METRO

Parks & Greenspaces Department
600 N.E. Grand Avenue
Portland, OR 97232

Memorandum

DATE: February 1, 1995

TO: Dennis O'Neil
Jim Watkins

FROM: Jim Morgan

SUB: North Slough Water Quality Effects on Smith and Bybee Lakes

We have been conducting a number of investigations that explore the water management options for the Smith and Bybee Lakes area. Options include augmenting the water supply from ground water wells, establishing a direct connection to the Columbia River, pumping water from the Willamette River, and opening the lakes directly to the North Slough by removing the dam currently in place. Listed below are recent studies pertaining to these water management options, either completed or in-progress, that were funded either from the Lakes Trust Fund or grants:

(1) hydrodynamic model of a direct connection to the Columbia River by PSU (90% completed);

(2) biological survey of vegetation, macroinvertebrates, amphibians, reptiles, birds, and mammals in the lakes area, (completed);

(3) paleolimnological survey of the lakes (i.e. reconstruction of lakes' history through study of sediment cores) (90% completed); and,

(4) 2-year water quality assessment of the lakes, including field measurements (i.e. Hydrolab parameters) in North Slough.

A joint effort of Solid Waste and Parks & Greenspaces Departments is:

(1) the hydrodynamic model with computer visualization of lower Columbia Slough hydrodynamics by OGI (framework completed);

Listed below are on-going studies that influence water management options that are being conducted by Solid Waste Department:

(1) ground water flow and transport model of St. Johns Landfill and surrounding environment;

(2) screening level risk assessment of the waters surrounding the landfill; and,

(3) the feasibility of leachate discharge control.

There are divergent opinions on the preferred option for managing the hydrology of the lakes. Results of all studies I have conducted to date point toward removal of the dam and return to the seasonal flooding and daily tidal fluctuations. Port of Portland is examining the feasibility of pumping water from the Willamette River as the preferred option. From Solid Waste Department's perspective, augmenting water from an external source other than ground water is preferred since it will allow dilution of contaminants originating from the North Slough or the landfill. The Army Corps of Engineers is currently investigating the costs/benefits of reconstructing the dam at the east end of North Slough to accommodate water flux equal to the channel capacity of the North Slough.

In order for us to explore the removing or modifying the dam, the following critical questions must be answered:

1. Will opening the lakes directly to the North Slough allow a significant load of contaminates to enter the lakes whose principle source is the landfill?

2. Will allowing the water level in the lakes to rise and fall with the daily tides and the seasonal floods promote the movement of leachate-contaminated ground water into the lakes?

I would like to convene the Smith and Bybee Lakes Technical Advisory Committee (TAC) before March 1, 1995, to discuss these water management options. The TAC is composed of representatives from:

Division of State Lands
U.S. Fish & Wildlife Service
Oregon DEQ
Port of Portland
Private consultants
Environmental Protection Agency
OR Dept. of Fish & Wildlife
Nat. Marine Fisheries Service
Portland Bureau of Env. Services

I need to know what information from your studies are available at this time and what is presentable to this committee. Since the Smith and Bybee Lakes Management has requested the TAC to address the water management options, I am requesting your reply in writing for documentation purposes.

Thank you for your cooperative efforts.

Port of Portland

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Mr. Jim Morgan
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RE: Smith and Bybee Lake Flow Augmentation

As per your letter request, we are evaluating only the augmentation part of the TAC's recommendations. The Port of Portland has a permit to withdraw water from the Columbia River. A portion of that permit is reserved for wetland enhancement. A volume of 33.4 cfs could be used to augment water needs in the Smith and Bybee lakes.

The Permit is for withdrawal from the Columbia River. There are two possible scenarios for water retrieval. The first scenario could be an exclusive surface water intake system near Terminal 6 and supporting infrastructure to get the water to the lakes. Roughly speaking, the **construction** cost could be estimated as follows:

Columbia River intake:	$250,000
(Guess) 6400 Lf 8" pipe	$224,000
Restoration for pipe installation	$ 96,000
Contingency (25%)	$143,000
Total	$713,000

This does not include the cost of permitting the construction, engineering, operation/maintenance or other administrative costs.

The second scenario may be the use of wells, if drawdown does not impact the surrounding area. Thirty-three cfs converts to approximately 15,000 gallons per minute. Assuming one well can produce about 1500-2000 gpm, there would need to be about seven to ten wells to augment the lakes. We have learned that it costs about $250,000 per well. This does not include the distribution system, nor the permitting, engineering, operation/maintenance or other administrative costs. The Port does not have a permit for wells for this use at this time.

The cost estimates above are aimed at cost of project feasibility and not engineering level cost analysis. Until the Management committee decides to move forward on exploring management options in more detail, it seems non-productive to attempt to assign either cost responsibilities or invest in greater engineering detail.

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In summary our understanding of the TAC's recommendations were to evaluate the cost of the following scenarios:

- Modify, remove or leave in and build adjacent to the existing water control structure;
- Augment Smith and Bybee Lake water by pumping for botulism and/or vegetative or vector control;
- Install a water control structure separating Smith and Bybee lakes;
- Open Bybee Lake to Columbia Slough.

If this does not address your questions or if you have further questions, please call me immediately.

Rollie Montagne

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