

# **PART I - ADMINISTRATIVE**

## **Section 1. General administrative information**

<b>Title of project</b> DESCHUTES RIVER UMBRELLA PROPOSAL	
<b>BPA project number</b>	20511
<b>Contract renewal date (mm/yyyy)</b>	
<b>Multiple actions? (indicate Yes or No)</b>	
<b>Business name of agency, institution or organization requesting funding</b> OREGON DEPARTMENT OF FISH AND WILDLIFE / CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON	
<b>Business acronym (if appropriate)</b>	ODFW
<b>Proposal contact person or principal investigator:</b>	
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<b>NPPC Program Measure Number(s) which this project addresses</b> 7.1, 7.1D, 7.1D.1and .2, 7.6, 7.6A, 7.6B.1-.3, 7.6B.6, 7.7, 7.10K.1	
<b>FWS/NMFS Biological Opinion Number(s) which this project addresses</b>	
<b>Other planning document references</b> Edlund R. And C. Penhollow. 1996. Trout Creek Watershed Resource Inventory, Problem Assessment and Treatment Alternatives. Jefferson County Soil and Water Conservation District. 46-84.  Columbia River Ontertribal Fish Commission. 1996. Wy-Kan-Ush-Mi Wa-Kish-Wit Spirit of the Salmon, The Columbia River Fish Restoration Plan of the Nez Perze, Umatilla, Warm Springs, and Yakima Tribes. Volumn II p38.  Oregon Department of Fish and Wildlife. 1997. Lower Deschutes River Subbasin Fish Management Plan. 1-24-5 and 1-34.  Northwest Biological Consulting. 1983. Trout Creek Restoration. Project No. 83-423. Phase 1 Final Report. Bonneville Power Administration. Portland, Oregon. P15-18.	
<b>Short description</b> Restore the depressed Deschutes River summer steelhead population by restoring and protecting stream habitat. Wildlife will be enhanced and wildlife habitat will be enhanced or acquired.	
<b>Target species</b> Summer steelhead, bull trout, and a variety of wildlife	

## Section 2. Sorting and evaluation

Subbasin Deschutes River
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### Evaluation Process Sort

CBFWA caucus		CBFWA eval. process		ISRP project type	
X one or more caucus		If your project fits either of these processes, X one or both		X one or more categories	
X	Anadromous fish	X	Multi-year (milestone-based evaluation)	X	Watershed councils/model watersheds
X	Resident Fish		Watershed project eval.	X	Information dissemination
X	Wildlife			X	Operation & maintenance
				X	New construction
				X	Research & monitoring
				X	Implementation & mgmt
				X	Wildlife habitat acquisitions

## Section 3. Relationships to other Bonneville projects

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

Project #	Project title/description
20511	DESCHUTES RIVER UMBRELLA PROPOSAL
9404200	Trout Creek Habitat Restoration Project
9306600	Oregon Screens
9303000	Buck Hollow Watershed Restoration
9405420	Bull Trout Studies

### ***Other dependent or critically-related projects***

Project #	Project title/description	Nature of relationship
9304000	Fifteenmile Creek Habitat Restoration Project	Shared equipment and personnel

## Section 4. Objectives, tasks and schedules

### ***Past accomplishments***

Year	Accomplishment	Met biological objectives?
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1998	132 miles of riparian livestock enclosure fencing built and maintained on Trout Creek	Working to meet stream bank stabilization and shading goals.
1998	Trout Creek smolt emigration monitored	Estimated 73,000 smolt produced
1998	236 instream rock weirs built and maintained in Trout Creek and tributaries	Working to meet habitat diversification goal.
1998	189 log weirs placed and maintained in Trout Creek and tributaries	Working to meet habitat diversification goal.
1998	3.7 miles of juniper riprap placed and maintained in Trout Creek and tributaries	Working to meet habitat diversification goal.
1998	3,397 instream boulders placed and maintained in Trout Creek and tributaries	Working to meet habitat diversification goal.
1998	498 pieces of large wood placed and maintained in Trout Creek and tributaries	Working to meet habitat diversification goal.
1998	Developed and maintained six upland Trout Creek livestock watering sites	Working to meet stream bank stabilization and shading goals.
1998	Facilitated Corps of Engineer initial assessment for removal of 1964 Trout Creek berms	Will help to meet several habitat goals (i.e. bank stabilization, habitat diversity)
1998	Trout Creek basin habitat survey completed	Aid in determining progress toward reaching habitat goals.
1998	Bull trout population inventories conducted on the Metolius and Deschutes rivers	Working to assess bull trout status and distribution

### **Objectives and tasks**

<b>Obj 1,2,3</b>	<b>Objective</b>	<b>Task a,b,c</b>	<b>Task</b>
1	Achieve a spawner escapement of 6,575 wild summer steelhead passing upstream of Sherars Falls (Deschutes River - Rm 43)	*	*Tasks (Strategies) a, b, and c, work cumulatively to achieve this objective.
		a	Achieve the annual natural production of 100,000 summer steelhead smolts from Trout Creek
		b	Restore and recover habitat lost as a consequence of man's activities in the Deschutes River subbasin.
		c	Achieve fish screening protection at all water diversions and pump intakes on anadromous fish streams.
		d	Determine the magnitude and cause of out-of-basin origin steelhead straying into the Deschutes River.
2	Restore bull trout populations in the Deschutes River subbasin.	a	Determine abundance, distribution, and life history patterns of bull trout in the subbasin.
		b	Identify population genetic structure, systematics, and distribution of bull trout in the subbasin.
		c	Identify factors limiting bull trout numbers and

Obj 1,2,3	Objective	Task a,b,c	Task
			distribution.
		d	Implement measures to restore bull trout habitat
3	Achieve and sustain levels of habitat and species productivity in order to mitigate for all wildlife and wildlife habitat losses caused by the development and operation of the Columbia Basin hydro power system.	a	Identify potential protection and enhancement projects within the Hood River / Fifteenmile subbasin.
		b	Implement wildlife or wildlife enhancement measures.
		c	Monitor and evaluate wildlife habitat and wildlife species response to implemented enhancement activities within the Hood River/Fifteenmile Creek subbasin.

### Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
BPA	Funding for Trout Creek Habitat Project	23.4%	\$297,050
ODFW/USFWS	Steelhead, chinook, rainbow trout, and bull trout population inventories.	9.9%	\$123,679
CTWS	Steelhead, chinook, rainbow trout, and bull trout population inventories.	12.0%	\$150,000
U.S. Forest Service	Watershed health improvements on forest land in headwaters	8.0%	\$100,000
USDA - NRCS	Implementing conservation measures on private land	12.0%	\$150,000
USDA - NRCS & FSA	Conservation Reserve Program - retires cropland to permanent vegetation	24.0%	\$300,000
USDA - NRCS & FSA	Hazard mitigation grant to reduce soil erosion on private land	4.0%	\$50,000
Local landowners	cost share for implementing EQIP practices	3.8%	\$48,000
Trout Creek, Buck Hollow, and Bakeoven watershed councils	In kind support	0.4%	\$6,000
Oregon Water Trust	Acquisition and conversion of water rights to instream rights	2.0%	\$25,000
<b>Total project cost (including BPA portion)</b>			<b>\$1,249,729</b>

## PART II - NARRATIVE

## Section 7. Abstract

The Deschutes River subbasin umbrella encompasses individual project proposals with a common goal of restoring summer steelhead and bull trout populations in their historic habitats in the subbasin in accordance with the Lower Deschutes River Subbasin Fish Management Plan (July 1997), the Upper Deschutes River Fish Management Plan (September 1997), and the Crooked River Fish Management Plan (May 1997). The interim summer steelhead spawner escapement goal (without passage at the Pelton / Round Butte Hydro Electric Complex) is 6,575 wild escapement upstream from Sherars Falls.

One measure of project success will be the achievement of adult summer steelhead spawner escapement objectives for the Deschutes River, and restoring bull trout numbers and distribution within the subbasin. ODFW and CTWS monitoring and evaluation projects will be used to evaluate project implementation and make management adjustments.

Restoring wildlife numbers and species diversity will be accomplished by assessing habitat limitations, opportunities, and acquiring and/or enhancing wildlife habitat in the subbasin.

## Section 8. Project description

### a. Technical and/or scientific background

The Deschutes River was historically an important contributor of summer steelhead, and spring, summer and fall chinook salmon in the Columbia River Basin. European influence began in the early 1800's with extensive beaver removal and by the mid to late 1800's significant settlement with cultivated agriculture and extensive livestock grazing. This early European presence culminated with rapid population growth and development of the significant irrigation and hydro electric resources in the subbasin during the 1900's, including: (1) Pelton / Round Butte Hydro Electric complex at river mile 100 on the Deschutes River, (2) Crescent Lake, and Wickiup and Crane Prairie reservoirs [upper Deschutes], and (3) Opal Springs Dam, and Ochoco and Prineville reservoirs [Crooked River system]. Development of the subbasin water resources for hydro electric production, extensive irrigation of agricultural crops, and industrial and urban uses has drastically reduced anadromous and resident fish populations and their habitat within the subbasin. Anadromous fish populations were extirpated from the Crooked River, upper Deschutes and Metolius rivers during the late 1960's when fish passage failed at the Pelton / Round Butte Hydro Electric Complex (Rm 100). The Deschutes River summer steelhead are currently at a moderate to high risk of extinction. The Deschutes River summer steelhead and fall chinook salmon populations are proposed for listing as threatened species under the Endangered Species Act (ESA). Bull trout have limited spawning and rearing distribution and are listed as a threatened species under ESA. The Deschutes River summer steelhead population has declined as the result of impacts of the development and operation of the Columbia River hydro system, as well as unscreened or inadequately screened diversions, low stream flow, water temperature extremes, loss of historical habitat, reduced habitat diversity, sedimentation, fish passage obstacles, and significant influx of out-of-basin hatchery steelhead. Bull trout numbers and distribution has been reduced by unscreened or inadequately screened diversions, low stream flow, water temperature extremes, loss of historical habitat, reduced habitat diversity, sedimentation, interaction with exotic trout, and fish passage obstacles.

The Trout Creek and Buck Hollow Creek habitat restoration projects have been working to restore instream and riparian habitat. Specific remedial restoration measures implemented include: riparian livestock enclosure and riparian pasture fencing, stream bank stabilization, placement of instream structures, screening of water diversions and pump intakes, and removal or modification of fish passage obstacles. The Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) have implemented fish habitat restoration measures on streams located on the Warm Springs Reservation. These projects include: riparian livestock enclosure fencing, off-site livestock water developments, placement of instream structures, and removal of fish passage obstacles.

The Bull Trout Project has provided information on the current status and distribution of bull trout in the subbasin. This information has been used by fishery managers to implement management actions aimed at protecting and restoring the depressed populations.

The Oregon Screens Project has been instrumental in the installation and maintenance of fish screens on gravity

diversions and pump intakes within the subbasin.

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

The individual projects that are ongoing under this umbrella proposal help to mitigate the losses of fish and wildlife associated with the construction and operation of federal hydropower facilities in the Columbia River Basin. Restoring the Deschutes River summer steelhead population will be accomplished by providing improved fish habitat, including: increased habitat diversity; increased stream shading; reduced water temperature extremes; reduced sedimentation; unobstructed fish passage at artificial barriers; the screening of all irrigation withdrawals; and the reduction in out-of-basin stray hatchery fish entering the Deschutes River. The Trout Creek and Buck Hollow Creek habitat restoration projects operate under the premise that the Deschutes River tributaries can contribute significant natural steelhead production, and will aid in the attainment of the subbasin biological objective. These tributaries will never again be pristine, because of human alterations of the ecosystem, but they can still be very productive in terms of fish production. Implementation of fish habitat restoration measures and long term habitat project maintenance will result in improved egg to smolt survival. This population restoration is specifically dependent upon the continuing maintenance of 132 miles of riparian livestock enclosure fencing and more than 1,000 instream structures in the Trout Creek system.

Restoring bull trout populations in the subbasin will be accomplished by assessing existing and historical distribution, and factors limiting the size and distribution of these populations. This assessment will be followed up with implementation measures that will help resolve factors limiting bull trout numbers and distribution. The Trout Creek and Buck Hollow Creek projects and the Oregon Screens Project will work cumulatively to restore the summer steelhead population in the Deschutes River subbasin.

**c. Relationships to other projects**

The Deschutes River Umbrella Proposal encompasses four separate contracts designed to increase natural production of summer steelhead and bull trout in the Deschutes River subbasin. The Deschutes River tributary habitat restoration projects are similar to other fish habitat projects underway in the Columbia River Basin, including: Fifteenmile Creek, John Day River, and the Umatilla River projects. The fish screening activities in the subbasin are part of the Oregon Screens Project, which has structural alternatives to traditional gravel push up diversion dams throughout Columbia Basin anadromous streams in Oregon.

There are a number of other, non-BPA funded programs in the subbasin that have direct positive impacts on the attainment of the subbasin biological objectives. For example, these programs include: (1) ODFW and CTWSRO conduct regular inventories of steelhead and bull trout in the subbasin, (2) ODFW has provided funds and materials for riparian livestock enclosures along the Deschutes River and tributaries, (3) Portland General Electric (ENRON) has funded studies on steelhead - resident trout interactions, (4) private landowners have provided property adjacent to Deschutes River tributaries for livestock enclosures, (5) SWCD's within the subbasin have been working with private landowners to implement upland watershed restoration practices, (6) BLM has conducted livestock grazing allotment evaluations and modified grazing practices, (7) Oregon Water Trust has acquired tributary water rights and converted them to instream water rights, (8) landowners have stabilized eroding streambanks.

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

The Trout Creek Habitat Restoration Project was initiated in 1982. A complete survey of the Trout Creek streams system was completed to determine assess habitat restoration opportunities. A stream system restoration plan was developed, except for the Antelope, Ward and Hay Creek areas. Habitat restoration project implementation began in 1986 and continued through 1992. Since 1993 the Trout Creek Habitat Restoration Project has concentrated on maintaining measures previously implemented. This project has accomplished significant habitat restoration, including: (1) 70 miles of stream protected with 132 miles of livestock enclosure fencing, (2) 4,548 instream structures installed and maintained (i.e. 272 rock jetties, 236 rock weirs, 189 log weirs, 3,353 boulders, and 498 pieces of large wood), 1,533 lineal feet of rock riprap, and 18,110 lineal feet of juniper riprap, and (3) 11 off-site livestock watering developments. In 1998 monitoring of steelhead out-migrants produced an estimate of steelhead 73,000 emigrants.

The Buck Hollow Habitat Restoration Project was initially proposed for NPPC approval and BPA funding in 1982. The

Buck Hollow Watershed Restoration Project implementation began in 1990 with small grants from the Oregon Governor's Watershed Enhancement Board and Northwest Steelheaders. BPA funding for the stream habitat component of the project was first received in 1992. The stream and watershed restoration project benefitted from experiences gained from other ongoing habitat projects in north central Oregon. Implementation was planned to proceed from the upper most areas of the watershed downstream to the stream's mouth. To date this watershed/stream restoration project has spent \$1.97 million from a variety of sources to implement the following measures: (1) 91 water and sediment control basins (wascobs), (2) 97,000 feet of cropland diversion terraces, (3) 42.8 miles of livestock fence, and (4) conservation and grazing management plans covering 114,000 acres.

All water diversions and pump intake screens on anadromous fish streams in the subbasin have been equipped with fish screens. This work has been accomplished with funding from Mitchell Act (NMFS) and BPA (Oregon Screens Project).

#### **e. Proposal objectives**

The primary objectives and strategies of this umbrella proposal are to (1) restore naturally self sustaining populations of summer steelhead in the Deschutes River subbasin, (2) restore degraded fish habitat, (3) rebuild a naturally self-sustaining population of bull trout throughout their historic range, (4) contribute to tribal and non-tribal fisheries, ocean fisheries, and the Northwest Power Planning Council's (NPPC) goal of doubling salmon runs in the Columbia Basin, and (5) achieve and sustain levels of habitat and wildlife species productivity to mitigate for wildlife and wildlife habitat losses caused by the development and operation of the Columbia River hydro power system.

Specific proposal objectives and strategies include:

**Objective 1.** Achieve a spawner escapement of 6,575 wild summer steelhead passing upstream of Sherars Falls (Deschutes River - Rm 43)

**Strategy a.** Achieve the annual natural production of 100,000 summer steelhead smolts from Trout Creek.

Performance Measures: (1) Achieve a Trout Creek summer steelhead spawner escapement of 1,500 wild fish.

Purpose: This strategy provides for the continued maintenance of on the ground fish habitat restoration measures, including: (1) 132 miles of riparian livestock exclosure fencing, (2) 4,548 instream structures, (3) three fish passage structures, and (4) 11 off channel livestock water developments. This project will also continue to collect limited monitoring data, including repetition of strategic photo points. There are two ongoing contracts (i.e. 9404200, 9306600) funded to achieve this strategy.

**Strategy b.** Restore and recover habitat lost as a consequence of man's activities in the Deschutes River subbasin.

Performance Measure: A report detailing the maintenance of riparian livestock exclosure fences, fish passage structures, fish screens, and intream habitat structures.

Purpose: This strategy provides for the continued maintenance of on the ground fish habitat restoration measures, including: (1) 132 miles of riparian livestock exclosure fencing, (2) 4,548 instream structures, (3) three fish passage structures, and (4) 11 off channel livestock water developments in the Trout Creek system. This project will also continue to collect limited monitoring data, including repetition of strategic photo points. There are two ongoing contracts (i.e. 9404200, 9306600) funded to achieve this strategy.

**Strategy c.** Achieve fish screening protection at all water diversions and pump intakes on anadromous fish streams.

Performance Measure: Complete and maintain fish screens on all gravity diversions and pump intakes on all streams with anadromous fish in the subbasin.

Purpose: This strategy provides for the installation, monitoring, and maintenance of fish screens at all water gravity diversions and pump intakes on streams that support anadromous fish.

**Strategy d.** Determine the magnitude and cause of out-of-basin origin steelhead straying into the Deschutes River.

Performance Measure: Complete a report that identifies the magnitude and cause of steelhead straying into the Deschutes River. This report will include conclusions and recommendations for reducing or eliminating the stray steelhead problem.

Purpose: This strategy provides definitive information on the magnitude and causes of steelhead straying into the Deschutes River. Identification of the causes and sources of the straying will aid in the implementation of appropriate measures to reduce or eliminate the straying. If straying continues at current rates the Deschutes indigenous steelhead population is threatened with extinction.

**Objective 2.** Restore bull trout populations in the Deschutes River subbasin.

Performance Measure: Restore bull trout number and distribution within the Deschutes River subbasin.

Purpose: This strategy provides the mechanism for identifying current and historic bull trout habitat in the Deschutes River subbasin. The identification of habitat and factors limiting bull trout numbers and distribution will help to prioritize restoration measures designed to accomplish the biological objective.

**Objective 3.** Achieve and sustain levels of habitat and species productivity in order to mitigate for all wildlife and wildlife habitat losses caused by the development and operation of the Columbia Basin hydro power system.

Performance Measure: Restore wildlife numbers, species diversity, and wildlife habitat.

Purpose: This strategy provides the mechanism for restoring wildlife numbers, species diversity, and/or wildlife habitat in the Deschutes River subbasin. The enhancement or acquisition of wildlife habitat within the subbasin will result in increased numbers of wildlife and increased species diversity.

## **f. Methods**

The Deschutes River Umbrella Proposal will be implemented with the following actions associated with each strategy and objective contained within the individual project proposals. The following actions identify work that will be implemented to achieve a specific strategy (listed above). The specific projects that will be working to accomplish each strategy are listed by project number at the end of each action statement.

**Objective 1.** Achieve a spawner escapement of 6,575 wild summer steelhead passing upstream of Sherars Falls (Deschutes River - Rm 43).

**Strategy a.** Achieve the annual natural production of 100,000 summer steelhead smolts from Trout Creek.

Action 1. Monitor the summer steelhead smolt out migration. (9404200)

Action 2. Subcontract with Oregon State Police to provide additional enforcement/surveillance during the most vulnerable periods for steelhead. (9404200)

Action 3. Subcontract with Oregon Water Resources to increase the monitoring of water withdrawals. (9404200)

**Strategy b.** Restore and recover habitat lost as a consequence of man's activities in the Deschutes River subbasin.

Action 1. Monitor and maintain all riparian livestock fencing. (9404200)

Action 2. Work with the U.S. Army Corps of engineers to restore natural stream sinuosity. (9404200)

Action 3. Monitor and maintain all instream and bank stabilization structures. (9404200)

- Action 4. Increase instream habitat diversity. (9404200)
- Action 5. Work with private landowners and other funding sources to protect additional stream habitat from livestock grazing. (9404200)

**Strategy c.** Achieve fish screening protection at all water diversions and pump intakes on anadromous fish streams.

- Action 1. Monitor and maintain all rotary and pump intake fish screens on streams with anadromous fish populations.
- Action 2. Install new fish screens on new or reloacted diversion sites.

**Strategy d.** Determine the magnitude and cause of out-of-basin origin steelhead straying into the Deschutes River.

- Action 1. Estimate the numbers and proportion of hatchery strays, Deschutes hatchery, and wild steelhead in the Deschutes River.
- Action 2. Determine the origin of hatchery strays in the Deschutes River.
- Action 3. Determine the stray rate for all Columbia River Basin hatchery summer steelhead stocks by brood and run year.
- Action 4. Summarize the summer steelhead stray rate information for all Columbia Basin fish hatcheries.
- Action 5. Determine spatial and temporal distribution and dropout characteristics of stray steelhead in the Deschutes River.
- Action 6. Determine the relationship between stray rate and widespread stock differences.
- Action 7. Determine the relationship between stray rate and hatchery practices and experimental treatments.
- Action 8. Determine the relationship between stray rate and juvenile migration.
- Action 9. Determine the relationship between stray rate and juvenile fish transportation.
- Action 10. Determine the relationship between stray rate and adult migration timing and migration conditions.
- Action 11. Write a report summarizing the findings and conclusions on the magnitude and causes of adult steelhead straying into the Deschutes River.

**Objective 2.** Restore bull trout populations in the Deschutes River subbasin.

**Strategy a.** Determine abundance, distribution, and life history patterns of bull trout in the subbasin.

- Action 1. Determine abundance of bull trout in the subbasin. (9405420)
- Action 2. Determine distribution of bull trout in the subbasin. (9405420)
- Action 3. Determine bull trout life history patterns in the subbasin. (9405420)

**Strategy b.** Identify population genetic structure, systematics, and distribution of bull trout in the subbasin.

- Action 1. Collect non-evasive tissue samples from bull trout throughout the subbasin. (9405420)
- Action 2. Conduct genetic analysis of bull trout tissue smples. (9405420)

**Strategy c.** Identify factors limiting bull trout numbers and distribution.

- Action 1. Review stream habitat and stream habitat surveys to identify physical habitat factors limiting bull trout numbers and/or distribution. (9405420)
- Action 2. Monitor stream water temperature is existing and potential bull trout habitat.
- Action 3. Determine the presence or absence of brook trout in existing or potential bull trout habitat. (9405420)

**Strategy d.** Implement measures to restore bull trout habitat.

- Action 1. Implement projects to improve riparian habitat on streams with bull trout potential.

- Action 2. Implement measures to reduce stream water temperature in potential bull trout spawning and rearing habitat.
- Action 3. Implement measures to reduce or eliminate the presence of brook trout in potential or existing bull trout habitat.

**Objective 3.** Achieve and sustain levels of habitat and species productivity in order to mitigate for all wildlife and wildlife habitat losses caused by the development and operation of the Columbia Basin hydro power system.

**Strategy a.** Identify potential protection and enhancement projects within the Deschutes River subbasin.

**Strategy b.** Implement wildlife or wildlife enhancement measures.

**Strategy c.** Monitor and evaluate wildlife habitat and wildlife species response to implemented enhancement activities within the Deschutes River subbasin.

**Congratulations!**