Lake project was prepared on behalf of the Thurston County Native American Community Association, Inc. This statement, which is reproduced on the following pages, expresses the organization's suggestions for incorporation of Native American activities and interpretive exhibits into the recreation plan for Capitol Lake. These suggestions will receive careful consideration during the preparation of the final recreation plan. The Thurston County Native American Community Association will be given a further opportunity to discuss its proposals with the department's consultants and to participate in the process of developing the final recreation plan.

The department is grateful for the obvious effort expended by the association in preparing this material for consideration.

THURSTON COUNTY NATIVE AMERICAN COMMUNITY ASSOCIATION, Inc.
P. O. Box 2785, Olympia, Washington 98501

December 15, 1976

Mr. Jerry Backman, Chairman
Capitol Lake Development Committee
General Administration Building
Olympia, Washington

Dear Mr. Backman:

Enclosed for consideration is a statement developed by Mr. Del McBride on behalf of the Thurston County Native American Community Association, Inc. (TCNACA) which we would like to have included in the proposed plan for the Capitol Lake Development project.

Also attached as a part of this letter is a brief statement describing the TCNACA. We feel that this may be warranted at this time as we are a relatively new organization and as yet, not many people know that much about the organization.

At the October 6, 1976 meeting of the TCNACA Board of Directors, the enclosed statement was reviewed and considered sufficient at this time to warrant the unanimous support of the Board for inclusion in this effort to restore Capitol Lake. We would also like to be included in further developments that may pertain to our suggestions.

Thank you for your consideration.

Ernst R. Cheeka, Jr.

Ernst R. Cheeka, Jr.
Resource Developer, Thurston County
Native American Community Association

Attachments - 1
Enclosure - 1

THURSTON COUNTY NATIVE AMERICAN COMMUNITY ASSOCIATION

The Thurston County Native American Community Association, Inc. is an inter-tribal organization incorporated in the State of Washington as a private, non-profit organization. The principal office is located in Olympia, Thurston County, Washington. At present, membership is on an individual basis and includes persons from tribes other than those located in Washington. It includes some who have no federal land base and receive no federal recognition; as such they are not eligible for services from the Bureau of Indian Affairs and other programs that are provided for recognized tribes.

In February of 1975, the Indian people of Thurston County united to form a group known as the Thurston County Native American Community Association. The primary purpose of this group is to act as a catalyst for Native American participation and involvement in various programs in the city, county, state, and nation. This effort is directed towards the development of the Olympia Indian Center which will be a multi-service community action program .

The TCNACA is governed by a seven-member Board of Directors elected to this position from the membership at large and is representative of the various Indian tribes from across the country. The Board members are:

Mr. Joe J. Dupuis, President
Sauk-Fox/Potawatami

Mrs. Margaret Sharlow, Vice President
Puyallup

Mr. Tony Olney, Secretary
Yakima/Quilleute/Clallam

Mrs. Jacqueline Delahunt
Rosebud Sioux

Mr. Donald Eddy
Cherokee

Mrs. Sally Fixico
Chehalis

Mrs. Beatrice Blacketer
Nisqually/Chehalis

STATEMENT

DELBERT J. MCBRIDE

ON BEHALF OF

THE

THURSTON COUNTY NATIVE AMERICAN COMMUNITY ASSOCIATION, INC.

SUBMITTED TO

CAPITOL LAKE DEVELOPMENT COMMITTEE

DEPARTMENT OF GENERAL ADMINISTRATION

STATE OF WASHINGTON

December 15, 1976

In recent years, a number of ideas have been proposed for a regional cultural center which would explain our Native American customs and traditions to the non-Indian public and serve as a focal point for non-reservation and urban Indians of this area. It seems Olympia would be the ideal location for such a center.

There have been attempts to arrive at an accurate census of Indian people in Thurston County, and adjoining counties, aside from members enrolled in local tribes or living on reservations. Figures are somewhere between 500 and 1000 in Thurston County, but there is difficulty in pinning down a definition for being "Indian", as each governmental agency has its own qualifications.

Certainly, these people represent a wide range of cultural backgrounds - - Alaska Natives, including Eskimo and Aleut, Canadian Northwest Coast, Plains, Southwest, Southeast, Woodland. A center could reflect some of this diversity, but at the same time could be predominantly Northwest in character.

In order to acquaint the public with Indian culture, there could be museum-type exhibits of implements, artifacts and art, along with interpretive material on Indian life of the present as well as pre-contact times and the recorded historical past. Always there must be caution exercised that the Indian is not presented merely for the entertainment of tourists and the idle curiosity seeker. This means substantial Indian input in the planning stages of such a project.

INTERPRETING THE NATIVE AMERICAN INHABITANTS OF THE BUDD INLET - TUMWATER FALLS AREA

I. INDIAN LIFE STYLE BEFORE CONTACT WITH THE WHITE MAN

Until shortly after the mid-18th century, the Native Americans of Southern Puget Sound lived in a cultural pattern strong in traditions, which was probably little dhanged over a period of many hundreds of years, possibly, from archeaological finds related to this area as evidence, 2,500 or 3,000 years or even more.

Specifically, in the Budd Inlet area, where the tidal shores reached a southern terminus with a rushing series of waterfalls at the Deschutes River and several smaller fresh water streams drained into the inlet, there was a rich area of glacial plains, covered with heavy bunch grass and edible types of vegetation, with Garry oak groves scattered about and dense woods of Douglas fir. Closer to the water's edge were leafy groves of alder, ash, maples, and huge red cedars in swampy locations, with a thick tangle of underbrush - - salal, devil's club, salmon berry bushes, etc.

The stable life style which evolved, depended not only on the produce of the beaches and saltwater, but on the vegetable products of the adjacent woods and prairies, which were periodically burned over in a primitive form of agriculture, to keep them clear of underbrush and encroaching trees and to enrich the thin layer of soil over glaciated gravel. Roots, bulbs, especially the blue flowering camas, nuts, acorns, berries of many kinds were industriously gathered with digging tools of ironwood and large, tightly woven berry baskets made from cedar roots and grasses. The men hunted the deer and elk, not only for meat; but the bones, hides,

hooves, and antlers were used in their various manufactures. Other large animals such as black bear, bobcat, wolf were hunted to a lesser extent, or snared. Small animals such as muskrat, mountain beaver, otter, beaver, marten, rabbit, squirrel, etc. were skinned and the small pelts carefully sewn into robes for prestige and for winter warmth.

The primary food source was from the saltwater itself. Runs of five species of salmon teemed in quantity in the streams at specific periods of the year, coho and chum salmon, dried and smoked, were the staple of winter and early spring food. There was some hunting of seals for meat and oil; shellfish of many kinds, including native oysters, abounded on the gravelly shores and exposed tide flats. Shell mound remains in the area indicate that besides several species of clams and the goeduck, the Indian diet included whelks, mussels, moon snails, large barnacles, and limpets. Flounders were speared in shallow water; and when sturgeon could be obtained, this was a special delicacy. Budd Inlet was a favorite area for digging, drying and smoking clams which were threaded on long strings and used as a trade item with the inland Plateau people.

Everyday clothing was worn more as protection from the rain than for warmth in the mile Puget Sound climate. Ponchos of woven cattails were also used for everyday work, and tule reeds and cattails were made into various sizes of mats which served a variety of purposes; they made kneeling pads for canoe paddlers, table cloths unrolled on the floor for a feast, padding for the sleeping platforms, wall hangings to keep drafts out from between the wall planks, and coverings to keep beached canoes from warping or splitting; and a very important use, as portable coverings for lightweight house frams during the more migratory life of root gathering and berry picking during spring and summer.

Salish winter houses were more substantial - heavy red cedar house posts which might have simple carvings of symbolic form, and sometimes painted representations of human figures, animals, birds, or fish in earth reds, carbon black, and white obtained from calcined clam shells, mixed with an emulsion of salmon egg oils. Faces were also painted with various mixtures, such as deer tallow and red and white clays both as decoration and perhaps as protection from biting insects.

The sides of winter houses were house boards two feet or more in width, split from cedar with hammer stones and wedges made of elk horn and tough yew and spruce wood. These were adzed into a rippled finish with short-handled, V-shaped adzes with ground and polished celt blades of hard jadeite obtained in trade from the north, probably the Fraser River.

Roof boards were alternately concave and convex to allow water to drain off more freely, and adjustable to increase the size of the smoke holes and give more light in good weather.

Typically, one house in a village was more substantial, with decorated posts, and was used primarily for ceremonial purposes, though an important man and his extended family might live there during the winter months. In front on the beach were drawn up canoes belonging to the group, an obvious indication of their wealth and social standing, just as automobiles are to a later generation.

The two major types of canoes were those used on saltwater, with a higher prow and stern to cut through waves, and the shovel-nose type used on the placid waters of lakes and rivers. These were dug out of a large cedar log by a process of controlled burning and adzing, and a master canoe builder could gauge thicknesses so accurately using only his fingers that the sides were very uniform.

Canoe bailers were a necessity - these might be spoon-shaped, from maple or alder, or of folded cedar bark with an attached wooden handle.

Canoe paddles were sometimes pointed, so that a hunter could approach a sleeping seal or other quarry more quietly - the point was also handy for sticking into the sandbars when tying up by a clam bed.

In later fall, after a good supply of salmon had been dried and hung from the roof beams or interior racks, storage baskets filled with dried huckleberries, salal and blackberries squeezed into small cakes, pounded acorn meal, strings of clams, and starchy camas bulbs from the prairies, and perhaps some venison jerky, along with such delicacies as smoked smelt, herring, seal oil, wild crabapples, pickled acorns, goeduck strips and soapberries for whipping into a frothy dessert, they were prepared for winter.

The Steh-chass group, as they called themselves, was then ready for large gatherings as invitations were put out and canoe loads of friends and relatives arrived, from the neighboring inlets of Puget Sound, and from the prairies and foothills of the Cascade Range, with Plateau people of Cowlitz, Yakima and Klickitat tribal groups, also related by blood and marriage to these primarily saltwater people of the Deschutes drainage area.

The winter ceremonial season included gift-giving, feasts, naming of children, reciting the family history, traditions and lineage; telling of legends, manifestations of individual spirit power through singing and dances; sometimes there were healing ceremonies for the sick; and always the several types of gambling games which occupied much time for both men and women, accompanied by drumming and chanting far into the night. Much property was exchanged in this way, with the excitement of using

one's superior gambling powers for success.

II. EARLIEST HISTORICAL DESCRIPTIONS OF THE AREA

There are some convincing semi-legendary accounts of sailing ships in Southern Puget Sound, at least as far south as Commencement Bay which can be roughly dated at around 1750. These seamen were affected with sickness-perhaps smallpox, which decimated one village which had received clothing from the ship. One girl, in seclusion for her puberty rites, escaped to the foothills, and lived as a "wild" person until she was captured by a party of Nisqually hunters, and became the wife of the leader of the party, son of an important chief. This description we know only through Indian accounts - whether the ship was Spanish, Russian or another nationality we are unable to tell from the scanty description.

In may of 1792, Captain Vancouver was making the first systematic exploration of New Georgia and Admiralty Inlet. Vancouver says "I directed that a party, under the command of Lt. Puget and Mr. Whidbey, should, in the launch and cutter, proceed . . . to the examination of that branch of the inlet leading to the South-westward." Later, a summer camp is described in not very flattering terms - - "The best of the huts were poor and miserable, constructed something after the fashion of a soldier's tent, by two cross sticks about five feet high, connected at each end by a ridge-pole . . . over some of which was thrown a coarse kind of mat, over other a few loose branches . . . " In them were hung up to be cured by the smoke of the fire they kept constantly burning, clams, mussels, and a few other kinds of fish, seemingly intended for their winter's subsistence." He goes on to describe nearly a hundred people digging in the meadow for roots, a species of wild onion, camas and two

other types of root (possibly tiger lily and wild carrot). These they pounded into a paste. He goes on to describe the face painting, with red ochre and mica flakes, and wearing of copper ornaments, which showed trade goods had already filtered down to south Puget Sound. The British bartered more copper, blue cloth and iron - of this the Indians seemed to value the copper most highly. Later, bows, arrows and spears were traded for hawk's bells, buttons, beads "and such useless commodities".

On December 5, 1824, John Work of the Hudson's Bay Company, was in the area, on the wqy from Fort Vancouver to the Fraser River. His party camped at the end of the Black Lake portage to Puget Sound at a place which fits the description of Eld Inlet, whose inhabitants would be closely allied to the Tunwater Falls group. He Says: "Where we are now encamped is a small bay of Puget's Sound. Notwithstanding that the tide rises about 6 feet, yet the water is not very salty, it can only be called brackish. Two Indian houses of the Halloweena tribe are close by; their inhabitants are living on salmon which comes up this little bay."

He thus describes the Halloweena group ("December 1, 1824 . . . several of the Halloweena Indians from the neighbouring village have visited us. Their mode of life, manners, language, etc. differ little from the Chihailis (sic); indeed they may be considered as a detached part of that tribe." As to hunting in the area - - "people were sent off to the hunt but returned unsuccessful though they saw both elk and deer. This is reckoned a good part of the country for those animals.

"Passed two houses of the Halloweena Nation, at which I counted 10 men and as many women, besides children; probably some more were in the houses. Saw some more Indians, some of whom had horses." On the way back, December 27, Work's journal states " A man went ahead to procure

horses from the Indians . . . the Indians not being able to get the horses collected, we had to encamp close by for the night." In describing what is probably Grand Mound Prairie, he says "It is a large, good looking prairie, with gravel and black mould, short grass and fern, bounded by pine woods (Douglas Fir) and with oak trees thinly scattered over the plain."

Wilkes describes getting horses from a "squa chief" at Sachal(Black) Lake; they got five horses and ten Indians to transport the canoe over the portage. He describes her: "Her horses were remarkably fine animals; her dress was neat, and her whole establishment bore the indications of Indian opulence. Although her husband was present, he seemed under such good discipline as to warrant the belief that the wife was the ruling power, or to express it in more homely language, "wore the breeches"."

An1872 description of potlatches follows: "The chiefs of the different tribes hold potlatches at intervals, for the purpose of making presents to members of neighboring tribes. Invitations are sent . . . when all are assembled, a feast is held, dances are indulged in, speeches of welcome are made, and when these are finished the presents are distributed, donations being graded according to the rank of each person. These are the gala days of the Indians, and as each tribe is desirous of displaying its wealth, no effort is spared to make the feast as important as possible. The women also dress themselves out in their gayest attire . . . and like their white sisters try to out-rival in gorgeousness those of the visiting tribes. True, the holiday robes may be meagre and consist merely of an old red blanket and a string of blue beads around the neck, or a pieces of bone or shell ornament, yet tribal pride requires it be worn with all the grace and dignity of the beauties of the wigwam."

III. INTERPRETIVE CENTERS FOR AREA INDIAN CULTURE

Though historically drastic changes occurred in the Indian life style, with inter-marriage with whites, reservations away from the immediate area, young people being sent considerable distance to government schools, and an official policy of discouraging any adherence to old Indian tradition, there are still identifiable descendants in the general area of Southern Puget Sound who are connected to the Budd Inlet village sites.

Late in 1855, most of the Indians not directly with Leschi and the hostiles were interned either on Squaxin Island or on Fox Island for more than a year (530 individuals who all were Nisqually speaking). After the Indian uprising had passed, a few of these people came back to Olympia-Tumwater, erected rather sketchy dwellings on the beach, and some made a meager living gathering oysters and clams and selling them to local housewives. Caroline Budlong describes this in the period of her arrival, 1865. " . . . Indians were all about us. Wigwams (sic) stretched along both banks of the Sound from Tumwater to Fourth Street. Indian men and boys, kloochmen and squaws strolled or squatted on the streets. Many nights, all night long, we heard the wails and chanting of the Tamanawus dancers across the west side bridge. . . . Some of the squaws did "washings" for old clothes or small change. Indian men peddled oysters or clams - - a ten pound lard pail of succulent shucked oysters sold for 25 cents at the time. By then there were a number of half breed and quarter breed children in the area."

Sometime later - probably in the 1870s - there was a smallpox scare in Olympia. The Indian families living along the shore were evicted from

the town and their shacks burned. This was the last of any substantial population of the old village sites on Budd Inlet. A few lingered, like "Old Betsy" who lived to be well over 100 and who with her son, "Blind Sam", was a familiar figure on the streets of Olympia for many years.

The language of the local Indians was identical to their neighbors on the Nisqually and Puyallup Rivers, and to the Squaqsnamish to the west. Also, Chinook jargon was the common means of communication between the Indians and white population. In naming some of the features of a culture center, Chinook terms might be considered where original Indian names are lost.

If we are to interest Indian groups in participating, we probably should start with some of the known descendants of the local village people. This could be broadened to include other adjacent groups. In fact, it is generally agreed that the Suquamish group, in historic times with Chief Seattle, spent the winter months on Budd Inlet in the area where the first settlement of Olympia was made by Smith and later Sylvester. This area, roughly two acres of cleared sandy land surrounded by heavy fir forest, was known as "Schet-woot" or "place of the bears" presumably from a population of bears who came for succulent roots in early spring.

There is now a local organization of Indian people - - the Native American Community Association, and at least several of the members can be identified through their forebearers as connected with the Budd Inlet site. Indian participation might be accomplished by working directly with this group; by name it is the Thurston County Native American Community Association, Inc. and is representative of the various tribes now located in Thurston County .

Demonstrations of native costumes, music, and dances could introduce a more in-depth interpretation. Contemporary Indian craftsmen working at carving in wood, stone, bone, antler, ivory, etc. A native loom set up to show early weaving; various styles of beadwork, leather craft, basketry, serigraph and printmaking in authentic Indian design, costume making, could all lend a great deal of interest to the operation and be a potential source of funds to the workers.

Canoe building and a revival of the traditional canoe races, which were held on Budd Inlet on holidays such as 4th of July, in the early 1900s. These Indian paddlers competing make an exciting spectacle and demonstrate the speed of the skillfully designed canoes. An on-going canoe carving project would seem to be a very desirable interpretive activity. For students and tourists, a trip in an Indian dugout canoe, with native paddlers, across Capitol Lake, from a museum type Indian display to a more active interpretive center and ecology display, where the Indian's use of the environment could be explained, would impress Indian life style more forcefully than any amount of illustrated lectures.

As an important feature an ethnobotanical area, with trees and plants labeled as to their Indian uses, and with a planned directional system for a conducted or self-guided tour, would be valuable.

Without going into a commercial restaurant operation, there could be some way planned to introduce the public to Indian foods.

Activities for children could include Indian games and sports, introduction to simple dances and chants, and a degree of participation under guidance. There would be need for sheltered areas, and if museum displays are introduced, for high security areas, fireproofed and locked. A rougher, natural beach area where small campfires could be built would

be necessary for some parts of a comprehensive interpretive program.

Construction should tie in with our climate, to which the Northwest Coast architecture was well adapted. Sloping roofs, cedar log and plank construction, some carved and painted decoration, would be appropriate. It would seem wise to keep more to the salish style of building rather than trying to imitate Tlingit or Kwakiutl structures, and it would be debatable whether totem poles should be featured. Basic plans for buildings of this type are already researched and available.

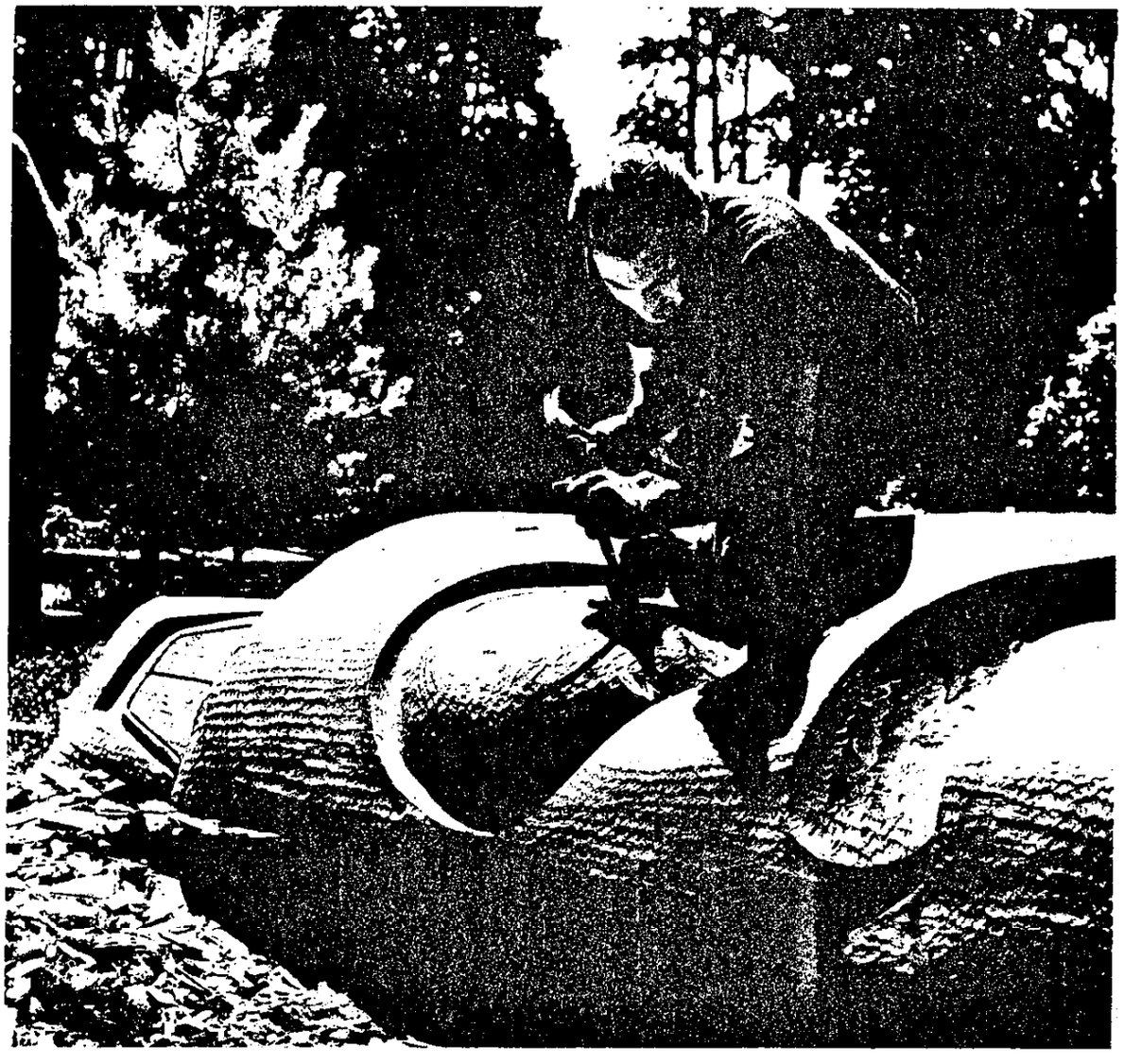
Because of the influence of plateau culture, one or more canvas teepees might be set up during summer. This culture was very much present after the upper Nisqually-speaking groups acquired horses from across the Cascades, and in the 1840s the Black River Indian group were reported by Wilkes to have very fine, well-cared-for mounts, which his party hired for the overland part of their exploring.

By careful planning, with Native American participation, such a program could be consistent with the broad objectives of Capitol Lake planning. This stresses human values and cultural-recreational adjuncts to the preservation and improvement of a natural, parklike complex of saltwater and freshwater, trees, grass, walkways, swimming facilities, playground, bicycling and boating, all within a developing urban setting.

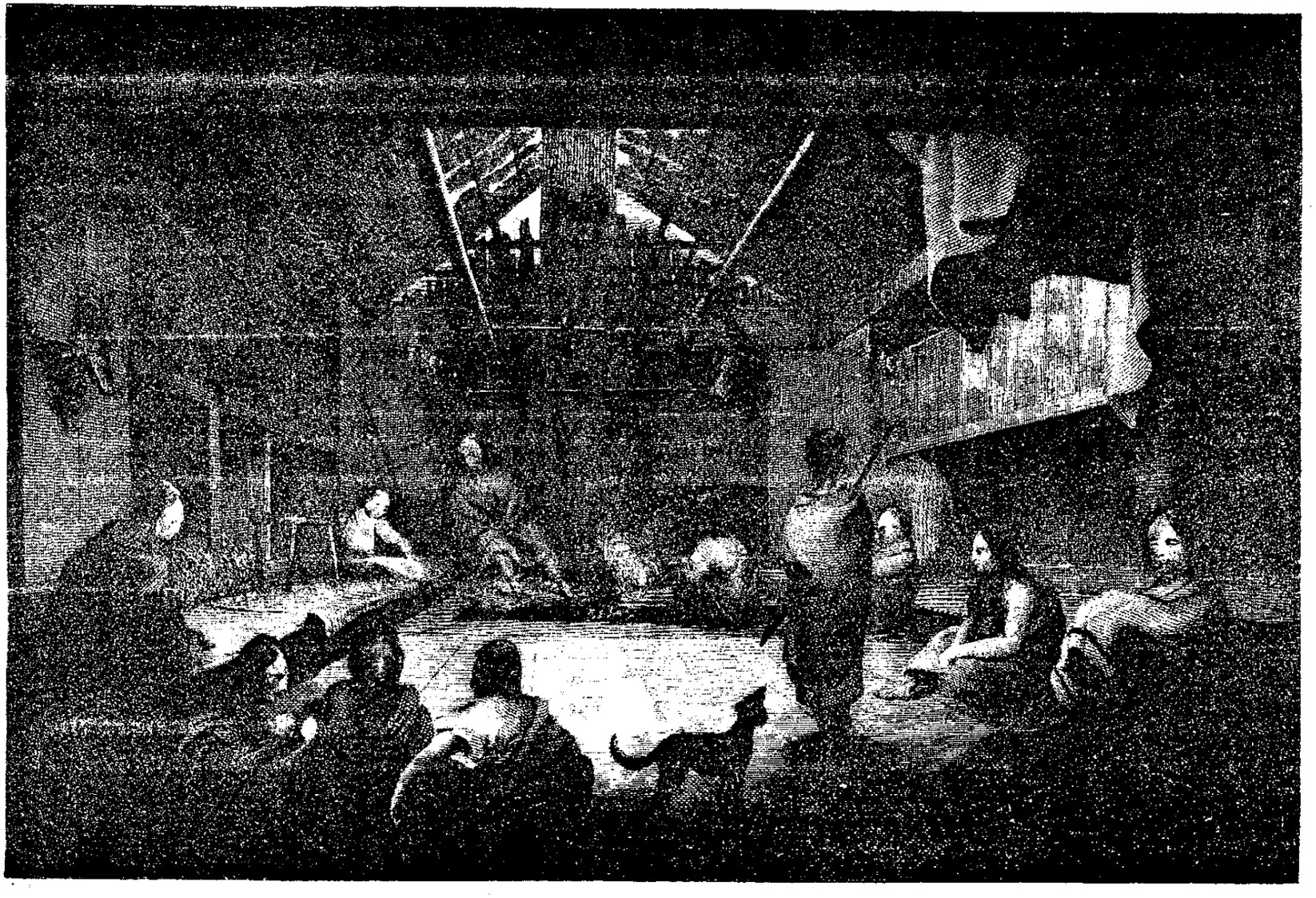
4 of July, 1905 -- Puget Sound Indians gathered at [illegible] and competed with their racing canoes in Budd Inlet

Photograph from the collection of State Capitol Museum

Duane Pasco carving - photograph by Mary Randlett



Demonstrations of Carving in cedar would be an important part of the Longhouse educational activities



REPORT ON SEDIMENT TRAPPING EFFICIENCIES IN UPPER BASIN

During the DEIS review process, considerable concern was expressed about planned changes in the upper basin. As a result, Dr. Walter Mih of the Albrook Hydraulic Laboratory at Washington State University was asked to evaluate alternative sediment removal plans. His analysis, presented in the following report, served as the basis for developing a revised upper basin plan that eliminates disturbance of the islands in the basin and significantly reduces the potential impacts. The revised plan for the upper basin is described on page 7.

SEDIMENT TRAPPING EFFICIENCIES OF MAINTENANCE DREDGE PLANS IN THE UPPER BASIN OF CAPITOL LAKE

for

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and

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SEDIMENT TRAPPING EFFICIENCIES OF MAINTENANCE DREDGE PLANS IN THE UPPER BASIN OF CAPITOL LAKE

INTRODUCTION

Capitol Lake was formed in 1951 by a small dam constructed across the mouth of the Deschutes River near Olympia, Washington. There are two bridges crossing the lake which divide it into three basins--upper (south), middle, and lower (north). The middle basin is the largest of the three basins.

In recent years, sediment from the Deschutes River has rapidly filled the upper basin and caused considerable sediment accumulation in the middle basin. Dredging of accumulated sediments appears to be a feasible approach for lake restoration. To optimize dredging efficiency and environmental enhancement, the maintenance dredging operation should be concentrated in the upper basin in a deep sump which can trap incoming sediments. This would prevent frequent dredging in the middle basin which would interfere with recreation and important fish rearing activities. The upper basin sediment trap should be designed so dredging would not be necessary but once every two years.

DESCRIPTION OF DREDGE PLANS

Plan 1

A previous study* of the sediment problem recommended that the existing islands in the upper basin be combined into one and a sediment trap sump dredged behind it. It addition, the previous study suggested that a groin be built at the west bank to divert flood flow toward the sediment trap. The details of this plan, designated as Dredge Plan 1, are described on pages 284-286* and illustrated in Figure 1 in this report.

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*"Hydraulic and Water Quality Research Studies of Capitol Lake Sediment and Restoration Problems, Olympia, Washington," Dept. of Civil and Environmental Engineering, Washington State University, Project Report 7374/9, 12-1310, September, 1975, 315 pp.

During a public meeting for the restoration of Capitol Lake, August 25, 1976, in Olympia, several citizen groups expressed their concern of possible environmental damages to the wildlife habitat in the upper basin that would be caused by modifying and combining the existing islands in Plan 1. Even though the environmental impact of Plan 1 would be short term, it was decided that alternative dredge plans should be studied that would minimize the modification of existing islands.

Plan 2

After several field trips to the upper basin by Jerry Bachmann of the Department of General Administration, Dale King of CH_2M-Hill, and Walter Mih, an alternative plan, Dredge Plan 2 (Figure 2), was proposed. Although two small channels (C and D in Figure 2) in the south side of the upper basin will be deepened to 6 ft, Plan 2 does not change the existing islands. Compared with Plan 1, the surface area and the depth of the sump are the same, but the area has an oval shape. The groin on the west side in Plan 1 was removed and a new training wall was added in Channel B.

Plan 3

Because model tests showed that sediment trapping efficiency in Plan 2 was small, a groin as in Plan 1 was added to the west side to divert flow to the sump area. In addition, the Channel B training wall of Plan 2 was removed, resulting in Plan 3 as shown in Figure 3.

Plan 4

Plan 4 is the same as Plan 3 except that the fan-shaped area of Plan 1 was used to test the effect of different sump area. Figure 4 illustrates Plan 4.

OBJECTIVE

The objective of this study is to determine the relative sediment trapping efficiencies of the four plans mentioned above. The sediment trapping efficiency is defined as the sediment accumulation in the sump area divided by the total sediment accumulation in the entire lake.

MODEL DESCRIPTION AND SCALES

The original study* used a model built in accordance with the 1951 topography and on a horizontal scale of 1:200 and a vertical scale of 1:20. The same model was used for this study, except for the upper basin, which was modified in accordance with dredge plans and the 1975 topography. The middle and lower basins of the model were left in the deeper 1951 condition. The middle basin practically trapped all the sediment passing through the upper basin.

The Froude model law was used for dynamic similitude. The model-prototype scale ratios given in Table 1 are derived from the chosen length scales and Froude's criterion.

Table 1. Capitol Lake Model-Prototype Scale Ratios

Parameter	Equation	Numerical Ratio
Horizontal Length	$L_r = L_m/L_p$	1:200
Vertical Length	$H_r = H_m/H_p$	1:20
Volume	$\forall_r = L_r^2 H_r$	1:800,000
Velocity	$V_r = \sqrt{H_r}$	1:4.47
Discharge	$Q_r = V_r L_r H_r = L_r H_r^{3/2}$	1:17,888
Time	$T_r = L_r/V_r = L_r/\sqrt{H}$	1:44.7

Notes: m model; p prototype; r ratio

PROCEDURES

Based on hydrological data and analyses, the flood with one-year recurrence interval in the Deschutes River is 3,000 cfs, and the 5-year flood is 5,000 cfs. Most sediment deposition occurs during a flood period which usually lasts for about two days. During the low and moderate flow periods, the

*Ibid.

sediment load in the river can be considered negligible even though local sediment scouring and shifting occur, particularly during a lake drawdown. The average annual sediment accumulation is 41,000 cubic yards.* The significant flow rates and sediment volumes used in the model tests were computed from the model scale ratios and are given in Table 2.

Table 2. Model Testing Parameters

Parameters	Prototype	Ratio	Model
Water Flow	3,000 cfs	1:17,888	0.168 cfs
	5,000 cfs	1:17,888	0.280 cfs
Flood Period	About 45 hr	1:44.7	1.0 hr
Average Annual Sediment Accumulation	41,000 yd^3	1:800,000	1.38 ft^3

Fine Delmonte sand, crushed quartz having a mean diameter of 0.005 in, was used in both this and the previous studies. The dry sand was added to water flow uniformly by an adjustable automatic sand feeder at a location corresponding to the lower falls of the Deschutes River upstream from the upper basin.

As mentioned earlier, a two-year dredging program was proposed. Therefore, a test program was established which supplied the equivalent of an average annual sediment load (41,000 yd^3) for two consecutive annual flood flows. Each flow was to consist of two equal time periods. The first period (1 hr model time) was to have the equivalent annual sediment load (1.38 ft^3) added at a uniform rate to the flow. The second time period, also of 1 hr duration, had the same flow rate, but no sediment was added. Model flow rates corresponding to the three and five year floods (3,000 and 5,000 cfs) were used in this study.

The detailed test program, designed to simulate the natural heavy sediment input during floods followed by a period of low sediment-free flow that

*Ibid, p. 72.

produces some local scour and representing the proposed dredging cycle of two years, was conducted as follows:

1. The water flow in the model was set corresponding to the 3,000 cfs flood (0.168 cfs).
2. After the water in the lake reached the normal level, and flow was steady, Delmonte sand was added uniformly to the water flow for one hour. The total volume of sand added was 1.38 ft^3, which is equivalent to one year of prototype sediment accumulation.
3. After stopping the sand input, the water flow continued for one more hour to simulate the scouring action during low and moderate flow periods. Sand accumulation patterns in the model were stable after 45 minutes of clear water flow, indicating that one hour of clear flow was sufficient to simulate the scouring during a long period of low flow.
4. The cycle was then repeated with 1.38 ft^3 of sand added again over one hour, followed by one hour of clear water flow. This completed the two-year maintenance dredge cycle.
5. The flow was stopped at the end of the fourth hour. Total sand added for each test run was 2.76 ft^3, which has a dry weight of 194 lbs. The model was drained slowly to avoid any change in sand accumulation patterns. The sand was then collected from the following five separate areas in the model:*
   ① Deschutes River, downstream from the lower falls,
   ② Sediment trapping sump,
   ③ Outside the sump in the east side of the upper basin,
   ④ West channel including the boat ramp area, and
   ⑤ Entire middle basin.
6. The sand collected from the five areas was spread out separately on clean concrete floor in a thin layer to be dried. The dried sand was then weighed and expressed as a percentage of the total accumulation in the model.
7. The entire procedure was then repeated for a river flow of 5,000 cfs.

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*Figure 5 shows the five sediment accumulation areas for Plan 1, Figure 6 for Plan 2 or 3, and Figure 7 for Plan 4.

RESULTS AND DISCUSSION

The results of the sediment tests are tabulated in Table 3 where the most significant values are the sediment accumulation ratios of Areas 2 and 5. The sediment accumulation ratio of Area 2 is the sediment trapping efficiency of the sump. The higher the efficiency, the better the plan. Plan 4 has the highest efficiencies: 59.1% for 3,000 cfs and 54.2% for 5,000 cfs. The efficiency of Plan 2 is very small and therefore should not be used. The sediment accumulation ratio in the middle basin, Area 5, is the percentage of sediment that has bypassed the upper basin. The lower the figure, the better the plan. Comparing the four plans tested, again Plan 4 is the best with the lowest bypass ratio of 10.6% for 3,000 cfs and 22.3% for 5,000 cfs.

Table 3. Sediment Test Results

Sediment Accumulation Areas	Sediment Accumulation in Each Area as Percentage of Total Sediment				Remarks
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	
FLOW 3,000 cfs					
1 Deschutes River	2.7	6.7	5.5	4.1	
2 Sump*	53.7	2.8	53.2	59.1	-Sediment Trapping Efficiency
3 East Side (outside sump)	15.8	19.2	15.1	17.8	
4 West Channel	13.4	20.5	10.5	8.4	
5 Middle Basin*	14.4	50.8	15.7	10.6	-Bypassed Upper Basin
TOTAL	100.0	100.0	100.0	100.0	
FLOW 5,000 cfs					
1 Deschutes River	1.4	0.3	2.6	2.5	
2 Sump*	43.6	4.6	52.9	54.2	-Sediment Trapping Efficiency
3 East Side (outside sump)	16.1	23.9	6.3	14.9	
4 West Channel	7.2	2.9	10.1	6.1	
5 Middle Basin*	31.7	68.3	28.0	22.3	-Bypassed Upper Basin
TOTAL	100.0	100.0	100.0	100.0	

*Significant values for comparison.

The tests indicated the two most important factors in providing high sump trapping efficiency were the ability to divert most of the flow into the east channel and the shape of the sump. The use of the groin to deflect the flow in Plans 1, 3, and 4 is particularly effective. Plan 2, which does not have the groin, caused most of the flow through the west channel, thus bypassing the sump area and dumping sediment directly into the middle basin. The trapping efficiencies of Plans 3 and 4 show that the fan-shaped area of Plan 4, having a greater cross-sectional area normal to the flow direction, is superior to the oval-shaped area of Plan 3.

In summary, Plan 4 demonstrated the best sediment trapping efficiency in the model tests, and thus is recommended for adoption for use in controlling sediment accumulation in Capitol Lake.

Another point observed in the model is that the boat ramp area has a large accumulation of very fine sediment. The river flow is not capable of flushing them out, hence, dredging is necessary for their removal.

RECOMMENDATION

1. Among the four plans tested, Plan 4 has the highest sediment trapping efficiency. The details of Plan 4 are shown in Figure 4.
2. The boat ramp area in the upper basin has large accumulation of very fine sediment which should be dredged once every two years to keep the ramp usable.

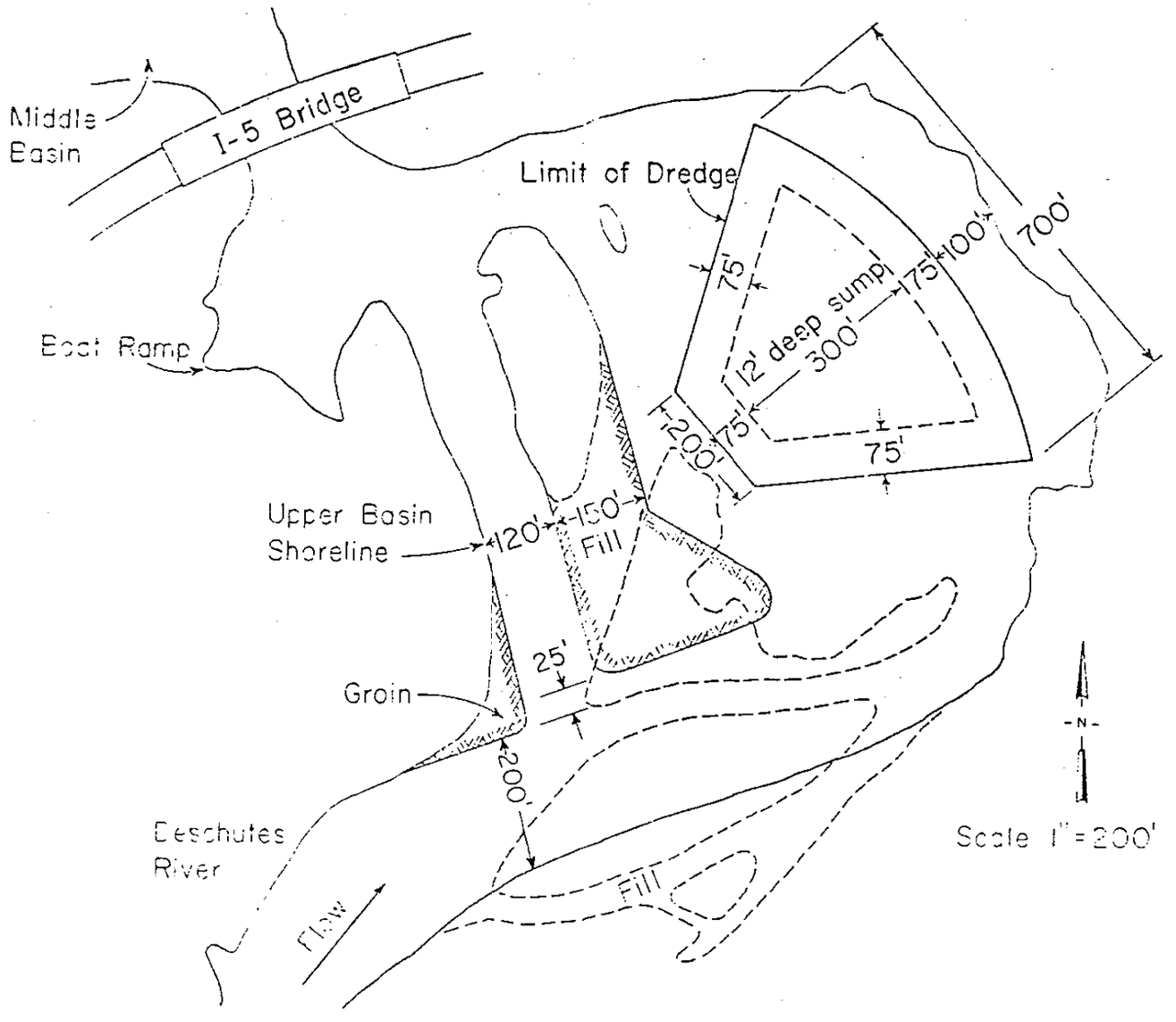


Fig. 1. Dredge Plan 1

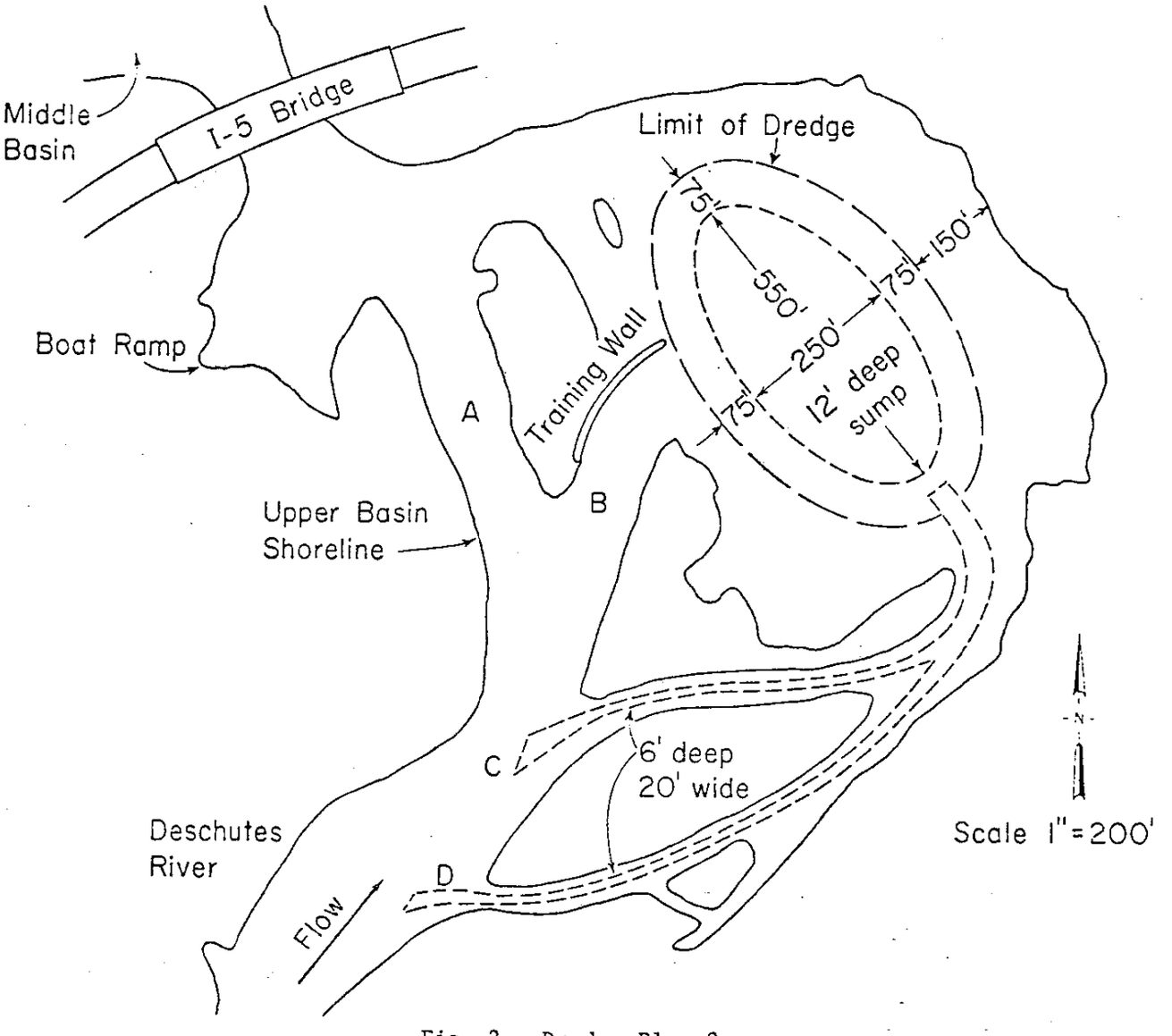


Fig. 2. Dredge Plan 2

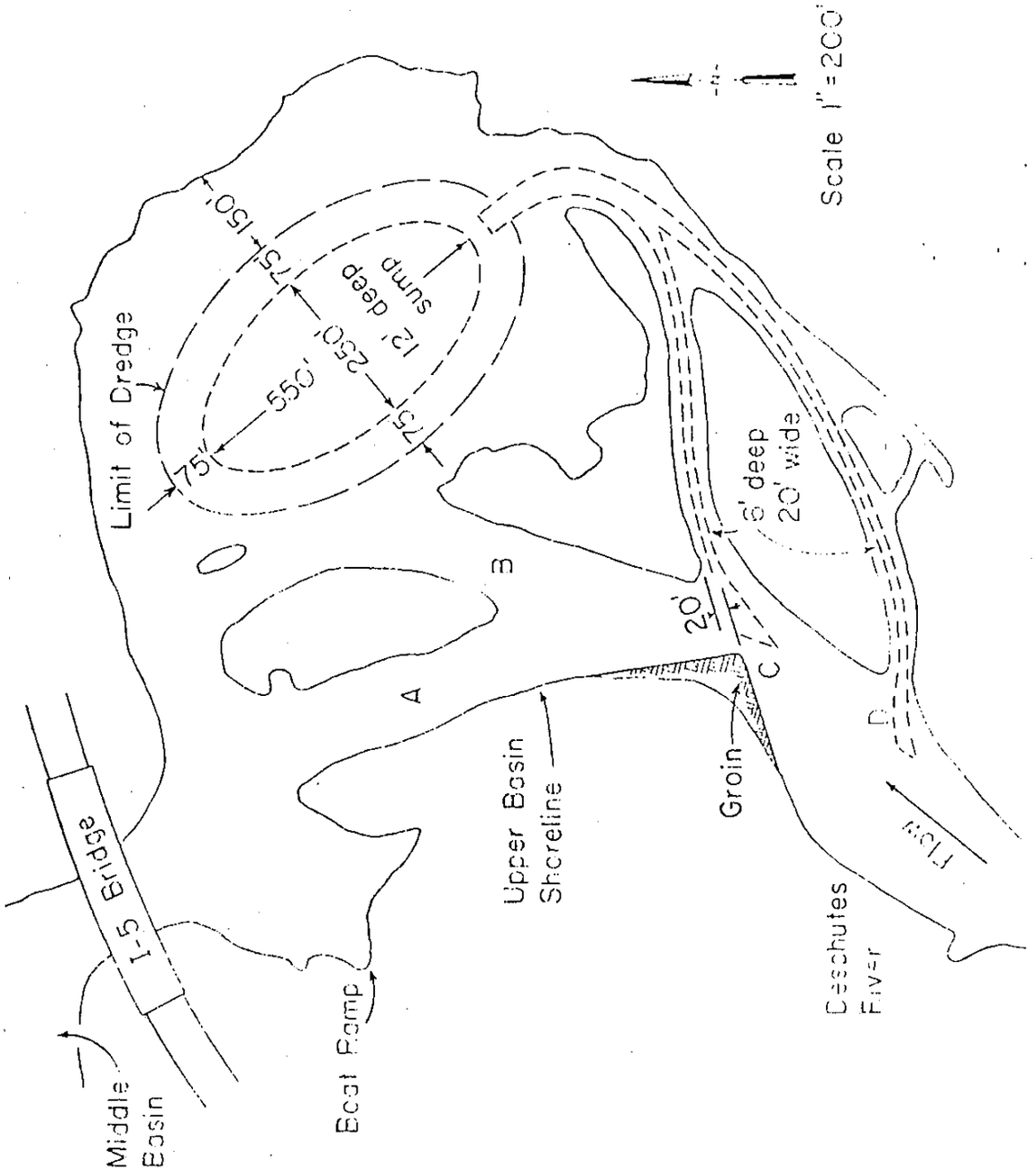


Fig. 3. Dredge Plan 3

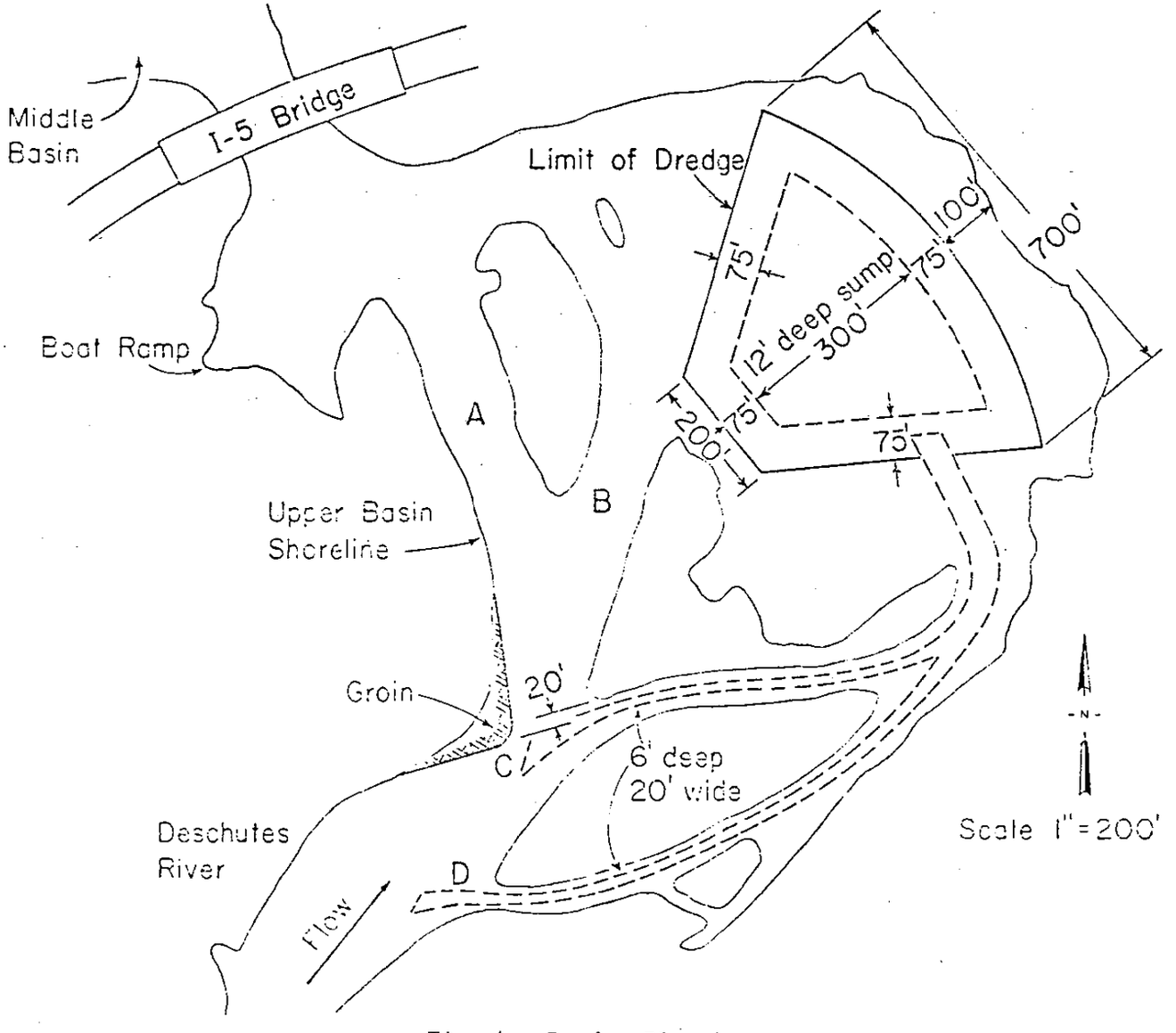


Fig. 4. Dredge Plan 4

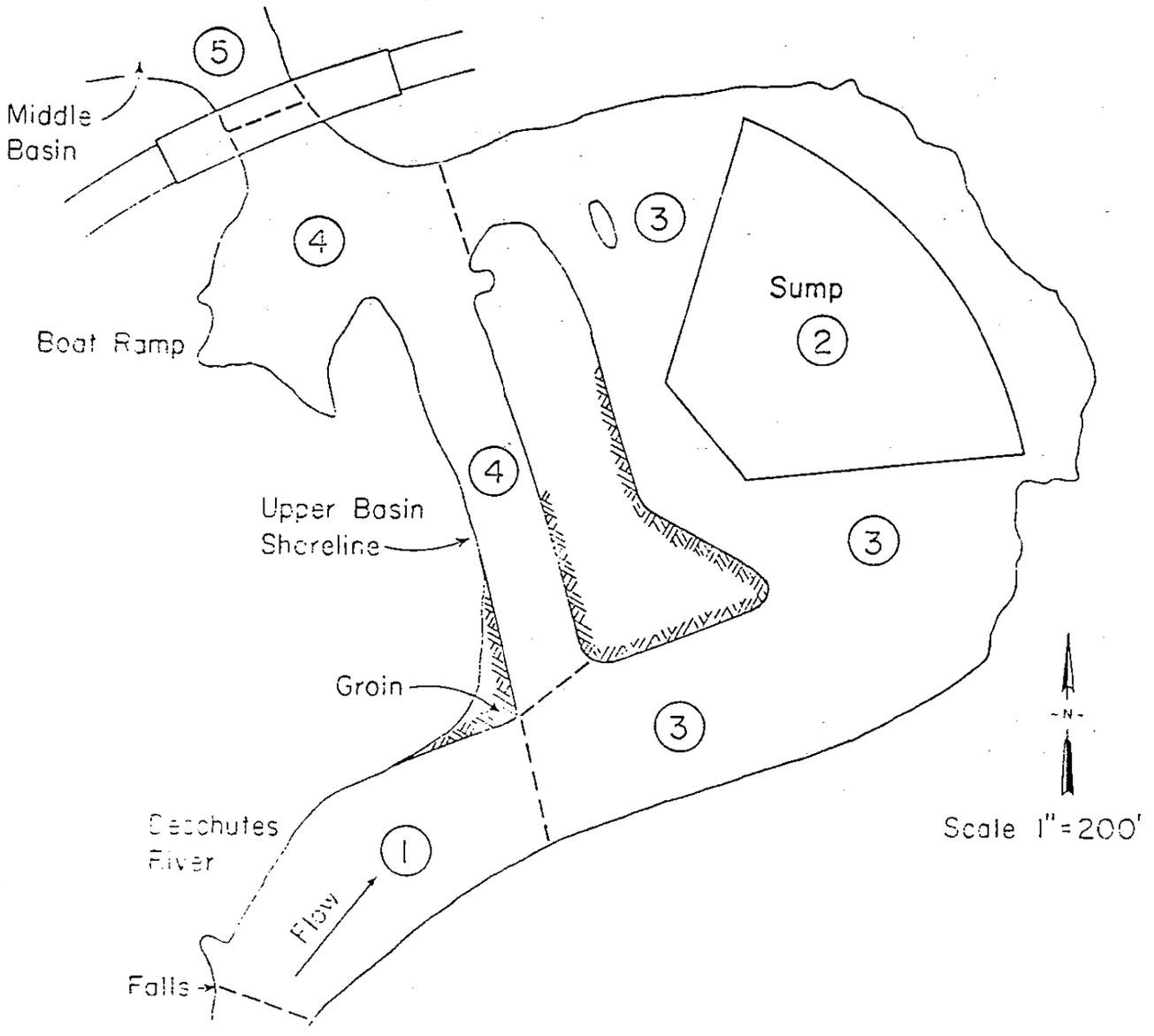


Fig. 5. Sediment Accumulation Areas--Dredge Plan 1

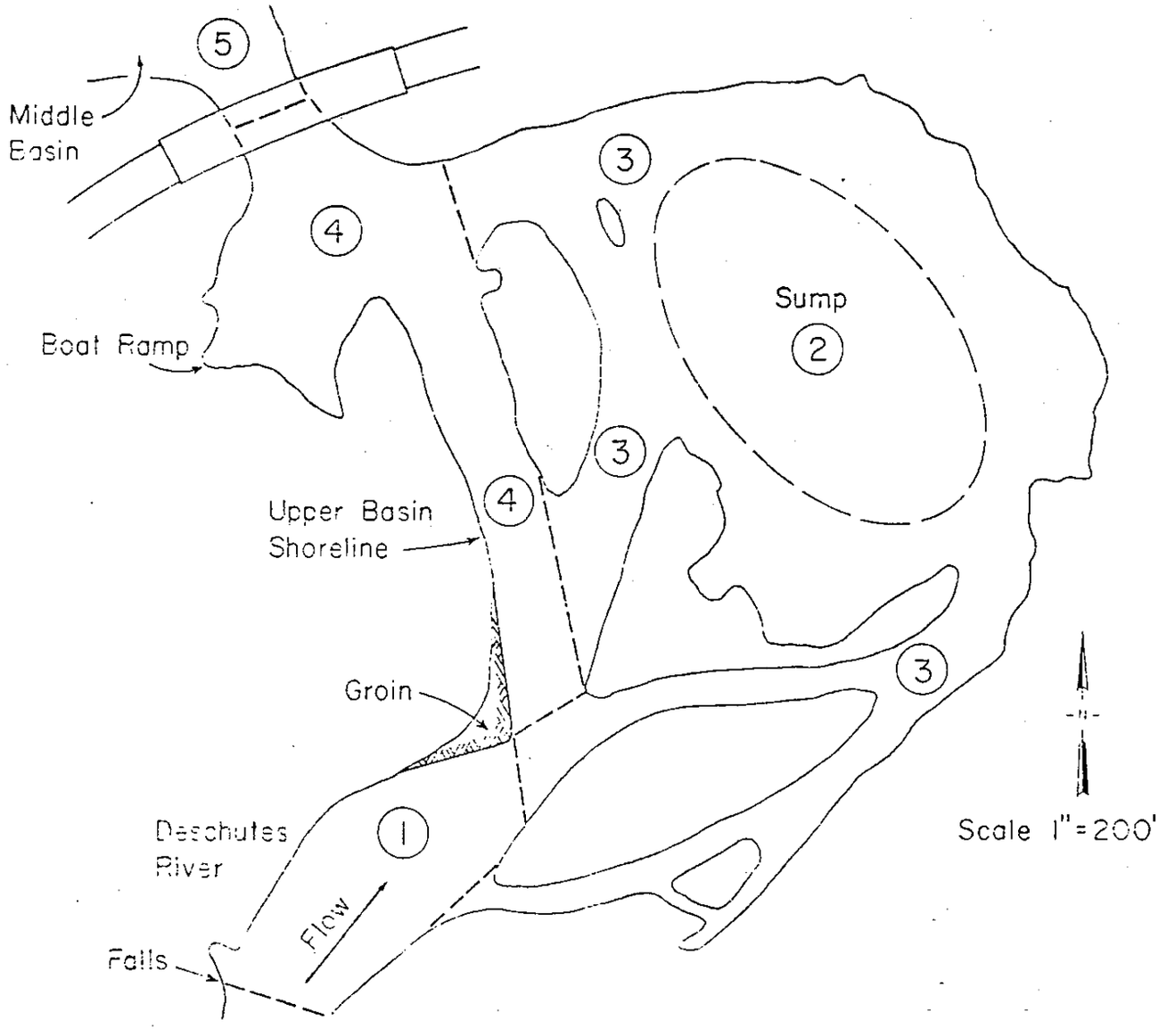


Fig. 6. Sediment Accumulation Areas--Dredge Plan 2 or 3

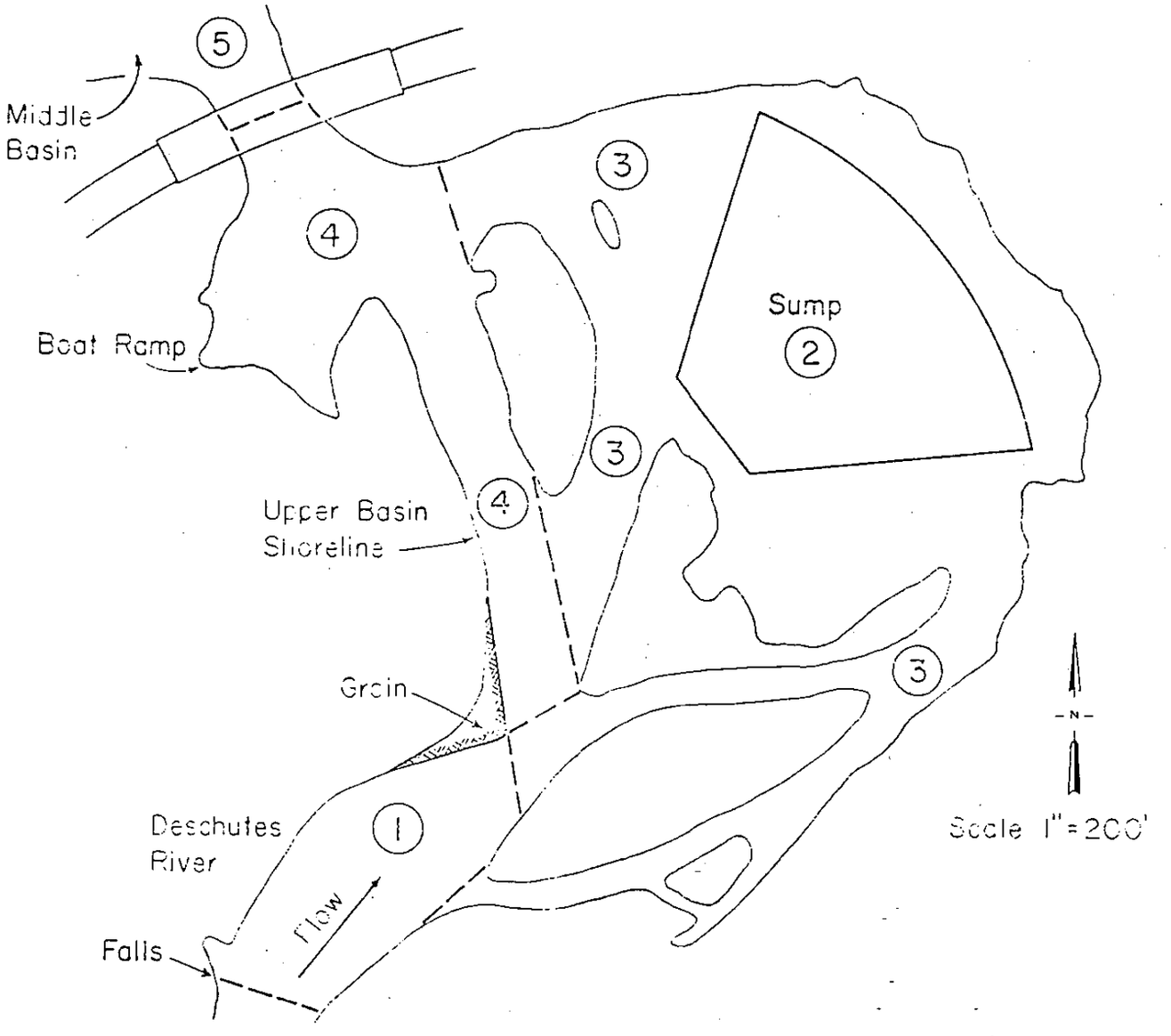


Fig. 7. Sediment Accumulation Areas--Dredge Plan 4

Capitol Lake

Appendix C

Written Statements
from ECPA Hearing

Appendix C
ENVIRONMENTAL COORDINATION PROCEDURES ACT HEARING STATEMENTS

On 28 April 1977 the State of Washington Department of Ecology conducted a combined hearing to consider all permits required for the proposed dredging and restoration activities. Written statements prepared in response to the hearing are given in the following pages. A complete transcript of the hearing proceedings is available from the Department of Ecology.

April 28, 1977

Hearing Officer
Department of Ecology
Olympia, Washington 98504

Gentlemen:

Since I was born and raised in Olympia, I am most definitely in support of the efforts to clean up Capital Lake.

Sincerely,

Terrie

(Ms.) Terrie Bodenhamer

April 26, 1977

State of Washington
Department of Ecology
Olympia, Wash. 98504

Attention: Hearing Officer

Gentlemen:

I strongly support the position of the General Administration Department in their application to dredge Capitol Lake. This is one of our fine state resources and should be cleaned up.

Yours truly,

R B Radnich

R. B. Radnich
2020 Lakemoor Place
Olympia, Wash. 98502

RBR:rc

March 25, 1977

State of Washington
Department of Ecology
Olympia, Washington 98504

Attention Hearing Officer

Gentlemen

I support the General Administration Departments position on their application to dredge Capitol Lake.

While it is a nice plan in many aspects we should take pride in keeping it clean and beautiful.

Yours very truly

J R Ackland
457 Ranger Drive SE
Olympia Washington 98501

April 28, 1977

Department of Ecology
Olympia
Washington 98504

Attn: Hearing Office

Gentlemen:

At the last minute I find that I will be unable to attend the public hearing on the proposed Capitol Lake Rehabilitation Project.

Please be advised that I support the applicant, the Department of General Administration, in its application No. 76-144 to dredge Capitol Lake of approximately 260,000 cubic yards of accumulated sediment with a 6-8 inch hydraulic suction dredge and to use the dredged material to provide new land masses and marsh areas in the lake's basin.

I am convinced that the lake must be dredged to preserve it as a beautiful part of the State Capitol Campus.

Sincerely,

DAVID A. SKRAMSTAD
1820 Thornton N. W.
Olympia, Washington 98502

April 28, 1977

Department of Ecology
Olympia, Washington 98504

Attention: Hearing Office

Gentlemen:

As an interested citizen regarding the proposed Capitol Lake Rehabilitation Project, I would like to inform you that I will be unable to attend the public hearing which has been scheduled.

However, I would like you to know that I support the Department of General Administration in its plans to dredge Capitol Lake and to use the dredged material to provide new land masses and marsh areas in the lake's basin. We must preserve it as a beautiful part of the Capitol Campus.

Sincerely,

GOODY ADAMS
P. O. Box 1522
Olympia, Washington 98507

April 29, 1977

State of Washington
Department of Ecology
Olympia, Wash. 98504

Attention: Hearing Officer

Gentlemen:

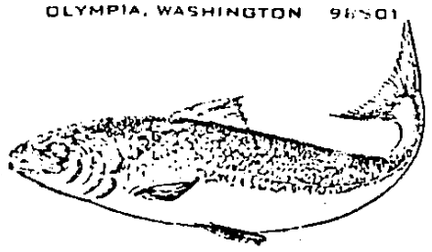
This is to advise you that I strongly support the General Administration Department in their application to dredge Capitol Lake. This lake is an outstanding resource and should be cleaned up.

Sincerely,

J. F. Gould, Jr.
2154 Lakemoor Dr.
Olympia, Wash. 98502

Olympia Salmon Club, Inc.

P. O. BOX 501
OLYMPIA, WASHINGTON 98501



May 1, 1977

Department of Ecology
ATTN: H earings Officer
Olympia, WA., 98504

Gentlemen:

On behalf of the Olympia Salmon Club, I am submitting this endorsement of the GA proposal to rehabilitate Capitol Lake.

The Olympia Salmon Club has a vital interest in this proposal since we are working with the Department of Fisheries on the Percival Cove salmon rearing project. Our club furnishes the manpower to do the feeding on weekends and holidays and in the 1975-76 program we supplied 510 manhours for this activity

In Percival Cove this year almost one million salmon have been reared. At the time of release, sometime this month they will be 8 to 10 inches in length, and much better able to escape the predators than are smaller ones.

In addition with this delayed release almost all of them will remain in Puget Sound as resident salmon, rather than migrating into the ocean. In the year 1975, for example one out of seven of the marked fish caught in all of Puget Sound from Olympia clear up to Bellingham and Pt. Angeles came from the Percival Cove plant. The Percival Cove rearing program is the most successful in the state and for this brood year, the Department of Fisheries estimates that less than five percent of the plant has failed to survive.

The rehabilitation of Capitol Lake is vital to the continued success of this program which is contributing many thousands of dollars to the commercial fishery and thousands of fish for the sport fishery of Puget Sound. From the standpoint of cost effectiveness the rehabilitation of Capitol Lake would pay for itself many times over through the continued success of the Percival Cove salmon-rearing project.

We recognize the other advantages of this rehabilitation, esthetic and recreational, but our primary concern is with the Percival Cove program.

Sincerely yours,

C. A. Skinner,
President, Olympia Salmon Club.

For House Committee on State Government
Testimony by the League of Women
Voters of Thurston County
March 29, 1977

HB 1172

I am Irene Christy representing the League of Women Voters of Thurston County. The League supports HB 1172.

Capitol Lake has obvious problems of siltage and pollution. Studies have been made of the problems. After extension public discussion and some public hearings, a proposal has evolved for rehabilitation of Capitol Lake.

Capitol Lake frames and enhances the Capitol Campus. The picnic and play area will attract area residents and would expand opportunities available for visitors to the state capitol.

The first step in rehabilitation must be improvement in water quality. We agree that the sources of pollution must be identified and corrected, both in the basins and upstream. The present swimming area is unusable much of the swimming season due to pollution.

State noise standards must be maintained.

League has some concerns about deepening the lower and middle basins for boating. We realize dredging is needed, but to what depth, for what kinds of boating?

Dredging of the upper basin should cause as little disturbance as possible since it has a sizeable wildlife population not found elsewhere in the urban area. Natural topography should be utilized wherever possible. We are pleased to learn that the islands will be left undisturbed.

The league thinks that privately owned land near Percival Creek would be a valuable addition to the project. The Percival Creek area is zoned Conservancy in our Shoreline Master Plan so it would be most compatible in a recreational use.

The League of Women Voters of Thurston County thinks the rehabilitation of Capitol Lake will be a valued extension of the Capitol Campus. We solicit your affirmative vote on HB 1172.

League of Women Voters of Thurston County
Presented by Irene Christy
1063 Capitol Way, Room 202
Olympia, WA 98501

April 25, 1977

Dear Sirs,

I wish to go on record in support of the Master application # 76-044 to dredge Capital Lake and retain the material at the lake basin to provide more land masses and March area —

Sincerely,

Joanne Zell
1921 Lakewood Dr
Olympia, Wa
98501

To John E Johnson, Manager
Facilities Planning
Dept of General Administration
106 Maple Park
Olympia Washington

Dear Sir,
I have reviewed your revised plans of Capitol Lake restoration dated Dec. 30 1976, and find plan # 4 an excellent approach to addressing the problems of Capitol Lake. Since Capitol Lakes are "man made" I strongly concour with your restoration program and can only say that from the beginning maintainance programs could have tremendously reduced the vastness of this present program!

Plan # 4 is the best approach to a suitable maintainance program of the Lake. A great number of objections to the restoration program have been answered with this plan. It will reduce the natural scouring of the upper basin and stabilize this basin in an interesting natural setting.

Stabilizing this basin will tend to keep specie diversity here at a high level. Without this attention the basin would evolve to a scoured alder growth area with stagnet ponds and a possible health hazzard. I have personally noted a decline in duck populations in the last 15 years. Plan # 4 appears to be more than an environmental compromise. It is the most satisfactory recreational ~~and~~, restorative, and maintenance proposal to date.

The biota of the dredged areas could be better documented for inventory reasons however I have found feeding here minimal compared to other shallow waters. The mallard duck populations are dwindeling because of available food due to increased sedimentation which is covering the benthic animals and the rooted plants. Now I have found because of changing water conditions fine sedimentation ~~on~~ is settling in this area and a regeneration of the biota is evident

The scouring of the upper basin should be minimized

with plan #4. Channel 'D' in this plan is an important aspect to keep the islands relatively isolated to urban intrusions (dogs, children, etc:).

This restoration program is a necessary move to preserve and restore Capitol Lake. Without it this area would be an ugly man made environment.

Sincerely

Charles G Lindberg

1631 Miller Ave
Olympia, Wash 98506

DEPARTMENT OF FISHERIES
ROOM 115 GENERAL ADMINISTRATION BLDG.
OLYMPIA, WASHINGTON 98504
Phone 753-6600

xxxxxxxxx
xxxxxx
Dixy Lee Ray
Governor

May 9, 1977

xxxxxxxxx
xxxxxx
Frank Haw
Acting Dire

5/16/77

Mr. John Johnson, Manager
Facilities Planning Division
Department of General Administration
General Administration Building
Olympia, Washington 98504

Dear Mr. Johnson:

April 28, 1977 representives of the Departments of General Administration, Fisheries, Game, Ecology, and Highways met to discuss plans for rehabilitation of Capitol Lake. The originally proposed fill in Percival Cove was discussed and staff concluded the high costs associated with the minor fill were excessive when compared to the benefits.

Therefore, the Department of Fisheries withdraws its original request for the proposed fill in Percival Cove. We will strike all references to the fill in the Hydraulics Project Approval to be issued after review of the Final Environmental Impact Statement.

Sincerely,

Frank Haw
Acting Director

sg

cc: Mr. Jerry Backman

Capitol Lake

Appendix D

Corps of Engineers Dredging Permit Correspondence

DEPARTMENT OF FISHERIES
ROOM 115, GENERAL ADMINISTRATION BLDG.
OLYMPIA, WASHINGTON 98504
Phone: 753-6600

[redacted]
ixy Lee Ray
Governor

April 21, 1977

[redacted]
Frank Haw
Acting Direc

Washington State Department of
General Administration
General Administration Building
Olympia, Washington 98504

Attention Mr. Jerry Bachmann

Dear Mr. Bachmann:

Capitol Lake Dredging
PN-071-OYB-2-003641-R
WRIA-C-13

The Departments of Fisheries and Game have reviewed your plans for the above referenced project located in Sections 22, 23, 26, and 27, Township 18 North, Range 2 West, W.M., in Thurston County. We greatly appreciate your excellent cooperation in the planning of this project. We strongly support the objective of removing the accumulated silt in Capitol Lake and Percival Cove to return the lake system to an effective producer of salmonid fishes and for the preservation of all the resource values for the people of our state.

In the best interest of the fishery resources, the following provisions shall be implemented during this proposed work.

Special Provisions

1. Dredging may be started immediately and continue to December 31, 1977 except as noted below. Hydraulic Project Approvals are issued on a calendar year basis only, but a time extension will be granted upon 30-days prior notice. Additional restrictions might be imposed or some restrictions might be relaxed at that time depending on experience gained during the initial dredging.

a) If the dissolved oxygen in the West Bay of Olympia Harbor (Budd Inlet) fails to meet Class B water quality standards, all dredging shall cease until conditions improve in Olympia Harbor. It will be the responsibility of the applicant to conduct a monitoring program, approved by the Department of Fisheries, for dissolved oxygen in Olympia Harbor during actual dredging operations from June until the onset of improved water quality in the fall. To help maintain Class B standards in Olympia Harbor,

it is highly recommended that the dissolved oxygen in the lake at the outlet meet ambient levels and the BOD and suspended solids meet pre-existing levels as established in studies by the Department of Fisheries and Washington State University. It is also suggested that the monitoring programs be coordinated with any Corps of Engineers surveys in Budd Inlet and any monitoring periodically conducted by the Department of Ecology.

b) The requirements of the Department of Ecology for maintaining and monitoring water quality in Capitol Lake shall be adhered to at all times.

c) The Department of Fisheries shall be kept informed of all water quality monitoring programs on a weekly basis, or more frequently on request, during the critical periods in summer-fall and when anadromous fish are expected in the lake.

d) Although not expected at this time, additional water quality restrictions or curtailment of dredging may be required to protect salmonids in the lake or Percival Cove during dredging.

2. No work in Percival Cove with the potential to impact water quality will be permitted during fish cultural operations from September 1 through the final release of fish, or approximately May 15 the following year. The work should be done after the final release of fish except as provided in 1. a) above. Successful completion of this work in the short time period between the release of fish and the probable occurrence of poor water quality in Budd Inlet will have to be closely coordinated with the Departments of Fisheries and Game. It is highly recommended to consider using extra equipment or two work shifts during the operation.

3. Percival Cove shall be completely drainable as determined on site by the Department of Fisheries following initial dredging. Maintenance dredging shall be periodically conducted at the request and to the specifications of the Department of Fisheries as determined on site to insure the cove remains completely drainable for the release of fish. Additional Hydraulics Project Approvals will be required for the maintenance dredging in Capitol Lake and Percival Cove.

4. The toe of the dike in Percival Cove shall not extend westerly beyond the outside row of old piling.

5. All old piling and other debris in Percival Cove shall be completel removed and not allowed to re-enter State waters.

6. All work affecting surface waters shall cease in the event of a fish kill, a block to upstream migration, or fish are reported in distress in Budd Inlet, Capitol Lake, or Percival Cove.

7. Any manipulation of the water level of Capitol Lake must have the prior approval of the Departments of Fisheries, Game, and General Administra

General Provisions

1. The dike for each disposal area shall be constructed prior to any filling operation.

2. Dredging shall be accomplished by use of a hydraulic dredge and is to be operated with the intake on or below the surface of the material being removed during all periods of operation. Reverse purging of the hydraulic dredge intake line shall be held to a minimum. Should purging become necessary, the intake end is not to be raised more than three feet above the bed material.

3. Waste water discharge from all disposal areas will be over a weir or similar structure rather than directly through a pipe or culvert. This outfall structure will be designed, constructed and maintained so the water crest height over the weir will not exceed 2 inches and at least 1 foot of water depth is maintained in the spoil pond.

4. The outer faces of the dikes shall be stabilized with rock riprap and the slope shall be no steeper than 2.00 feet horizontally and 1.0 foot vertically as indicated on the Corps of Engineers Public Notice.

5. The rock riprap shall be clean, angular material and shall be of sufficient size to prevent its being washed away by high water or wave action.

6. Extreme care shall be taken to ensure that no petroleum products or other deleterious materials are allowed to enter state waters.

7. Any debris resulting from this construction project shall be removed from the lake and disposed of or placed in such a manner to prevent its being washed back into the lake by high water or wave action.

8. Water quality is not to be degraded to the detriment of fish life as a result of this project. Compliance with the quality limits set forth in the Washington State Water Quality Regulations shall be maintained throughout the life of the project.

The Departments of Fisheries and Game reserve the right to make further restrictions if deemed necessary for the protection of fish life. This letter is written in the interest of fishery protection only, and these departments cannot be held liable for any property damage which might occur as a result of this project.

We appreciate your cooperation in our collective efforts to protect, perpetuate and manage the fishery resources of the State of Washington. If you have any questions or need further information please contact Mr. Earl Finn or Mr. William Rees at 753-6650.

Sincerely,

Frank Haw, Acting Director
DEPARTMENT OF FISHERIES

Ralph W. Larson, Director
DEPARTMENT OF GAME

sc

cc: Mr. Dale L. King
CH2M Hill, Inc.

March 24, 1977

Washington State Department of
General Administration
106 Maple Park
Olympia, WA 98504

3-25-77

State of Washington
Department of Ecology

ATTN: George C. Harris
Manager of Facilities Planning

RE: Capitol Lake Dredging, Thurston County, Washington
Corps of Engineers Application No. 071-0YB-2-003641

Gentlemen:

The purpose of this letter is to replace the letter of December 27, 1976 sent to you from our Department regarding the above Capitol Lake Dredging Corps Application. We are prepared to issue water quality certification for your Corps application #071-0YB-2-003641, according to the following conditions. Please review these conditions and indicate your approval by signing in the space provided.

1. Submit to the Department a report indicating the specific chemical polymers that are to be used for solids settling. The report must indicate the safety measures used to insure that the specific chemical polymers are not toxic to aquatic life.

2. Plans and specifications for the design and maintenance of the disposal sites are to be submitted to the Department for review and approval.

3. The applicant shall submit to the Department for review and approval a plan for monitoring the receiving water and the return flow from the disposal sites.

4. The applicant shall monitor dissolved oxygen in the receiving water in the vicinity of the return flow discharge on a daily basis. The timing and location of the monitoring is to be such that the expected minimum values of dissolved oxygen are exposed. If dissolved oxygen falls below 5 mg/l inside the dilution zone, or .5 mg/l below the ambient dissolved oxygen outside the dilution zone, dredging shall cease. The dilution zone will be established during the final design stage and will be included in the plans and specifications that are submitted to the Department for review and approval.

5. Suspended solids shall be monitored in the receiving water and in the return flow from the disposal sites. If at any time, the suspended solids in the return flow exceeds 250 mg/l, immediate measures shall be taken to reduce the discharge of suspended solids or dredge spoil disposal shall stop at this site until corrective action has been taken. After actual field performance has been evaluated, the suspended solid parameter could be revised.

The Statement below is provided for your signature if the Washington State Department of General Administration hereby agrees to the above conditions.

Sincerely,

Rhonda R. Pritchard

Rhonda R. Pritchard
District Engineer

RRP:jr

Washington State Department of General Administration Statement:

The Washington State Department of General Administration hereby agrees to meet the above conditions or to ensure that they are met:

Signed John E. Johnson 4-29-77
John E. Johnson, Manager of Facilities Planning (Acting)

cc: Dale L. King, P.E., Division Manager
CH2M Hill, Bellevue, Washington