



FISHERIES RESTORATION & ENHANCEMENT PROGRAM

Project Proposal

APPLICANT INFORMATION

1. **Organization** (private non-profits: attach IRS 501(c)(3) status letter): Metro Regional Parks and Greenspaces Department
2. **Federal Tax ID Number** (unnecessary for state agencies): 93-0636311
3. **Representative:** First Elaine Middle I. M. Last Stewart
- 4a. **Address 1:** Metro Parks and Greenspaces
- 4b. **Address 2:** 600 NE Grand Ave.
5. **City:** Portland
6. **State:** OR
7. **Zip:** 97232-3736
8. **County:** Multnomah
9. **Phone:** 503-797-1515
10. **Fax:** 503-797-1849
11. **E-Mail:** stewart@metro.dst.or.us

PROPOSAL SUMMARY

- | | |
|---------------------------------------|---|
| 1. Title (Brief and Explicit): | Smith-Bybee Water Control Structure Refinements |
| 2. Hatchery: | n/a |
| 3. Basin: | Willamette |
| 4. Stream/Lake/Estuary: | Smith and Bybee lakes (Columbia Slough system) |
| 5. Type of Project: | |

- | Restoration | Enhancement |
|--|---|
| <input type="checkbox"/> Liberation | <input type="checkbox"/> Access |
| <input type="checkbox"/> Hatchery Maint. | <input type="checkbox"/> Education |
| <input type="checkbox"/> Passage Maint. | <input type="checkbox"/> Propagation |
| <input type="checkbox"/> Screen Maint. | <input type="checkbox"/> Monitoring |
| <input type="checkbox"/> Miscellaneous | <input type="checkbox"/> Research |
| | <input type="checkbox"/> Habitat |
| | <input checked="" type="checkbox"/> Passage |
| | <input type="checkbox"/> Screening |
| | <input type="checkbox"/> Miscellaneous |

6. **Is project part of a Salmon-Trout Enhancement Program (STEP) initiative?**
 NO YES • If Yes, and a propagation project, attach STEP proposal

7. **Total Project Cost:** \$36,500 9. **Start Date** (for R&E work): October 2004
 8. **R&E Funding Requested:** \$15,400 10. **End Date:** June 2005

11. **Description** (75 word limit): The Smith-Bybee water control structure, completed in December 2003, is providing fish passage to 1,500 acres of off-channel habitat for salmonid rearing, feeding and refugia. Much off-channel habitat has been eliminated from the lower Willamette river, and juvenile Chinook salmon used the new structure to access Smith-Bybee wetlands this spring. The structure is functioning well to date, but several needs have been identified to protect the investment and ensure its proper operation.


Applicant Signature

5/27/04
Date

Regional Approval (ODFW proposals only)

Date

PROJECT DESCRIPTION

1. Location

a. **Nearest Town/City:** Portland

b. **Directions** (from nearest highway): Access is through an area that is not open to the public; tours can be arranged with the contact person for this application. The site is located approximately 4.5 miles west of Interstate 5 off Columbia Blvd. (exit 307 from I-5). The wetlands are approximately 1 mile from the confluence of the Willamette and Columbia rivers, in north Portland.

2. **Property Owner(s)** (attach letter[s] of consent if the owner[s] is [are] not the same as the applicant): Metro

3. **Background:** Smith and Bybee lakes and their associated sloughs and wetlands are remnants of formerly extensive river bottomlands located near the confluence of the Willamette and Columbia rivers (Figure 1). Part of the Columbia Slough watershed, these large shallow lakes and wetlands are in the 1,928-acre Smith and Bybee Lakes Wildlife Area. Metro manages the wildlife area primarily for habitat, as remnant Columbia River floodplain wetland. A secondary purpose is passive recreation. Habitat types occurring at the wildlife area include open water, emergent wetland, bottomland hardwood wetland, riparian forest and grassland. Smith and Bybee Lakes Wildlife Area has been a protected natural area since 1990. There is a full-time wildlife area manager and a modest dedicated fund for maintaining the site.

Bybee and Smith lakes comprise about 1,500 acres of Columbia River floodplain wetland habitat. Historically, they were shallow wetlands, subject to daily tidal fluctuations and seasonal floods in the surrounding large rivers (notably winter floods and the spring freshet). Considerable changes have occurred in the surrounding landscape that have had significant impacts on these wetlands. The construction of major dams and dikes drastically altered the natural hydrology in the lower Columbia River ecoregion. Locally, an earth dam built in 1982 separated the large wetlands (Bybee and Smith lakes) from North Slough, and thus the Willamette and Columbia rivers. The dam blocked fish passage and converted the wetlands to permanent lakes held at fairly static water levels. Invasive species thrived (especially reed canarygrass) and native plant communities were lost (especially emergent and bottomland hardwood wetlands).

The new water control structure was built to provide habitat connectivity for juvenile salmonids and reverse habitat degradation. The structure is used to provide fish passage, control invasive plants and support native plant communities by providing appropriate hydrology. Water control structures are increasingly used to restore and manage wetland systems where landscape-level hydrologic changes have made it impossible to restore the appropriate hydrology without active manipulation.

The Columbia Slough Watershed Council recognized the water control structure project as a priority in its Watershed Action Plan. Ducks Unlimited and Metro implemented the project in late 2003 (Figure 2) and identified refinements for the structure soon after its operation began.

Smith-Bybee provides a rare opportunity to provide significant off-channel habitat for juvenile salmonids that move through and rear in the lower Willamette River. This habitat likely supports stocks originating in the Columbia River system also, because the Columbia Slough empties into the Willamette River only 0.25 mile from its confluence with the Columbia River. Fish sampling in North and Columbia sloughs in 2002-2004 documented juvenile Coho and Chinook salmon there. In May 2004, a single sampling event picked up 180 age 1+ Chinook in Bybee Lake. The fishway is successfully providing access to the wetland habitat for salmonids.

4. Objectives: This proposal seeks funding to:

- a. *Protect the investment already made in the structure by installing trash racks.* Considerably more debris, particularly woody debris, has been transported into the structure than was anticipated (Figure 3a). Fast-moving woody debris can damage the structure, and it also can become lodged in the reverse tidegates that are used to flood the wetlands, allowing water to flow back out when it should be retained. It is unsafe to manually remove debris from the tidegates when water is flowing. This problem could be avoided with metal trash racks installed on the four openings on the North Slough side of the structure to deflect debris. (Total cost \$12,000; R&E request \$5,000.)
- b. *Make the fishway's operation more efficient and safe using aluminum plates instead of stoplogs in part of the fishway.* The fishway has operated very well to date, however, the stoplogs could be operated more efficiently with a few modifications. A total of 11 slots in the fishway hold up to 13 stoplogs each to create a fish ladder (Figure 3b). Each stoplog is approximately 5.5 inches high. When staff is positioning stoplogs during fast flows, the water movement makes it difficult to hold them in place and they can be lost downstream. Fast-flowing water also places the operator at risk when standing on a ladder in the fishway placing boards. A set of aluminum plates could be placed in certain slots to slow water flow and make placement of remaining stoplogs safer and more efficient. (Total cost \$5,000; R&E request \$5,000.)
- c. *Ensure adequate flows in the fishway during low-water periods by reinforcing gaps along the set of box culverts that comprises the fishway.* The structure consists of four parallel sets of five box culverts. The set of box culverts used for the fishway has earth on one side and a set of culverts on the other side. It needs reinforcement along the side that is flush with the next set of box culverts (Figure 3c). During low water levels in December 2003, a diver confirmed that water escaped through joints between box culverts. If sufficient water escaped, it could impede the fishway's ability to pass fish. The void between the parallel box culvert runs will be filled with cement grout to prevent water from escaping at box culvert joints and ensure fish passage capability. (Total cost \$5,000; R&E request \$3,000.)
- d. *Improved access for maintenance and fish monitoring (no R&E funds requested; description included to provide complete picture of work to be done).* Considerable thought and design was devoted to access within the structure in the headworks area, however, access to the exterior of the structure is also needed for

maintenance and fish monitoring work. No provision was made for access down the banks on either side of the structure during design and construction. The completed structure is surrounded by steep banks with large, loose rocks that provide hazardous footing (Figure 2b). The situation is particularly unsafe when people are carrying large pieces of woody debris or sampling gear. Poured concrete steps would provide a simple and safe solution. Concrete steps will be constructed adjacent to the concrete wing walls to facilitate access for debris removal. (Total cost \$7,000; R&E request \$0.)

5. Commercial and/or Recreational Fisheries Benefit: This project will support both commercial and recreational fisheries by supporting natural production of salmon.

6. Targeted Fish Species: Chinook and Coho salmon

7. Methods/Procedures/References (be specific): Metro is partnering with Ducks Unlimited (DU) to accomplish this work. DU designed the structure and managed its construction. These refinements are straightforward and do not include any experimental methods. a. The metal trash racks will be installed on each of the four openings on the North Slough side of the structure to deflect debris. Each rack will be approximately 8 ft. wide by 10 ft. tall. Racks will be constructed from A36 bar and A53 pipe welded together to form a vertical rack system; they will be galvanized for corrosion protection. b. Some stoplogs in the fishway will be replaced by a set of aluminum plates placed in certain slots to slow water flow and make placement of remaining stoplogs safer and more efficient. Six aluminum baffles approximately 2 feet wide by 3 feet tall will be fabricated from aluminum plate and shaped to facilitate placement into existing stoplog guides. c. The box culvert reinforcement entails filling a 2-inch-wide by 10-foot-high by 30-foot-long void between the parallel box culvert runs with cement grout. Earthen material will be temporarily removed from the top side of box culverts to facilitate grout placement.

8. List required permits and when they were, or will be, obtained:

Permit	Date Secured	Date Expected
n/a (no permits required)		

9. List sources of long-term Maintenance, Operation, and Funding: Smith and Bybee Lakes Wildlife Area was established nearly 15 years ago and is protected by complementary ordinances at the City of Portland and at Metro. A dedicated fund ensures modest funding for managing the site, and there is a full-time manager. Because the water control structure is central to the restoration of most of the site, its operation and maintenance are core duties of the wildlife area manager.

10. List elements, frequency, and longevity of project Monitoring: The wildlife area manager checks the structure at least weekly (more frequently during spring and early summer). The manager monitors the fishway for flow and debris, and monitors and manipulates the rest of the structure for habitat restoration purposes. These activities will occur in perpetuity. For spring 2004, DU has performed periodic fish sampling in the wetlands. Starting in November 2004, DU and Metro will place a two-way fish trap in the fishway. We will monitor ingress and egress of juvenile salmonids through the structure and mark them with PIT tags to document timing of use of the wetlands, residence time, growth, etc. This continuous sampling will occur from November 2004 through June 2005 (the trap will be checked every two days). Additional sampling will occur in the wetlands and the adjacent slough. We intend to seek funding for a second year of this monitoring work (November 2005 through June 2006).

11. Previous R&E Funding (list last 3 grants for Organization):

Title	Project Number	Amount	Completion Date
n/a (R&E funding has not been sought by Metro, to my knowledge)		\$	
		\$	
		\$	

12. Previous, Non-Funded R&E Proposal Submissions (list last 3 for Organization):

Title	Date Submitted
n/a (R&E funding has not been sought by Metro, to my knowledge)	



SCHEDULE / PARTICIPANTS / FUNDING

• Please provide a detailed schedule of activities for the project, indicating when the work will be conducted ("Date") and by whom ("Participant"). Clearly indicate when necessary permits will be obtained, critical completion points, and subsequent monitoring/maintenance. See Application Instructions for further details.

Activity	Date (mo, yr)	Participant(s)
Design and engineering	August 2004	Metro, Ducks Unlimited
Fabricate materials	October 2004	Ducks Unlimited
Install improvements to structure	Oct. 2004-June 2005	Ducks Unlimited, Metro
Monitoring of structure	ongoing	Metro
Maintenance of structure	ongoing	Metro
Fish monitoring	Nov. 2004 – June 2005	Ducks Unlimited, Metro

• Please provide a list of all funding sources (e.g., R&E, OWEB, In-Kind Match, ODFW, etc.) and whether the funding has been secured. In-kind match can be for the participating group's time and expenses of volunteers or staff; these do not need any further documentation. For secured funding, please attach letters of commitment. For non-secured funding, please attach a summary page of submitted applications. Non-R&E funding critical for completion of the R&E work must have documentation.

Funding Source	Amount (\$)	Secured? (Yes/No)
OWEB	\$19,600	No
R&E	\$15,400	No
Metro (in-kind)	\$1,000	Yes
Ducks Unlimited (in-kind)	\$500	Yes
	\$	
	\$	
	\$	
	\$	
	\$	
	\$	
	\$	
	TOTAL \$36,500	

BUDGET

- Please give a detailed itemization of the budget for the project. See Application Instructions for further details and instructions on how to add more rows if needed.
- Make sure contract service estimates are described in an attached letter from the contractor, in the same format as this budget.

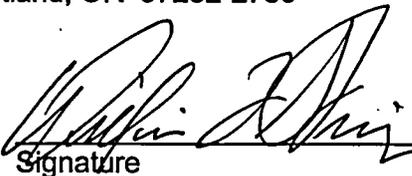
Item	Item Description (#, cost, etc.)	R&E Funds (\$)	Other Funds (\$)	Total (\$)
Examples				
technician	12 months @ \$2000/mo	12,000	12,000	24,000
gravel	5 yards @ \$200/yd	1,000		1,000
Personnel				
DU engineer	30 hours at \$81/hr	1,000	1,500	2,500
Metro project manager	48 hours at \$50/hr	1,400		1,400
DU and Metro admin. costs	various (in-kind and other funding)		3,600	3,600
Personnel Benefits				
Supplies/Services				
Aluminum plates for fishway	lump sum	5,000		5,000
Travel				
Equipment				
Contracts				
Install improvements	DU engineer's estimate (project will go out for competitive bid when funding has been secured)	8,000	16,000	24,000
TOTAL		\$15,400	\$21,100	\$36,500

FINANCIAL OFFICER (please have your organization's financial officer fill in this section)

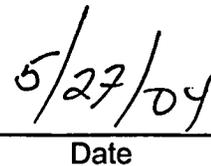
Name: Bill Stringer, Metro CFO

Address: 600 NE Grand Ave, Portland, OR 97232-2736

Phone: 503-797-1700



Signature



Date



Figure 1. Smith and Bybee Lakes Wildlife Area (outlined in green).



(a)



(b)

Figure 2. Smith-Bybee water control structure, showing headworks under construction (a) and North Slough opening at the end of construction (b).



(a)



(b)



(c)

Figure 3. Needed refinements include trash racks to block debris (a), aluminum plates to replace some stoplogs (b), and cement grout to reinforce a gap between two sets of box culverts (c – red arrows indicate joint between culverts).