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**PART I - ADMINISTRATIVE**

**Section 1. General administrative information**

**Title of project**

Amazon Basin/Eugene Wetlands Phase Two

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**BPA project number:** 9205900

**Contract renewal date (mm/yyyy):** 4/1999  **Multiple actions?**

**Business name of agency, institution or organization requesting funding**

The Nature Conservancy

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**Business acronym (if appropriate)** TNC

**Proposal contact person or principal investigator:**

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**NPPC Program Measure Number(s) which this project addresses**

11.3F.1, 7.1, 7.6.A, 7.6.B, 7.6.C, 7.7, 7.8, 11.3.A, 11.3.D

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**FWS/NMFS Biological Opinion Number(s) which this project addresses**

N/A

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**Other planning document references**

Willow Creek Wildlife Mitigation Project, Final Environmental Assessment, BPA document # DOE-EA-1023, April 1995.

BPA 1993, Oregon Trust Agreement Planning (OTAP) Project: Potential Mitigation to the impacts on Oregon wildlife resources associated with relevant mainstem Columbia River and Willamette River hydroelectric projects. Bonneville Power Administration, US Dept. of Energy, Portland, OR. DOE-BP-90299-1.

ODF&W 1997. Assessing Oregon Trust Agreement Planning Project using GAP analysis. Contract No. DE-BI179-92P90299 prepared for US Bonneville Power Administration.

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**Short description**

Restore and enhance wildlife habitat at the Willow Creek Natural Area. Acquire an additional 134 acres contiguous with the 330 acres currently managed under the BPA Wildlife Mitigation Program. Prepare a new Habitat Evaluation for the new acquisitions.

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**Target species**

Beaver, Black-capped Chickadee, Red-tailed Hawk, Valley Quail, Western Meadowlark, Yellow Warbler, and Western Pond Turtle.

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**Section 2. Sorting and evaluation**

**Subbasin**

This project is located within the Lower Columbian Subregion, and the Willamette River Subbasin.

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**Evaluation Process Sort**

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input type="checkbox"/> Anadromous fish <input type="checkbox"/> Resident fish <input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Multi-year (milestone-based evaluation) <input type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input type="checkbox"/> Information dissemination <input checked="" type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input type="checkbox"/> Research & monitoring <input checked="" type="checkbox"/> Implementation & management <input checked="" type="checkbox"/> Wildlife habitat acquisitions

**Section 3. Relationships to other Bonneville projects**

**Umbrella / sub-proposal relationships.** List umbrella project first.

Project #	Project title/description

**Other dependent or critically-related projects**

Project #	Project title/description	Nature of relationship
9206800	Implementation of Willamette Basin Mitigation Program-Wildlife	
9705900	Securing Wildlife Mitigation Sites—Oregon	


## Section 4. Objectives, tasks and schedules

### *Past accomplishments*

<b>Year</b>	<b>Accomplishment</b>	<b>Met biological objectives?</b>
1995	Acquired conservation easement over 330 acres of habitat.	The conservation easement provided an estimated 575 Habitat Units (HU's) of protection credits.
1995	Completed the Willow Creek wildlife management plan and Environmental Assessment proposing restoration and enhancement actions and wildlife mitigation credits that would be produced.	The selected management alternative should lead to a total of 815 HU's at this site.
1996	Implementation of restoration and enhancement actions proposed in management plan.	Yes. Habitat Units generated through habitat acquisition were maintained and additional habitat units were generated through restoration and enhancement. The increase in HU's has not been quantified but will be documented with the FY 2000 HEP.
1997	Implementation of restoration and enhancement actions proposed in management plan.	Yes. Habitat Units generated through habitat acquisition were maintained and additional habitat units were generated through restoration and enhancement. The increase in HU's has not been quantified but will be documented with the FY 2000 HEP.
1998	Implementation of restoration and enhancement actions proposed in management plan.	Yes. Habitat Units generated through habitat acquisition were maintained and additional habitat units were generated through restoration and enhancement. The increase in HU's has not been quantified but will be documented with the FY 2000 HEP.

**Objectives and tasks**

<b>Obj 1,2,3</b>	<b>Objective</b>	<b>Task a,b,c</b>	<b>Task</b>
1	Implement wildlife habitat management activities as outlined in the Willow Creek management plan to maintain a baseline of 575 habitat units and provide additional habitat units through restoration and enhancement of wildlife habitats.	a	Continue non-native vegetation control efforts; reduce or eliminate the top 10 problem non-native plant species from the site.
		b	Reduce adult bullfrog populations by 50% from pre-control levels.
		c	Monitor and evaluate invasive non-native species control efforts.
		d	Enhance three acres of oak woodland by reducing trunk density and removing non-native understory vegetation.
		e	Restore two acres of invaded wet prairie to wet prairie and ash savanna habitats.
		f	Restore native grasses and forbs to establish one acre of native upland prairie on former agricultural land.
		g	Install and monitor “soft” erosion control methods on streambanks and at nickpoints.
2	Acquire 133 acres of adjacent land to expand wildlife credits and improve the overall viability of the site for wildlife use.	a	Negotiate for and purchase a total of 133 acres on the following tracts at Willow Creek: Alvord (56 acres), Rathbone (36 acres), Mahler (7 acres), Christensen (5 acres), Houser (10 acres), Scott (7 acres), and Watson (10 acres).
3	Monitor hydrology and water quality conditions to compare with baseline conditions regarding stream flows and water quality inputs to the Willow Creek site.	a	Monitor hydrology and water quality conditions.
		b	Continue precipitation monitoring.
		c	Continue turbidity monitoring.
		d	Refine wildlife management and enhancement activities based upon

			results of monitoring and analysis.
4	Improve defensibility of the site and reduce unauthorized use and associated impacts.	a	Increase volunteer defensibility monitoring.
		b	Maintain or update public use signage and entry controls (gates and fences) as necessary.
5	Perform additional habitat evaluation, management planning, and NEPA documentation to guide acquisition and management of new land acquisitions and assess changes in HU's achieved on existing lands.	a	Undertake a Habitat Evaluation, develop a management plan, and perform necessary NEPA documentation for the tracts listed under Task 2a and evaluate additional HU's protected through restoration and enhancement on existing lands.

**Objective schedules and costs**

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	4/2000	3/2001	Maintain 575 HU's and work towards achieving 815 HU's		1.89%
2	10/1999	3/2001	Protect an additional 133 acres	New conservation easements	97.07%
3	4/2000	3/2001	Prevent degradation of hydrologic regime		0.12%
4	4/2000	3/2001	Prevent damage from unauthorized use		0.08%
5	10/1999	3/2001	Identify management actions to increase the number of HU's	Updated management plan	0.84%.
				<b>Total</b>	100.00%

**Schedule constraints**

None

**Completion date**

Since the habitat enhancements described in the Willow Creek Wildlife Management Plan represent a vision for implementation over a 20 year period, the likely completion date (depending upon funding availability) could be as far out as the year 2015.

## Section 5. Budget

FY99 project budget (BPA obligated): \$50,000

### *FY2000 budget by line item*

Item	Note	% of total	FY2000
Personnel		%1	18,700
Fringe benefits	(38.5%, based upon line 1 and part of line 4 costs)	%0	11,450
Supplies, materials, non-expendable property		%0	2,800
Operations & maintenance	(some of personnel expense applied to O&M tasks)	%0	5,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Fair market value as determined by preliminary appraisals	%97	2,295,070
NEPA costs		%0	5,000
Construction-related support		%0	
PIT tags	# of tags:	%0	
Travel		%0	1,000
Indirect costs	20%, TNC federally approved indirect cost rate for all non subcontract costs.	%0	6,000
Subcontractor	Work crews, contract labor, appraisals, HEP work, hydrologist, zoologist	%1	31,000
Other		%0	
<b>TOTAL BPA FY2000 BUDGET REQUEST</b>			<b>\$2,376,020</b>

### *Cost sharing*

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
Oregon Commission on Families and Children	youth work crews	%0	6,000
US Fish and Wildlife Service	upland prairie restoration	%0	4,000
The Nature Conservancy	real estate assistance	%0	3,000
		%0	
<b>Total project cost (including BPA portion)</b>			<b>\$2,389,020</b>

### **Outyear costs**

	<b>FY2001</b>	<b>FY02</b>	<b>FY03</b>	<b>FY04</b>
<b>Total budget</b>	\$70,000	\$71,750	\$73,540	\$75,380

## **Section 6. References**

<b>Watershed?</b>	<b>Reference</b>
<input type="checkbox"/>	Bonneville Power Administration. 1995. Willow Creek Wildlife Mitigation Project, Final Environmental Assessment. DOE-EA-1023, Portland, OR.
<input type="checkbox"/>	Beilke, Susan. 1995. Willow Creek Habitat Evaluation. Oregon Dept. of Fish and Wildlife, Clackamas, OR.
<input type="checkbox"/>	Oregon Trust Agreement Planning (OTAP) Project
<input type="checkbox"/>	

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## **PART II - NARRATIVE**

### **Section 7. Abstract**

The Nature Conservancy proposes to continue restoration and enhancement activities on the 330 acre Willow Creek Natural Area. In addition, we proposes to provide funding for acquisition and management planning for additional lands that are contiguous with the Willow Creek project site, but currently in private ownership. These actions will help to mitigate the habitat losses as outlined in the Northwest Planning Council's 1994 Fish and Wildlife Program.

For FY 2000 we propose to continue restoring native wet prairie, enhance oak woodland, reduce non-native species abundance, and apply data from hydrologic monitoring to improve aquatic habitat conditions. We also propose the acquisition of an additional 133 acres of land contiguous with the existing protected site. Also in FY 2000 we would conduct a new Habitat Enhancement Plan and undertake management planning to guide wildlife habitat enhancement and restoration on the newly acquired lands.

The results of ongoing habitat management will be monitored though vegetation sampling, permanent photo plots, and use of air photos and maps. Quantitative data will be reported for particular wildlife species under observation or study, and observations related to target species or other noteworthy wildlife species will also be reported.

### **Section 8. Project description**

#### **a. Technical and/or scientific background**

The Amazon Basin/Eugene Wetlands project has been designed to provide protection and improvement of wildlife habitat for mitigation of habitat loss as outlined in the Northwest Planning Council's 1994 Fish and Wildlife Program. These efforts would partially fulfill BPA's obligations to protect, mitigate, and enhance wildlife habitat affected by the development of federal hydroelectric projects in the Columbia River Basin, including the Willamette River Drainage. In this proposal, we request funding to continue ongoing management activities and to acquire and protect an additional 133 acres of habitat, beyond the 330 acres that have been protected to date.

The Willow Creek Natural Area is located in the Amazon Creek watershed in and adjacent to the City of Eugene, Lane County, Oregon. An area of 330 acres is currently protected at Willow Creek through the BPA wildlife mitigation program. However, the Willow Creek Natural Area comprises one portion of a larger wetland system in the West Eugene area that is protected through a partnership between The Nature Conservancy, the City of Eugene, and the Eugene District Bureau of Land Management. This larger wetland system includes over 1000 acres of protected wetlands as well as adjacent upland habitats that have been acquired by BLM.

The Willow Creek Wildlife Mitigation Project Environmental Assessment (EA) was developed in 1995 to guide the management of the Willow Creek Natural Area for wildlife mitigation purposes. Prior to completing the EA, a habitat assessment was conducted of the Willow Creek site to document habitat units baseline conditions for the following target species: Beaver, Black-capped Chickadee, Red-tailed Hawk, Valley Quail, Western Meadowlark, Yellow Warbler, and Western Pond Turtle. The EA also describes five management alternatives and quantifies the increase in habitat units for the target species that would occur under each alternative. The alternative that was selected for implementation was designed to maximize wildlife and biodiversity values on the site. This would be accomplished by restoring, enhancing, or maintaining sufficiently large areas of a variety of habitats occurring on the site.

Since 1996, our proposals for funding have been focused on implementing management plans for the Willow Creek site. However, we have also recognized that there are significant opportunities on adjacent privately owned lands to improve the viability and ecological function of the Willow Creek site. These opportunities include:

- 1) Protection of additional valuable wildlife habitat.
- 2) Providing buffers between protected lands and nearby developed areas.
- 3) Protecting important wildlife movement corridors.
- 4) Securing valuable riparian habitats along both forks of Willow Creek.
- 5) Maintaining the hydrologic function of the watershed by protecting small headwaters streams and adjacent uplands from development.

We propose to acquire 133 acres of additions to the Willow Creek project at this time because in many cases these properties are coming on the market now. If they are sold to

a private party, they are at risk of being lost to development, logging, or other uses that reduce habitat suitability for wildlife populations.

Although we have not conducted a formal habitat evaluation of the lands we propose to add to the Willow Creek project, approximately 2/3 of the acreage consists of upland forest habitats that support a mix of Douglas-fir, oak, and madrone. Within these upland forests habitats are a number of small seasonal streams that form, in part, the headwaters of the Willow Creek watershed. The proposed acquisitions include smaller amounts of forested wetland dominated by Oregon ash, oak woodland/savanna, and open pasture. The oak woodland and pasture habitats, in particular, have potential for enhancement to improve their suitability for target wildlife species.

**b. Rationale and significance to Regional Programs**

This project was developed because of the opportunity to provide BPA with in-kind mitigation for wildlife habitat loss as outlined in the Northwest Planning Council's 1994 Fish and Wildlife Program. The types of wildlife species and habitats present at the site, including wetlands, riparian zones, prairie, and oak woodlands, are typical of habitats that were impacted by construction of BPA hydroelectric dams in the Willamette River drainage. The Wildlife Scoping Group at BPA ranked the Willow Creek proposal second out of 46 projects in 1992. This project was included in the 1993 Oregon Trust Agreement Planning Project and is listed in Appendix C at the end of that report. The Willow Creek project is relevant to ongoing project #9705900, Securing Mitigation Sites in the Columbia River Basin in Oregon. It is complementary to the ongoing Burlington Bottoms project (#9107800). It is also complementary to the Willamette Basin Mitigation Program (#9206800) which includes the Mt. Pisgah site. The relationship of Willow Creek to the Mt. Pisgah site is described in Section 7c below. Work at Willow Creek funded by BPA benefits from the site being located within the West Eugene Wetlands Project and the Amazon Creek Basin.

Willow Creek hosts a wide diversity of wildlife species including a representative array of songbirds, raptors, mammals, reptiles, and amphibians typically found in the Willamette Valley. The combination of terrestrial and aquatic habitats leads to benefits for both fish and wildlife. Over 200 species of native plants occur at Willow Creek (including populations of six rare, threatened, or endangered species), along with significant remnants of native plant communities. Results of a Habitat Evaluation Plan (HEP) in 1994 identified a baseline of 575 Habitat Units (Hu's) with proposed actions leading to 815 Hu's at the site. Target wildlife species identified in a 1995 Management Plan/EA include Beaver, Black-capped Chickadee, Red-tailed Hawk, Valley Quail, Western Meadowlark, Yellow Warbler, and Western Pond Turtle. The proposed acquisition and enhancement of 133 additional acres at the site will substantially increase the overall wildlife mitigation credits at the site.

Although the Willow Creek site provides suitable habitat for many native plants and animals, the site has been negatively impacted through the lack of management attention to wildlife and habitat values and through the introduction of non-native plant and animal

species. Management efforts (as identified in the Willow Creek Wildlife Mitigation Plan) directed at reintroducing fire, controlling invasive non-native plant and animal species, and restoring degraded habitat areas are needed to conserve the rich diversity of native plants and animals at the site.

The U.S. Fish and Wildlife Service has published a recovery plan for Bradshaw's lomatium (*Lomatium bradshawii*), a Federally listed endangered species. This is just one of the seven species that occur at Willow Creek that are Federally listed, proposed, candidate, or species of concern. In addition, the U.S. Fish and Wildlife Service has proposed for listing as endangered the Fender's blue butterfly (*Icaricia icarioides fenderi*) and Willamette Daisy (*Erigeron decumbens* var. *decumbens*), and as threatened Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*). USFWS is in the process of developing a multi-species recovery plan for the numerous listed, proposed, candidate, or species of concern that occur in the Willamette Valley. It is anticipated that the activities described under the Proposed Action alternative would be compatible with these recovery plans and no modifications would be required should additional species be federally listed.

Work at Willow Creek funded by BPA benefits from the site being located within the West Eugene Wetlands Project and the Amazon Creek Basin. The West Eugene Wetlands Plan is being implemented by an interagency partnership that includes The Nature Conservancy, the City of Eugene, the Bureau of Land Management, the Corps of Engineers, and the Oregon Youth Conservation Corps. These agencies work together to manage wetland resources in a landscape context over the entire project area. Each partner has a particular role that it brings to the partnership, which provides for stronger implementation of the program. For example, the Bureau of Land Management has received over \$7 million for land acquisition in west Eugene, and the City of Eugene operates a wetland mitigation bank that provides funding for wetland restoration. These projects are helping to build an interconnected network of wetlands and riparian corridors that help to strengthen the viability of habitats and wildlife populations over the entire system. In summary, the Willow Creek wildlife mitigation project benefits from the wetland partnership but is not constrained by it.

This proposed project provides a cost-effective opportunity to mitigate for wildlife habitat losses. According to a study that compared various mitigation methods, fee acquisition and subsequent management is generally more cost effective than easement (Prose et al. 1986). The cost effectiveness of this project is also enhanced by the prominent role of volunteers in conducting defensibility monitoring and assisting with restoration work. The close partnership with the City of Eugene and the Bureau of Land Management also allows for cost saving measures.

### **c. Relationships to other projects**

The Willow Creek project has obvious links to the Willamette Basin Mitigation Program (#9206800), which includes a number of sites elsewhere in the Willamette Valley that have similar opportunities for wildlife mitigation. For example, the Mt Pisgah site, which

is located about 11 miles east of the Willow Creek site, supports some similar habitats and target species (such as wetlands and riparian habitats supporting species such as the western pond turtle). Mt Pisgah also provides some similar opportunities for wildlife habitat enhancement, such as removal of invasive non-native species such as Scot's broom. The Willow Creek project also benefits from its contribution to the West Eugene Wetland Plan and ongoing recovery efforts for threatened and endangered species (see section 7c above).

**d. Project history** (for ongoing projects)

This is a continuing project. The proposal for this project was originally submitted in August 1991, and the project was initiated in 1992. The original proposal included funding for both habitat protection through acquisition, and habitat improvement through restoration, enhancement, and O&M.

**Results Achieved** - The Habitat Evaluation (HEP) for the Willow Creek site was completed in 1994, and the Wildlife Mitigation Plan/EA was completed in 1995. Also in 1995, The Nature Conservancy purchased approximately 325 acres of habitat at Willow Creek. At the same time, BPA acquired a conservation easement for the entire site from The Nature Conservancy. The Nature Conservancy still owns the underlying fee title for the 325 acres.

In 1996, 1997, and 1998 The Nature Conservancy contracted with BPA to perform wildlife habitat restoration, enhancement, O&M, and monitoring. This funding has been used to continue inventory of small mammals, reptiles, and amphibians, and to develop better hydrology and water quality monitoring programs. In the past three years we have made major progress eliminating 12 acres of Scot's broom, smaller patches of reed canary grass, and teasel from the site (only small patches of these species remain), and we have reduced the dominance of Himalaya blackberry on about 10 acres of the site. Over the last three years we have carefully restored nearly 20 acres of wet prairie habitat by removing invading woody vegetation. Youth work crews have logged over 2500 hours of work time in the past three years, working primarily on non-native and invasive vegetation removal tasks.

Our efforts have been aided by extensive volunteer support, as we have led 35 volunteer work parties, recorded over 2200 hours of volunteer time removing invasive vegetation, and benefited from 94 volunteer site monitoring visits in the past 3 years.

**Adaptive Management** - Over the three years that we have been implementing habitat restoration and enhancement projects at Willow Creek, we have utilized an adaptive management approach to refine our methods and identify the most effective, efficient, or least costly techniques for achieving the desired results. For example, we have experimented with numerous invasive species control methods and have found that different methods vary considerably in their effectiveness for controlling different weed species.

**Past Costs** - Through FY 1998, costs have totaled \$1,266,890, of which \$1,112,500 were for acquisition. Of the remainder, \$32,977 was for preparing the management plan and EA, and \$121,413 was for habitat restoration, enhancement, O&M, and monitoring. We anticipate that the opportunity for BPA to fulfill wildlife habitat mitigation obligations at the Willow Creek site will continue into the future.

**Documentation and Reports** - In addition to the Willow Creek Habitat Evaluation and the Willow Creek Wildlife Mitigation Plan/Environmental Assessment noted above, unpublished reports that document the results of work at Willow Creek include “A Hydrologic Assessment for Habitat Management of the Willow Creek Natural Area”, by and Sarah Shafer, 1995; “Herpetological Assessment of the Willow Creek Natural Area, West Eugene, Oregon”, by Christopher Pearl, 1997, and “Wildlife Habitat Assessment of the Western Oak Stand, Willow Creek Natural Area, Eugene, Lane County, Oregon”, by Dan Gumtow-Farrior, 1998. An additional report that pertains to habitat restoration at Willow Creek, though it was not funded through the BPA wildlife mitigation program, is “Restoring Habitat for the Fender’s Blue Butterfly: 1997 Report on Progress of Experimental Restorations”, by Cheryl Schultz, 1998.

**e. Proposal objectives**

**Objective 1** - Implement wildlife habitat management activities as outlined in the Willow Creek management plan to maintain a baseline of 575 habitat units and provide additional habitat units through restoration and enhancement of wildlife habitats.

**Objective 2** - Acquire 133 acres of adjacent land to expand wildlife credits and improve the overall viability of the site for wildlife use.

**Objective 3** - Monitor hydrology and water quality conditions to compare with baseline conditions regarding stream flows and water quality inputs to the Willow Creek site.

**Objective 4** - Improve defensibility of the site and reduce unauthorized use and associated impacts.

**Objective 5** - Perform additional habitat evaluation, management planning, and NEPA documentation to guide acquisition and management of new land acquisitions and assess changes in HU's achieved on existing lands.

The accomplishments achieved under this project would be documented in quarterly progress reports and an annual report at the end of the project year. We also will continue ongoing monitoring of vegetation and other wildlife use of the site to document improvements resulting from this project.

**f. Methods**

The methods by which the currently authorized elements of the Willow Creek project are being implemented are described in detail under Alternative 1 (Proposed Action

Alternative) in the Willow Creek Management Plan/EA. Briefly, this alternative proposes to maximize wildlife and biodiversity values by maintaining a diverse mix of habitats on the site, including open prairie, savanna, woodland, riparian forest, and wetland. In some portions of the site, active habitat management has been initiated to maintain or restore open prairie habitats. In other areas, vegetative succession will be allowed to proceed and forested habitats (both forested wetlands dominated by Oregon ash and upland Douglas-fir forests) will be allowed to mature. The spatial configuration of different habitats on the site is designed so as to maximize large blocks of contiguous habitat, thus minimizing habitat fragmentation. Under the proposed action, high priority is also given to controlling invasive, habitat-modifying non-native plant species. These activities are also integrated into other ongoing stewardship activities at Willow Creek that are not directly associated with this BPA project, such as prescribed burning, and management and monitoring of endangered species populations that occur on the site.

The environmental consequences of this project are also described in the Management Plan/EA. Based upon the Habitat Evaluation (HEP), there would be a 42% net increase in habitat units for the target species identified with full implementation of the management plan, from 575 to 815 habitat units. This increase is due generally to the increased habitat quality for wildlife. For example, habitat restoration or enhancement would generally provide improved nesting habitat for some species, or higher quality hunting and feeding areas for other species.

Although the Management Plan/EA identified some potential short-term negative impacts that could occur, these impacts could be minimized by timing management activity appropriately. For example, this could be done by timing management activity to seasons when wildlife species are not breeding or nesting, or when vegetation is dormant, or when the ground is dry and hard, and not likely to be disturbed. The Management Plan/EA concluded that even taken cumulatively, these short-term impacts would have little or no long term impact to the Willow Creek environment.

**Objective 1, Task a - Continue non-native vegetation control efforts; reduce or eliminate the top 10 problem non-native plant species from the site.**

**Methods** - A variety of methods have been, and will continue to be utilized to control invasive plant species. The methods of choice vary for different species, but include manual clipping or removal, mowing, covering with opaque plastic, and spot spraying of herbicides.

**Objective 1, Task b - Reduce adult bullfrog populations by 50% from pre-control levels.**

**Methods** - The primary means we are using to reduce bullfrog populations is removal of egg masses during the breeding season. In some years when water levels get low, we can supplement this approach with the removal of tadpoles as they become concentrated in small pools.

**Objective 1, Task c - Monitor and evaluate invasive non-native species control efforts.**

**Methods** - The results of ongoing invasive species removal and habitat management have been and will continue to be monitored and documented through a combination of quantitative vegetation sampling, permanent photo plots, mapping of invasive species distribution, and use of air photos to document habitat changes. The response of selected wildlife species will be monitored by surveys of selective species, and documentation of noteworthy observations.

**Objective 1, Task d - Enhance three acres of oak woodland by reducing trunk density and removing non-native understory vegetation. Methods** - Enhancement would be accomplished by reducing trunk density and removing invasive non-native understory vegetation, particularly Himalaya blackberry. This would increase the structural diversity and productivity of the oak woodlands for target wildlife species. Remaining oaks would be provided with greater space for canopy development, while girdled and felled trunks provide standing and down coarse woody debris for wildlife use.

**Objective 1, Task e - Restore two acres of invaded wet prairie to wet prairie and ash savanna habitats.**

**Methods** - Work crews will be hired to use chain saws to manually remove invading woody vegetation (mostly common pear and Oregon ash) that has invaded open prairie habitat. We anticipate that our goals for the units that will be restored in FY 2000 will be to restore an ash savanna, which will entail leaving scattered larger ash trees.

**Objective 1, Task f - Restore native grasses and forbs to establish one acre of native upland prairie on former agricultural land.**

**Methods** - This task will involve site preparation to eliminate existing non-native vegetation, collection or propagation of native grass and forb seed, and planting of one acre of former agricultural land. We anticipate that an equal or greater area of native upland prairie restoration will be funded by the U.S. Fish and Wildlife Service.

**Objective 1, Task g - Install and monitor “soft” erosion control methods on streambanks and at nickpoints.**

**Methods** - Willow stakes and bundles, and straw pillows contained within jute netting, will be installed to stabilize localized occurrences of bare stream banks and eroding stream channels.

**Objective 2, Task a - Negotiate for and purchase a total of 133 acres on the following tracts at Willow Creek: Alvord (56 acres), Rathbone (36 acres), Mahler (7 acres), Christensen (5 acres), Houser (10 acres), Scott (7 acres), and Watson (10 acres).**

**Methods** - TNC has already acquired Alvord and Christensen, and holds options for the purchase of Rathbone and Mahler. TNC would negotiate with and acquire fee ownership (from willing sellers) for the additional tracts listed above. BPA would acquire from TNC conservation easements for all of the tracts for which TNC acquires fee ownership.

The conservation objectives that would be achieved through acquisition of these tracts are varied. All the tracts are contiguous with the existing land under TNC ownership and BPA conservation easement, and their purchase would buffer the existing protected site

from adjacent privately owned lands. Some of these tracts are within the Urban Growth Boundary of the City of Eugene (Mahler, Houser, Scott, and Watson), and have considerable development value; if we do not acquire them, they will be subject to urban residential development. Alvord and Rathbone are outside the present Urban Growth Boundary but within the Urban Reserve. They form an important link in a continuous undeveloped habitat corridor that links Willow Creek and the West Eugene Wetlands with undeveloped lands outside the urban reserve. Many of these tracts provide important habitat values, such as riparian and aquatic habitats (Christensen, Houser, Alvord), forested uplands with a mix of Douglas-fir, oak, and madrone (Alvord, Rathbone, Scott), or are important in protecting the headwaters of small tributaries of Willow Creek (Alvord, Rathbone).

In addition to the tracts listed above that area proposed for acquisition, the City of Eugene and the BLM have additional acquisition plans that will complement BPA-funded acquisitions to assemble a larger protected urban wetland and wildlife habitat system. BLM has proposed to purchase riparian corridors along Willow Creek both upstream and downstream from the TNC/BPA project site. In November 1998, voters in the City of Eugene passed a bond measure that provides funding for acquisition of approximately 100 acres in the headwaters of Willow Creek adjacent to the Alvord and Rathbone tracts, which will complete the protected wildlife habitat corridor described above.

**Objective 3, Task a - Monitor hydrology and water quality conditions.**

**Methods** - Ensuring that suitable hydrologic conditions are maintained is important to maintaining and improving wetland and aquatic habitats for wildlife. Under this task we will monitor a series of groundwater wells to document groundwater patterns, and six staff gauges to document changes in water levels in beaver ponds. We also will gather baseline data on stream flows (stage measurements) by installing an automated device at one location on the site. The flow data will be used to document baseline conditions, and to calculate loadings of any pollutants that are detected in water quality monitoring. Much of the data gathering and data analysis will be performed by students at Churchill High School, which is located about 1 mile from Willow Creek.

**Objective 3, Task b - Continue precipitation monitoring.**

**Methods** - We will use an automated rain gauge to document precipitation during the project period. Because the nearest official rainfall measurement station is located 10 miles away, and because precipitation varies locally depending upon variations in topography, we believe it is important to have a local precipitation record to use for calculating and modeling stream flows under alternative future land use conditions.

**Objective 3, Task c - Continue turbidity monitoring.**

**Methods** - We monitor turbidity at least twice a month at a series of eight sampling locations. Measurements are made with an Orbeco-Hellige Model 966 portable turbidimeter.

**Objective 3, Task d - Refine wildlife management and enhancement activities based upon results of monitoring and analysis.**

**Methods** - If the above monitoring indicates that there are certain on-site problems related to hydrology or aquatic habitat conditions, we will use an adaptive management approach to revising and updating management and enhancement activities.

**Objective 4, Task a - Continue volunteer defensibility monitoring**

**Methods** - Volunteers make monthly visits to a set route on the site, and record observations of visitor use, changes in hydrology, wildlife sightings, and plant phenology. These observations are useful for documenting coarse level changes and patterns on the site.

**Objective 4, Task b - Maintain or update public use signage and entry controls (gates and fences) as necessary.**

**Methods** - Limited amounts of wear and tear as well as vandalism require that we replace signage and entry controls from time to time. This ensures that we are able to protect habitat quality from disturbance related to unauthorized uses of the site as best possible.

**Objective 5, Task a - Undertake a Habitat Evaluation, develop a management plan, and perform necessary NEPA documentation for the tracts listed under Task 2a and evaluate additional HU's protected through restoration and enhancement on existing lands.**

**Methods** - We will use standard methods and protocols for HEP and NEPA documentation. Management planning will follow a similar format to the existing Willow Creek wildlife management plan by documenting the location and extent of different habitats on the site prior to the start of management activity, and under future conditions under a range of possible management alternatives.

Over the long term, the primary factor that may limit success is the effects of land use practices on privately owned lands within the Willow Creek watershed. Both urbanization (residential and industrial development along with the construction of associated infrastructure) and rural land uses such as forest practices, livestock grazing, and other agricultural practices have the potential to negatively impact both habitat quality (particularly for the aquatic systems) and wildlife diversity within the lands protected by TNC and BPA. We have identified a critical linkage with local public officials at the City of Eugene and Lane County, and have participated and will continue to participate in public processes where we have the opportunity to ensure that wildlife habitat concerns are addressed in public decisions. We have only begun to identify ways to educate private landowners and work cooperatively with them to ensure that best management practices are followed on private lands that are not managed solely for wildlife habitat. TNC is now represented on the steering committee of the Long Tom Watershed Council, and this organization may provide good opportunities to work cooperatively with private landowners within the Willow Creek basin.

**g. Facilities and equipment**

TNC has existing arrangements for office space and office equipment, both in Portland and Eugene, for the personnel involved in this project. TNC owns a full size pick-up

truck that is used in field projects, and we can rent equipment such as tractors and mowers locally from rental companies.

There are no special or high cost facilities or items of equipment that are identified for purchase during FY 2000. To date, each year's project budget has included a small amount (typically less than 10% of the overall project budget) for vehicle operation, equipment, supplies, and other materials.

#### **h. Budget**

**Personnel:** The primary personnel on this project include a project manager ("Stewardship Ecologist") who oversee the implementation of the project; a technician ("Stewardship Coordinator") who is responsible for overseeing the work of volunteers and work crews, and performs much of the basic field work; and a second technician ("Field Steward"), who performs much of the monitoring and field investigations. A small amount of time is also budgeted for a data manager who is responsible for monitoring data summary and analysis. Russ Pinto, Director of Protection for The Nature Conservancy of Oregon, will assist with acquisition activities. His salary will be contributed as in-kind assistance to this project.

**Fringe benefits:** This is calculated at The Nature Conservancy's standard rate of 38.5%.

**Supplies, Materials, Non-Expendable Property:** This line item includes miscellaneous supplies such as fencing, signage, hand tools, film, flagging, herbicides, printing/copying, cellular phone, etc.

**Operations and Maintenance -** Many on-the-ground projects tasks include both a restoration/enhancement element and an operations/maintenance element. The line item under this category is an estimate of the cost of the O&M component of projects tasks. We define restoration or enhancement as the activity that is undertaken in the first year that a unit of habitat is subject to management activity, and the O&M component is the time that is spent in out years following up on the initial activity to ensure long term success. For example, the first year that invasive species removal is implemented on a particular unit, the work is categorized as enhancement, but any necessary follow-up work the next year is defined as O&M.

**Capital Acquisitions:** This is a new budget item that was not included in the FY '99 proposal. Of the seven tracts we have included in the acquisition budget, a majority are sure to happen (TNC currently holds fee ownership, an option to purchase, or has an indication that the owner is a willing seller), but several are at this stage prospective acquisitions. We feel that it is most efficient to include all projected acquisitions in this proposal so the necessary planning and habitat evaluation can proceed at one time. The urgent need to make acquisition a priority at this point in time is based upon the current active land sale and development market at this time. If we are not able to act reasonable quickly, many of the tracts we have targeted for acquisition are likely to be sold for

development. The sizable increase in land values over the last five years is also an indication of their high development value and the need to act urgently.

NEPA Costs: under this line item we have included the cost of performing a Habitat Evaluation for the new acquisitions, writing a management plan, and (with assistance from BPA NEPA staff) completing NEPA documents and procedures.

Travel: Travel expenses are related to operation of a TNC-owned truck and include gas and oil, maintenance, and repairs; these are charged on a cost basis.

Indirect Costs: Indirect costs are charged at a 38.5% rate. We also charge a 3% administration fee for costs associated with subcontracts.

Subcontractor: We anticipate engaging a number of subcontractors to assist in accomplishing the tasks listed above. Contract labor crews provided by Northwest Youth Corps will do much of the manual labor. A contract wildlife biologist will perform the Habitat Evaluation. A contract hydrologist will assist with evaluation of water quality and hydrology monitoring and data analysis. A contract zoologist will oversee the bullfrog control work and other associated reptile and amphibian monitoring. A contract mower will perform portions of the non-native species control work. A professional appraiser will perform the appraisals as a subcontractor.

Note: we anticipate at least \$10,000 in additional funds for R&E/O&M work at Willow Creek for work directly related to accomplishing the objectives and tasks listed above. This does not include land acquisition costs for other tracts in the Willow Creek area undertaken by other partners (BLM, City of Eugene) in the West Eugene Wetlands Partnership. These acquisition costs include at least \$900,000 from the City of Eugene bond measure to purchase open space in the Willow Creek watershed, and an as-yet unidentified dollar amount from BLM for acquisition of wetlands and riparian areas. An additional match will be provided by the Rachael Carson school, a program of Churchill High School, which will provide assistance with water quality monitoring and native plant propagation using their equipment and facilities. The financial magnitude of their match has not yet been determined.

## **Section 9. Key personnel**

Edward R. Alverson, Willamette Valley Stewardship Ecologist, is the project manager for The Nature Conservancy on this project. Mr. Alverson is an ecologist and field botanist with expertise in wetland ecology, monitoring, ecological restoration, landscape ecology, and natural area management planning.

### **RESUME FOR EDWARD R. ALVERSON**

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**EDUCATION:** Oregon State University, Corvallis, 1986-1989; M.S. in Botany. Thesis title: "Biosystematics of Parsley-ferns, *Cryptogramma* R. Br., in Western North America". The Evergreen State College, Olympia, WA, 1977-1979; 1981-1984, B.S. in Biology and B.A. in Environmental Studies.

**WORK EXPERIENCE:**

1991-Present. Willamette Valley Stewardship Ecologist, The Nature Conservancy, Eugene OR. As the Nature Conservancy's staff ecologist for the southern Willamette Valley, I am responsible for all aspects of management of five natural areas. Responsibilities include organizing and writing site management plans; ongoing management, research, and monitoring of rare animals, plants, and plant communities; planning and implementation of ecological restoration projects; and representing TNC in local partnerships and cooperative projects.

1990-1991. Environmental Scientist, David Evans and Associates, Inc., Portland OR. Staff botanist for an engineering, planning, and environmental consulting firm.

1980-1989. Contract Botanist/Botanical Consultant. Conducted surveys for endangered, threatened, and sensitive plants; prepared status reports for specific sensitive plant species, and conducted general floristic and vegetational studies. Worked on projects throughout the states of Washington and Oregon for the Bureau of Land Management, U.S. Forest Service, Oregon Dept. of Agriculture Endangered Species Program, Washington Natural Heritage Program, and the Washington Native Plant Society. Projects in the Willamette-Puget Trough included inventory surveys for *Aster curtus* in the southern Puget Sound region, field studies and monitoring of *Aster vialis*, field surveys for rare plant populations and native prairie remnants in the Willamette Valley.

**SELECTED PUBLICATIONS:**

Alverson, E.R. 1993a. When "native" plants aren't native. *Hortus Northwest* 4:20-24.

\_\_\_\_\_. 1989a. *Cryptogramma cascadenis*, a new parsley fern from western North America. *American Fern Journal* 79(3):95-102.

\_\_\_\_\_. 1989b. Use of a county soil survey to locate remnants of native grassland in the Willamette Valley, Oregon. Pp. 107-112 in Mitchell, R.S., C.J. Sheviak, and D.J. Leopold (eds.). *Ecosystems Management: Rare Species and Significant Habitats*. Proc. 15th Ann. Natural Areas Conf. New York State Museum Bull. 471.

Russ Pinto, Director of Protection, The Nature Conservancy of Oregon.  
Education: BA 1971, university of Southern California, J.D., Seattle University, 1976,  
Experience: Mr. Pinto is a real estate specialist with over 20 years of experience acquiring lands on behalf of federal, state, local governments, The Nature Conservancy, and Trust for Public Lands. He oversaw the conveyance of the conservation easements to Bonneville Power Administration at Willow Creek/Amazon Basin and provided assistance on the acquisition to the Bonneville Power Administration at Burlington Bottoms.

**Section 10. Information/technology transfer**

The Nature Conservancy is a participant in a number of partnerships and organizations, such as the West Eugene Wetlands partnership described above. Another organization that we participate in is the Willamette Valley Natural Areas Network. The network is comprised of land managers, researchers, and agency staff with an interest in natural areas and biodiversity in the Willamette Valley. The network communicates through meetings and mailings; the possibility of holding a conference on Willamette Valley natural areas in the next few years has been discussed.

Staff from The Nature Conservancy have been involved on an informal or advisory basis with other BPA wildlife mitigation projects and proposals, including sites such as Burlington Bottoms and Mt. Pisgah.

Nature Conservancy staff regularly participate in national meetings of professional and scientific organizations, such as the Society for Ecological Restoration, the Natural Areas Association, Ecological Society of America, and The Wildlife Society. In addition, Nature Conservancy staff from Oregon communicate on a regular basis with equivalent staff from Nature Conservancy programs in other states. Every two years Oregon staff attend a national meeting of Nature Conservancy stewards.

**Congratulations!**