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PROPOSAL FOR A CLEAN LAKES GRANT
SMITH AND BYBEE LAKES

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I. BACKGROUND

In the summer of 1985, the Port of Portland initiated a process that would eventually lead to the creation of a Management Plan for the Smith and Bybee Lakes area of North Portland. A variety of attempts had been made in the past to produce such a document, but had failed because of the complexity of issues and the large number of interested parties, including public and private property owners, wildlife and regulatory agencies, and conservation and community organizations. The Management Plan is a consensus document. It was produced by a committee representing all of these diverse interest groups. All members of the committee agreed with and supported the provisions of the Plan. It represents a delicate balance between environmental, recreational and developmental values.

The Recommended Draft of the Management Plan (included with this proposal) lays out both the process used to develop the Plan (page 7), and the policies, programs, and projects that constitute its substance (page 49). Though not yet adopted by the City of Portland because the format for management plans under the City's recently adopted environmental (e) overlay zone has not been determined, the Plan has already been used by the Port as the basis for an agreement with the state and federal environmental regulatory agencies. This Rivergate Fill Agreement, a copy of which is appended, sets the terms of mitigation for continued wetland fill which the Port needs in order to complete the Rivergate Industrial District. The mitigation projects the Port has agreed to carry out as a result of this agreement include: creation of year round ponds and islands in the Ramsey Lake area; revegetation of surrounding uplands; and construction of two new water level control structures called for in the Smith and Bybee Lakes Management Plan. These structures are the key projects necessary to implement the Plan. They will allow the return of Bybee Lake to a more naturally diverse habitat by re-connecting it to the Columbia Slough, while still maintaining the ability to control the water level of Smith Lake, both to assure its long term survival as a body of water and to enhance its recreational potential.

The Management Plan is based on the Smith and Bybee Lakes Environmental Studies, which are the product of extensive cooperative efforts involving a multi-disciplined consultant team lead by Fishman Environmental Services, the Port of Portland, City of Portland, Oregon DEQ, Oregon Department of Fish and Wildlife, U.S. Fish & Wildlife Service, Army Corps of Engineers, and Portland Audubon Society. These Environmental Studies have also been reviewed by staff from Oregon Division of State Lands, National Marine Fisheries Service, U.S.E.P.A., and the Metropolitan Service District (Metro).

Other studies and plans have also been undertaken which reinforce the Rivergate Fill Agreement and the Smith and Bybee Lakes Management Plan. The City of Portland's Bureau of Environmental Services completed, and the City Council adopted, an End Use Plan for the St. Johns Landfill in 1987. This same bureau is currently involved in a major study to enhance water quality in the Columbia Slough (The Columbia Slough Management Plan). The Metropolitan Service District (Metro) is also in the process of devising a closure plan for the landfill. All of these plans and studies are mutually supportive and are aimed at achieving the same goal -- the improvement of environmental quality in the water and wetland resources of the North Portland peninsula, including the Smith and Bybee Lakes complex. The two lakes and their surrounding wetlands occupy almost 2,000 acres in the heart of the urban area. Preserving, enhancing, and providing better access to them (the main components of the Management Plan) will mean that the 1.3 million people in the metropolitan area will be able to experience and enjoy this unique and previously obscure resource.

II. DESCRIPTION OF THE PROPOSAL

This grant application is submitted to assist the Port in initiating construction of the two key water level control structures needed to implement the Smith and Bybee Lakes Management Plan. The first step leading to construction is a "water flow analysis". This analysis will consist of modeling the interaction among the Slough and the lakes, assuming they are reconnected, to see how they would work as a system. The second step would then be to design the structures according to the parameters dictated by the water flow analysis. The final step is construction, which is set for the fall of 1990.

The water flow analysis is a critical element of this process, and to be effective must be closely coordinated with the work of the other jurisdictions (the City of Portland and Metro) which are developing plans for this area. Though these water level control structures could be designed and constructed with a minimum level of analysis, the long term health of the lakes and Slough system is dependent on a thorough investigation of all the possible scenarios. Metro has just completed its water quality studies of the Columbia and North Sloughs and the lakes to determine the impact of the landfill on these water bodies. The City's Slough study has also just concluded its water quality and water flow modeling elements.

Both jurisdictions are now moving into the process of determining what the options are that will assure the long term health of these water bodies. The interrelationships, both through surface water and ground water connections, among these water bodies and the landfill need to be considered in more detail. A thorough water flow analysis which looks at a variety of alternatives for implementing the Management Plan, matched with what each of the recent studies has made known, will tell us a great deal about the long term implications of the proposed structures and give us much better design parameters for them. All three plans, the Smith and Bybee Lakes Management Plan, the Columbia Slough Management Plan, and the St. Johns Landfill Closure Plan must be consistent and reinforce one another as they are implemented. A comprehensive water flow analysis will give all three plans a common basis for determining the best design for improvements in this area.

The Port will coordinate the work of consultants to carry out the following scope of work.

Task 1 Compile needed information from the Smith and Bybee Lakes Environmental Studies, the Columbia Slough Water Quality Studies, the St. Johns Landfill Water Quality Impact Investigation, and any other relevant studies.

- Task 2 Coordinate input from (including meetings among) the agencies and consultants responsible for the relevant plans to assure that appropriate environmental information is considered in engineering the facilities to be constructed.
- Task 3 Develop a list of assumptions and objectives concerning: lakes and slough water quality (existing and targets for the future); habitat diversification; the amount of water which needs to move between, or be held within, the lakes and the sloughs; etc.
- Task 4 Devise scenarios for water flow modeling. These scenarios should include, at a minimum, the two developed for the Smith and Bybee Lakes Management Plan - 1) a new dam with adjustable tide gate in the channel between Smith and Bybee Lakes, and an open channel between the Columbia Slough and the west end of Bybee Lake, and 2) the new structure between the lakes, an inflow-only tidegate built into the new channel between Bybee Lake and the Columbia Slough, and an outflow-only tidegate in the existing water control structure at the east end of North Slough.
- Task 5 Model the above scenarios, adjusting design parameters of each of the structures as necessary to achieve the objectives agreed upon in Task 3.
- Task 6 Produce a report documenting the above process and detailing the results of the modeling. The report will provide the optimum engineering design parameters for the facilities in each of the scenarios.
- Task 7 Determine the scenarios to be constructed and the responsibilities for implementation. (The Port is obligated by the Rivergate Fill Agreement to construct the level of facilities indicated in the first scenario of Task 4.
- Task 8 Develop preliminary and final engineering plans for the water level control facilities to be constructed, based on the design parameters in Task 6.
- Task 9 Obtain needed permits for constructing the facilities indicated in Task 7. (Though a 404 permit will be required for this project, this step cannot be taken until the design of the facilities is known.)

Task 10 Devise and implement a monitoring program to assure that water quality in the lakes is improved and maintained over time.

Task 11 Construct facilities.

It should be emphasized that the Port has an existing obligation to construct a certain level of facilities (Scenario 1). Metro is working on a closure plan for the landfill which could indicate the desirability of certain additional or supplemental improvements (Scenario 2?). The primary purpose of the grant is to assure that the best possible combination of projects is eventually constructed. In order to get to that point, considerable coordination and analysis needs to be carried out, and the Clean Lakes grant will assure that it happens.

Though a detailed scope of work may change these figures somewhat, the anticipated budget for this project is as follows:

Water flow analysis (Tasks 1-6)	\$ 40,000
Preliminary and final engineering (Task 8)	30,000
Administration, planning, permits, etc. (Tasks 7, 9 and parts of 10 & 11)	50,000
Construction of facilities (assuming Scenario 1 only) + contingencies	<u>320,000*</u>
	\$ 440,000

This grant application is for \$30,000, or less than 7% of the total project cost. The total cost for all water level control improvements may be considerably higher than \$440,000 if Metro or some other agency agrees to participate.

*Port estimate based on preliminary engineering completed for the Rivergate Fill Agreement.

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III. REQUIREMENTS FOR DIAGNOSTIC-FEASIBILITY STUDIES AND ENVIRONMENTAL EVALUATIONS

The information contained in this section is considered to fulfill the requirements of 40 CFR Part 35 Appendix A. Extensive studies conducted during the period 1985-1987 were designed to gather information and data to determine the characteristics of the lakes and watershed. The Management Plan process conducted during the period 1986-1987 examined the diagnostic information base and the feasibility of improving lake quality. Studies are presently being conducted on surface and groundwater quality issues, aquatic biology, and bioaccumulation in the Columbia Slough system.

Smith and Bybee Lakes are a remnant complex of aquatic habitats once characteristic of the lower Columbia River floodplain. Much of this historic habitat type has been lost to diking, pumping and filling. A somewhat unique characteristic of the Smith and Bybee Lakes system is the tidal nature of lower Columbia Slough and, before 1983, Bybee Lake. Impoundment of the lakes has created problems in the form of water quality degradation and loss of habitat diversity. This grant application requests support for measures that will result in improvement of water quality and diversification of aquatic/wetland habitat.

The present condition of Smith and Bybee Lakes is an impounded system resulting from the installation of a water control structure in 1982-83. In this condition, the major factor in the lakes' water budget is precipitation, with seasonal input from Columbia Slough during high water episodes. The watershed is therefore the uplands surrounding the lakes.

The objectives of this project are to improve water quality, habitat diversity, and recreational opportunity in the lakes. A connection between Bybee Lake and Columbia Slough will return the lake to its historical condition, a tidal lake/wetland complex. Flushing resulting from daily tides will reduce nutrient accumulation in the lake, control aquatic macrophytes (submersed) that have increased since impoundment, and reestablish tide flat habitat important for a variety of wildlife species. A relocated water control structure designed to allow water level changes will provide the mechanism to manage water levels in Smith Lake for recreation, aquatic weed control, reduction of nutrient accumulation, fisheries and other priorities.

This section is organized to present required information primarily by reference to source documents that are included with the application. The documents referenced are:

1. Smith and Bybee Lakes Baseline Data Report, 30 DEC 1985
2. Smith and Bybee Lakes Environmental Studies Summary Report, SEP 1987

3. Smith and Bybee Lakes Environmental Studies Appendices, SEP 1987, consisting of:

- Technical Appendix A: Surface Water Hydrology
- Technical Appendix B: Ground-water Hydrology
- Technical Appendix C: Water Quality
- Technical Appendix D: Wetland Sediments
- Technical Appendix E: Vegetation
- Technical Appendix F: Aquatic Invertebrates
- Technical Appendix G: Fish
- Technical Appendix H: Wildlife

4. Smith and Bybee Lakes Management Plan, JAN 1988

5. Columbia Slough Water Quality Management Plan, Water Quality Report, SEP 1988

A good overview of the environmental studies and management plan can be obtained by reviewing documents 2 and 4 from the above list.

APPENDIX A REQUIREMENTS:

- (a) Diagnostic Study:
- (1) Identification of lake: see Document 2, Section 2.
State WQ standards for lake: see Document 3, Tech. App. C.
 - (2) Geologic description: see Document 1, Section 2.1.2 and Document 3, Tech App. B.
 - (3) Public access: access is presently by auto and bicycle along Marine Drive and by small boat through Columbia Slough; Port of Portland has committed funds to provide off road parking and foot access along Marine Drive (see Document 4, Section VIII A); major access will be provided through the St. Johns Landfill site after closure (1990) as provided in the St. Johns Landfill End Use Plan.
 - (4) Size and economic structure of lake user population: see Section I.
 - (5) Summary of historic lake uses and changes resulting from WQ degradation: See Document 4, Section II A; historic recreational uses have included duck hunting, fishing, hiking and bird watching. Decreased aquatic/wetland habitat diversity resulting from impoundment has resulted in lower bird diversity, particularly shorebirds. Increased aquatic vegetation, specifically smartweed (Polyganum) has reduced areas available for boating. Increased algal population densities have reduced desirability for water contact recreation. See Document 3, Tech App. E for affects of vegetation changes, and Section 4.5 of Tech. App. E for human use considerations. Water quality degradation has raised questions in the minds of lake users about health; see Document 3, Tech. App. C.
 - (6) Adverse impacts to lake user population: no particular segment

of the lake user population has been more impacted than others.

- (7) Water use compared to other lakes: other lakes in the region are Sturgeon Lake on Sauvies Island, Vancouver Lake (WA) and Blue Lake east of Portland. Each of these lakes has a particular character: Sturgeon Lake is severely degraded by siltation and barely usable for recreation; Vancouver Lake is a large, open body of water used for sailing, sail-boarding, swimming and fishing with primary access through a developed park; Blue Lake is intensely developed as a regional park with swimming and fishing uses. Smith and Bybee Lakes are the most natural (relatively) of these lakes, with a diversity of aquatic/wetland habitat, and offer a more "natural" experience to hikers, canoers, and fishermen.
- (8) Pollution discharges: Point-source discharges are limited to a small inflow at the NE corner of Smith Lake that has been the scene of oil spills from a used oil refining operation; this situation has recently been addressed by creation of wetlands and oil-water separation culvert system. Columbia Slough might be considered a point source in the sense that it flows into the lakes through a single point during high water events, and is known to have water quality problems (see Document 3, Tech. App. C; and Document 5. The City of Portland is presently completing a \$300,000+ study of water quality and is developing a management plan for remediation of identified problems.
- (9) Land uses in watershed: see Document 4, Section IV C. Also, Document 5; pollutant loading information is not completely applicable in this situation.
- (10) Baseline limnological data: See Document 3.
- (11) Biological resources: see Document 3, Tech. App. F, G, H.

(b) Feasibility Study:

- (1) Alternatives: see Document 4, Sections VI, VII and VIII. An engineering feasibility study was commissioned by Port of Portland in 1988.
- (2) Benefits: see Document 4, Section V and VII.
- (3) Monitoring program: an appropriate monitoring program will be initiated prior to proposed construction activities.
- (4) Milestone schedule: see Section II.
- (5) Non-federal funds: see Section II.
- (6) Relation to pollution control programs: see DEQ attachment
- (7) Public participation: See Document 4, Section II B.
- (8) Continuation of pollution controls: see DEQ attachment
- (9) Permits: see Section II.

(c) State Environmental Evaluation: see DEQ attachment