Boeckman Creek Riparian Area Project
Final Report

August 11, 2006

Submitted by

City of WILSONVILLE In OREGON

Project Information

Cooperator Project Officer: Kerry Rappold, Natural Resources Program Manager

Project Title: Boeckman Creek Riparian Area Project

Cooperative Agreement Number: 1448-13420-02-J208

Period of Time: May 1, 2002 to July 31, 2006

Project Description and Accomplishments

Summary: The Boeckman Creek Riparian Area project began in May 2002. The restoration project was a partnership between the city and the West Linn – Wilsonville School District's Center for Research in Environmental Sciences and Technologies (CREST). The project included the removal of invasive plant species (Himalayan blackberry and English ivy), and the enhancement of the upland and riparian areas adjacent to the creek.

Boeckman Creek is a tributary to the Willamette River, and flows south through the eastern third of the City of Wilsonville. The creek is low-gradient stream, with a number of beaver dams, which have impounded water. The creek's riparian corridor is protected within a resource overlay district. All riparian corridors within the City of Wilsonville were deemed significant as part of the Goal 5 inventory and planning process. A riparian scrub-shrub habitat is located adjacent to Boeckman Creek.

The project area was approximately 800 feet in length and extended from the fringe of the upland area into the riparian corridor for Boeckman Creek, which varies in width from 250 to 300 feet. The project area was 4.5 acres.

Working cooperatively with the local school district, the project team achieved the goals of controlling invasive plant species, and enhancing the riparian corridor of Boeckman Creek while also educating youth about local environmental issues. Bob Carlson, Director of CREST, has worked closely with both the schools and the city in previous restoration efforts.

During the last four years, debris was removed from the site, invasive species were controlled, and trees and shrubs were planted and maintained. Most of the scheduled project activities were accomplished for the project time period. In July 2004, a modification to the cooperative agreement was approved that extended the performance period until July 31, 2006. Additional time was necessary to control the extensive areas of invasive species, and install the proposed plants.

Accomplishments:

	Plantings	**Activities**	**Volunteers**
Project Year 2002-2003:			
	200 trees and shrubs 50 live willow stakes	- Removed 150 tires - Spider hoe removal of invasive species (1 acre)	50
Project Year 2003-2004:			
	70 trees and shrubs 50 live willow stakes	- Goats grazed invasive species (2 acres)	100
Project Year 2004-2005:			
	170 trees	- Goats grazed invasive species (2 acres)	250
Project Year 2005-2006:			
	235 trees and shrubs	- Goats grazed invasive species (2 acres)	250
Total:	775 trees and shrubs		650

Project Goals

The project achieved most of the goals outlined in the grant application. Project goals included the following:

1) **Establish a program to control invasive plant species**
   A number of methods were employed for the removal of invasive plant species, such as Himalayan blackberry and English ivy. Goats were allowed to graze half the site over a three year period. In addition, invasive plant species were controlled by hand and by mowing, and a spider hoe was used to clear invasive areas during the first year of the project. No herbicides have been used to control invasive plant species pursuant to the grant agreement requirements. Due to the project, there has been a significant decrease in the areas affected by Himalayan blackberry and English ivy. The performance measure for the project was "invasive species will not make up more than 10% of cover in any growing season." Based on monitoring of the site, it appears that invasive species do not make up more than 10% of the cover in areas that have been treated. Although the invasive plant species control efforts have been relatively successful, there are still some on-going problems with Himalayan blackberry and reed canarygrass, and a new problem associated with Teasel invading the site. Future maintenance efforts will be critical in maintaining control of the invasive plant species.

2) **Develop a plan for native revegetation of the site**
Performance measures for the planting of the site included:
"Tree and shrub cover will be increased by 10% after one year, by 20% after two years and more than 30% after three years." And "Native plantings will have at least a 75% survival rate after three years".

The native revegetation plan called for the planting of 950 trees and shrubs and 500 wetland plants. As noted under the accomplishments, the total number of trees and shrubs planted was 775 (82% of the quantity proposed). In addition, we have delayed the installation of the wetland plants until the willows planted along the creek and the floodplain area have had an opportunity to establish and provide some control of the reed canarygrass. Based on monitoring, the percentage of native trees and shrubs has been increased, at a minimum, by 30%.

One of the major successes of the project has been the survival rate for the native plantings, which is approximately 90% in 2006. This high survival rate is attributed to the tubes, mats and mulch used to protect the plants. The tubes protected the plants from herbivores, such as rodents and deer. The mats and mulch allowed the plants to maintain a more constant moisture level and provided some nutrients.

3) **Protect native plants from beaver and other herbivores**
In addition to the use of plant tubes, wire mesh was used on willow plantings to protect them from beaver damage. As with the tubes, the wire mesh appears to have been effective in eliminating damage to these plants. The beavers were able to remove some of the smaller branches, but did not have access to most of the stems and branches.

4) **Establish working partnerships with volunteer organizations and school groups**
A variety of volunteers have been involved in the project over the last four years. The project benefited from the strong partnership with the West Linn – Wilsonville School District's Center for Research in Environmental Sciences and Technologies. Grade school through high school students were organized by CREST and helped with many of the activities at the site, including planting, maintenance work, and controlling invasive plant species. As noted above, 650 volunteers participated over the past four years, which also included AmeriCorps crews and the Clackamas County Environmental Youth Corps. In addition, volunteers from the city's annual W.E.R.K. Day (i.e. local SOLV clean-up event) also participated in activities on the site.

The volunteers were an essential part of the project, and they received a greater appreciation for the Greenspaces Program and the essential projects that were funded and supported through this program. They also developed a strong connection to the project site, and will be involved in future maintenance activities.

5) **Develop a maintenance and monitoring program for replanted areas**
The city in cooperation with CREST and other volunteers will continue to maintain and monitor the site. Additional plantings will be installed, and the on-going suppression of invasive plant species will continue. The following maintenance and monitoring

activities, identified in the grant application, have been employed over the past four years and will continue to be implemented:

Maintenance of the native plantings and areas cleared of invasive plants will include the following:

- The City's operations staff and volunteers from the community will monitor the project site on a regular basis, ensuring that new trees and shrubs receive adequate water throughout the warm summer months (July 1 to October 15) during the first two years after planting.
- The project team will organize work groups to remove invasive plant species at least twice a year during the term of the project, and ensure the success of enhancement efforts by replacing damaged, diseased, or dead plants. Native plants will be protected from browsing and damage by beaver and other herbivores.

Monitoring of the native plantings and areas cleared of invasive plants will include the following:

- A monitoring program will be conducted during the project and for a period of five years following final installation of all native plantings. A report will be prepared annually to document the progress of the project. Those areas within the project, which do not meet the project goals –measurements of success, will be identified, and corrective actions will be implemented.
- Vegetation transects (systematically spaced, at least one per plant community) that document shrub and tree survival, and the condition of invasive plant species. In addition, fixed photo points will be used to track the progress of the restoration project. These points will be shown on a map of the restoration area, and be keyed to lines of sight from those photo points.
- Evaluate vandalism, littering, or other conditions actually or potentially harmful to the restoration project.
- Identify maintenance concerns (e.g. plants need to be replaced)
- Bob Carlson director of the CREST center will organize groups of students to visit the sight several times a year. For educational purposes, the students will survey the area for invasive plant regeneration, and assess the growth of trees and shrubs.
- We hope to use this site as an educational area for citizens to learn about native plants and to witness alternative, non-hazardous methods of eradicating invasive plant species.

6) Inform the community about the enhancement project and its objectives.

A description of the project is on display at the project site. In addition, environmental education efforts have been on-going for the past four years, which included discussions with students and adults at the site, and articles published in the local newspaper and city newsletter.

Project Expenditures and Reimbursements

Project Year 2002-2003:

A reimbursement of $2,000.00 was received for the mowing of Himalayan blackberries with the spider hoe.

Project Year 2003-2004:

No reimbursements were submitted.

Project Year 2004-2005:

A reimbursement of $2,023.95 was received for invasive plant species control by the goats and the purchase of a native seed mix.

Project Year 2005-2006:

A reimbursement of $2,381.00 was authorized for invasive plant species control by the goats and the purchase of native plant material. A final reimbursement request for $1,100.00 will be submitted with this report. The grant funding was used to hire a restoration work crew to control invasive plant species.

Total Grant Reimbursements: $7,504.95 (Grant Award was $7,575.00)

Matching Funds

Project Year 2002-2003

Monetary:

10/31/02 (City Tree Fund): $450.00

In-Kind Value:

10/23/02 (City Staff): 2 hours x $25/hr. = $50.00
11/5/02-11/8/02 (City Staff): 10 hours x $25/hr. = $250.00

10/23/02 (Volunteer Labor – CREST Director): 2 hours x $35/hr. = $70.00
10/23/02 (Volunteer Labor – Students): 12 students x 2 hours x $6.50/hr.= $156.00

11/5/02-11/8/02 (Volunteer Labor – CREST Director): 10 hours x $35/hr. = $350.00
11/5/02-11/8/02 (Volunteer Labor – Students): 25 students x 10 hours x $6.50/hr.= $1,625.00

Project Year 2003-2004:

Monetary:

11/14/03 (City Tree Fund): $207.50

Project Year 2004-2005:

In-Kind Value:

11/15/04 (City Staff): 2 hours x $25/hr.= $50.00
11/22/04 (City Staff): 2 hours x $25/hr.= $50.00

11/15/04 (Volunteer Labor – CREST Director): 2 hours x $35/hr.= $70.00
11/15/04 (Volunteer Labor – Students): 100 students x 2 hours x $6.50/hr.= $1,300.00

11/22/04 (Volunteer Labor – CREST Director): 3 hours x $35/hr.= $105.00
11/22/04 (Volunteer Labor – Students): 100 students x 3 hours x $6.50/hr.= $1,950.00

Project Year 2005-2006:

In-Kind Value:

<u>CREST</u>
10/21/05 (City Staff): 2 hours x $25/hr. = $50.00

10/21/05 (Volunteer Labor – CREST Director): 2 hours x $35/hr. = $70.00
10/21/05 (Volunteer Labor – Students): 190 students x 2 hours x $6.50/hr.= $2,470.00

<u>Clackamas County Environmental Youth Corps</u>
2/25/06 (City Staff): 1 hour x $25/hr. = $25.00
3/18/06 (City Staff): 1 hour x $25/hr. = $25.00

2/25/06 (Volunteer Labor – Crew Leader): 2 crew leaders x 5 hours x $20/hr. = $200.00
2/25/06 (Volunteer Labor – Students): 8 students x 5 hours x $6.50/hr.= $260.00

3/4/06 (Volunteer Labor – Crew Leader): 2 crew leaders x 5 hours x $20/hr. = $200.00
3/4/06 (Volunteer Labor – Students): 8 students x 5 hours x $6.50/hr.= $260.00

3/18/06 (Volunteer Labor – Crew Leader): 2 crew leaders x 5 hours x $20/hr. = $200.00
3/18/06 (Volunteer Labor – Students): 8 students x 5 hours x $6.50/hr.= $260.00

3/25/06 (Volunteer Labor – Crew Leader): 2 crew leaders x 5 hours x $20/hr. = $200.00
3/25/06 (Volunteer Labor – Students): 8 students x 5 hours x $6.50/hr.= $260.00

4/1/06 (Volunteer Labor – Crew Leader): 2 crew leaders x 5 hours x $20/hr. = $200.00
4/1/06 (Volunteer Labor – Students): 8 students x 5 hours x $6.50/hr.= $260.00

Total Matching Funds:

Monetary: $657.50

In-Kind Value: $10,966.00

Total: $11,623.50

Matching funds satisfy the requirement for a minimum 1:1 non-Federal financial and/or in-kind matching contribution. The matching funds listed above reflect the amounts identified in the reimbursement requests, however, it is likely the actual matching fund total (based on in-kind contributions) is probably double the amount that is shown here.

Summary

The project was a wonderful opportunity to improve the functions and values of a riparian habitat, and also a chance to involve a broad array of volunteers in the restoration work. Tangible benefits to wildlife, habitat diversity and water quality have resulted from the project, and members of the community have developed personal connections to the site that will ensure its long-term stewardship.

Due to staff limitations at the city, it was tremendously helpful to have a partner such as CREST. They provide continuity in regards to organizing volunteers and assisting with the project. The long-term success of the project will be dependent on maintaining this relationship.

Photo Points

Photo Point #1A:

Photo Point 1A, looking northeast (August 7, 2002)

Photo Point 1A, (August 7, 2006)

Photo Point #1B:

Photo Point 1B, looking south (August 7, 2002)

Photo Point 1B, (August 7, 2006)

Photo Points

Photo Point #2A:

Photo Point 2A, looking northwest (August 7, 2002)

Photo Point 2A, (August 7, 2006)

Photo Point #2B:

Photo Point 2B, looking east (August 7, 2002)

Photo Point 2B, (August 7, 2006)

Photo Points

Photo Point #3:

Photo Point 3, looking north (August 7, 2002)

Photo Point 3, (August 7, 2006)

Photo Point #4A:

Photo Point 4A, looking south (August 9, 2002)

Photo Point 4A, (August 7, 2006)

Photo Points

Photo Point #4B:

Photo Point 4B, looking east (August 9, 2002)

Photo Point 4B, (August 7, 2006)

Photo Point #5A:

Photo Point 5A, looking north (August 9, 2002)

Photo Point 5A, (August 7, 2006)

Photo Points

Photo Point #5B:

Photo Point 5B, looking west (August 9, 2002)

Photo Point 5B, (August 7, 2006)

Photo Point #6A:

Photo Point 6A, looking northwest (August 9, 2002)

Photo Point 6A, (August 7, 2006)

Photo Points

Photo Point #6B:

Photo Point 6B, looking west (August 7, 2002)

Photo Point 6B, (August 7, 2006)

Activities

Invasive Species:

Goats grazing invasive species adjacent to Boeckman Creek.

Herbivore Control:

Installation of beaver protection fencing.

CREST and Student Volunteers:

Student volunteers learning about tree planting techniques from Bob Carlson (CREST Director).

Student volunteers planting trees.