Cedar Mill Wetland Habitat Enhancement
Greenspaces Grant - Final Report

1. **Name of the Cooperator:** The Wetlands Conservancy
Project title: Cedar Mill Wetland Habitat Enhancement
Cooperative Agreement number: 1448-13420-03-J335
Date of Report: July 30, 2005
Project Time Period: Spring 2003- Spring 2005

2. Project description, including a comparison of expected and actual goals, accomplishments and benefits.

The Cedar Mill Wetland Habitat Enhancement project was one component of a larger research and adaptive management program at Cedar Mill Wetland Preserve. Greenspaces funding was used for invasive plant control and enhancement of native vegetation. Activities focused on:

a) reducing the amount of reed canarygrass in order to conserve the vegetative diversity at the site;
b) conducting a soil study of wetland soils where reed canarygrass is dominant;
c) conducting a hydrologic analysis;
d) preparing vegetation map; and
e) studying how beaver dams influence the hydrology and health of the system.

The research project testing and evaluating a variety of non-chemical reed canarygrass removal and control techniques was completed in January 2005 (Appendix A). The attached scientific paper, "Investigating Alternatives for Control of *Phalaris arundinacea* (Reed Canarygrass) in Urban Wetlands," has also been distributed to Jackson Bottom Wetlands Preserve, Clean Water Services, Dr. Joe Maser, members of The Wetlands Conservancy board and property committee and has been posted on the TWC website. The paper was distributed in order to share information with other groups involved with restoration in the Tualatin Basin. The data collected was used to develop the vegetation management strategy and plan for Cedar Mill Wetland. Reed canarygrass control techniques were evaluated for their short and long term effectiveness, cost, and the resources required to employ them. A Cedar Mill Management Plan was created for the preserve, including long term goals, vegetation survey results, mapping and invasive weed management plans.

The grant goals were successfully achieved with the completion of the research, vegetation monitoring, development of the adaptive vegetation management plans and dissemination of information. The results have provided a better understanding of the preserve dynamics and the ability to develop a management plan that reflects both the reality and desired restoration goals.

3. Actual work tasks implemented and the associated project schedule.

- August of 2003 - Reed canarygrass alternative control research test plots established
- August 2003 to November 2004 - Research conducted
- December 2004 - Final data collection and analysis of results completed
- April 2005 - Final vegetation surveying, monitoring, and results completed

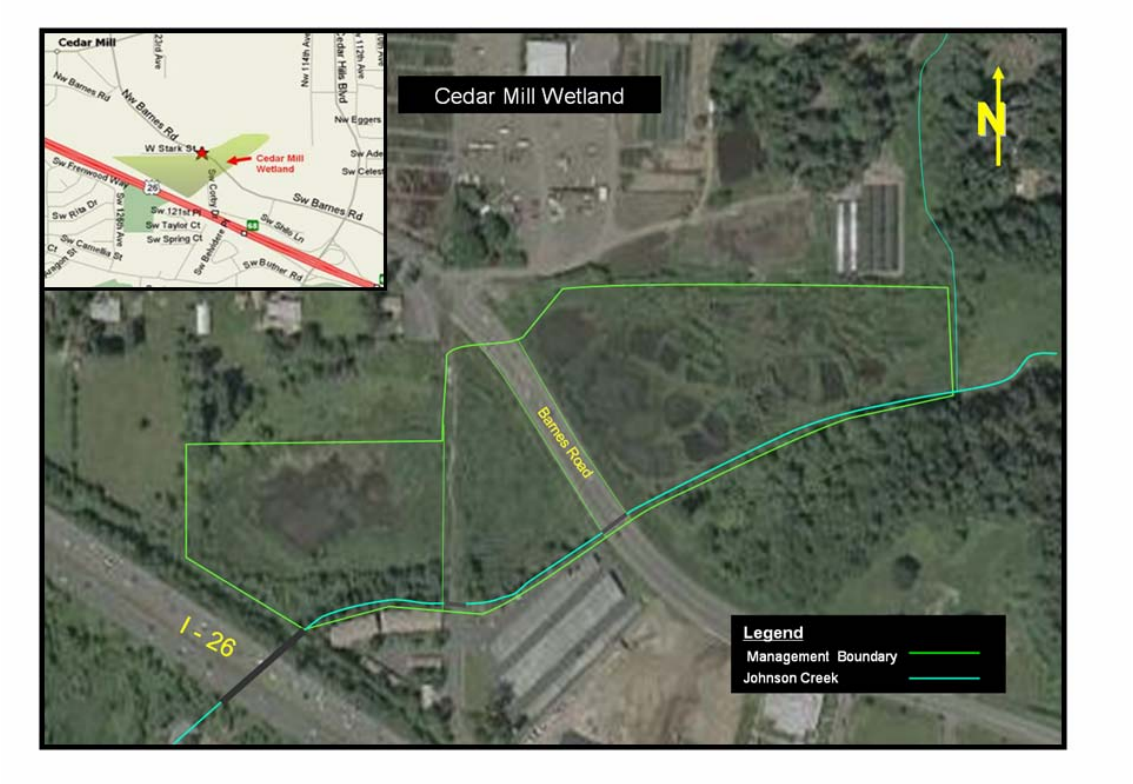
- July 2005 - Created the Cedar Mill Vegetation Management Plan, incorporating the information collected through the project

4. List of project staff and partners, and their roles. Include the number of volunteers and other participants involved, along with the associated number of hours contributed to the project.

Project staff for TWC included Brian Vaughn, former TWC Land Steward, and Marshall Johnson, current TWC Land Steward. Mandy Tu of The Nature Conservancy and Dr. Joseph Maser of Portland State University (PSU) provided guidance for the research project. Clean Water Services was a partner in the overall project, providing funding for staff, supplies and equipment to implement reed canarygrass control and vegetative competition research. Two undergraduate interns from PSU participated in the alternative reed canarygrass control study during 2003-2004, volunteering approximately 200 hours combined.

5. Description of the project area and/or study location. Include dimensions of the actual area affected and/or studied, a map showing the location of project activities, and final project designs, plans and as-built surveys, as applicable.

Cedar Mill Wetland, is a 16.2 acre wetland preserve owned by The Wetlands Conservancy. There are diverse vegetation communities within the wetland including year-round ponds, forested upland, scrub-shrub areas, and wet meadow communities. The research project and invasive weed control took place in the locations infested with reed canarygrass within the Management Boundary of the 16.2 acre Cedar Mill property (see map below).



6. A description of the methods used to implement the project and the effectiveness of those methods.

Methods for the alternative reed canarygrass control and vegetation monitoring are described in "Investigating Alternatives for Control of *Phalaris arundinacea* (Reed Canarygrass) in Urban Wetlands" and the vegetation management plan (respectively) which are included with this submittal (Appendix A and B). The methods were designed to investigate the effectiveness of solarization, mulching, acetic acid and competitive planting for reed canarygrass control. The study used pre- and post-treatment stem counts on randomly selected test plots in areas dominated by reed canarygrass. The vegetation survey used management zones and visual estimates of canopy cover based on the Braun-Blanquet cover class system. Methods were deemed effective and allowed us to achieve the desired goals for the project.

7. On-going tasks that will continue beyond the term of this Cooperative Agreement, such as monitoring and maintenance, or next steps.

The management plan document produced through this project will continue to be used by the TWC land steward to manage Cedar Mill Wetland Preserve. The methods developed for use in this project will continued to be employed for annual monitoring and ongoing adaptive management of the preserve.

8. Summary of expenditures and project costs, including the use of Service funding and the amounts and sources of monetary and in-kind matching contributions. Include an accounting for any real and personal property acquired with Federal funds or received from the Federal Government according to requirements of regulations referenced in " APPLICABLE REGULATIONS" section of this Cooperative Agreement.

The matching contribution totaled $31,334, including $10,000 provided by Clean Water Services (CWS) of Washington County. The Greenspaces funding (a $10,000 grant) and funding from CWS were used to support the project costs for graduate student interns, one of which was later hired as a TWC staff person specifically to complete the project. Funding was also used for the following materials and equipment:

- Native plantings
- Mowing equipment
- Sheet plastic for solarization
- Graduate student stipend
- Alternative herbicide formulas

9. Summary and conclusions. Include observations and advice from this project experience that may assist others involved in similar work.

The study gathered information needed to develop an effective vegetation management plan for Cedar Mill Wetland Preserve, specifically focusing on the invasive weed: reed canarygrass. Since reed canarygrass is also one of the most damaging and widespread invasive weeds in wetlands of the Pacific Northwest, the conclusions of this study have been shared with other natural resource managers throughout the region. All of the alternative reed canarygrass techniques investigated in this study were effective to

varying degrees. More importantly, all of them possess strengths and weaknesses that should be considered when planning a vegetation management plan. Strategies should use multiple techniques in a combination designed to minimize use of resources and impacts to the wetland, while maximizing control of invasive weeds such as reed canarygrass. The Cedar Mill Wetland vegetation management plan has been submitted with this report. It contains the culmination of the monitoring and research accomplished for this project, as well as the adaptive management strategy with long term management goals for Cedar Mill Wetland.

Appendix A - Investigating Alternatives for Control of *Phalaris arundinacea* (Reed Canarygrass) in Urban Wetlands

Appendix B - Cedar Mill Wetland Vegetation Management Plan

Appendix C – Do Soil Factors Contribute to the Spread of Reed Canarygrass (*Phalaris arundinacea*), An Invasive Wetland Grass?