

# HOOD RIVER PROD'N PROGRAM - PELTON LADDER - HATCHERY

8902900

## SHORT DESCRIPTION:

Fund the production and rearing of Deschutes River spring chinook at Round Butte Hatchery and Pelton Ladder for subsequent release into the Hood and Deschutes rivers.

## SPONSOR/CONTRACTOR: ODFW

Oregon Department of Fish and Wildlife

Trent Stickell, Propagation Program Manager

Oregon Department of Fish and Wildlife P.O. Box 59, Portland,  
OR 97207

503/872-5252 x5398

Trent.W.Stickell@state.or.us

## SUB-CONTRACTORS:

14

---

## GOALS

### GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations, Fish Propagation

### ANADROMOUS FISH:

O&M

### NPPC PROGRAM MEASURE:

7.4N.1

### RELATION TO MEASURE:

Measure 703 (f)(5) of the Northwest Power Planning Council's (NPPC) 1987 Fish and Wildlife Program recommended BPA investigate the feasibility of developing artificial production facilities for Chinook salmon and steelhead in the Hood River. In 1991 the NPPC linked the Hood River portion of the Northeast Oregon Hatchery Project to the Pelton Ladder Project on the Deschutes River. This project, which had converted an unused section of the fish ladder into a rearing facility for spring chinook was to provide broodstock for the Project.

### TARGET STOCK

Deschutes / Spring Chinook

### LIFE STAGE

All

### MGMT CODE (see below)

A Deschutes River Basin;  
SE Hood River Basin

### AFFECTED STOCK

Bull Trout (Resident), Rainbow Trout (Resident),  
Cutthroat (Resident), Mountain White fish  
(Resident), Sucker, Sculpin, Longnose Dace  
(Resident), Brook & Brown Trout and Bull Head  
(Introduced) Summer and Winter Steelhead  
(Indigenous)

### BENEFIT OR DETRIMENT

Low impact if any on resident, indigenous, or introduced species and no significant impact on species of salmon listed under the Endangered Species Act.

---

## BACKGROUND

### STREAM AREA AFFECTED

#### Stream name:

Hood and Deschutes River

#### Subbasin:

Hood and Deschutes River

#### Stream miles affected:

Hood River 90, Deschutes River 100

#### Land ownership:

Both

#### Hydro project mitigated:

These fish propagation activities are undertaken in an attempt to mitigate the losses of fish associated with

construction and operation of Federal hydroelectric facilities in the Columbia River Basin. In particular, Bonneville and Powerdale Dams.

**HISTORY:**

Project was started as a low cost production program using, to the extent practicable, existing facilities. The first contract addressed construction and rehabilitation efforts at Pelton Ladder to develop three new extended rearing cells. The cells were completed September, 1995 and additional spring chinook were transferred to the new cells. Plans are to use the production from two cells to re-establish spring chinook in the Hood River system and to evaluate the effect of the new cells on the existing production (Hood River Production Program -CTWS - M&E, Project #8805303). The contract was converted from a construction project to a production project in October, 1995.

**BIOLOGICAL RESULTS ACHIEVED:**

The use of Pelton Ladder for rearing juvenile spring chinook has proven to be a feasible and successful means for increasing adult returns (i.e. smolt to adult survival). Spring chinook smolts rear well in the ladder, apparently benefiting from the semi-natural rearing conditions. Smolts reared in the ladder have helped achieve increased adult returns to the Deschutes River Subbasin. Survival, or smolt to adult return, to the Deschutes River has averaged 1.6 percent. Survival of the first complete brood of ladder reared Deschutes spring chinook returning to the Hood River Subbasin will not be available until 1999.

**PROJECT REPORTS AND PAPERS:**

Bonneville Power Administration. 1996. Draft Environmental Impact Statement.  
Bonneville Power Administration (Contract DOE/EIS-0241). Portland, Oregon.  
Monthly Progress Reports submitted to ODFW Headquarters no later than 15 days after the end of the month.  
Annual Operating Plan (AOP) The AOP sets forth details of proposed fish hatchery operations at Round Butte / Pelton Ladder.  
a. Provisions of the Hatchery Management Plan (HMP) approved by the Council in October 1989;  
b. Fish Hatchery Operations Policies required in Oregon Administrative Rules (OAR) Chapter 635-007-0510 through 0590.  
AOP developed annually.

Integrated Hatchery Operations Team (IHOT) - Operation plans for Anadromous Fish Production Facilities in the Columbia River Basin, Annual Report 1995 BPA.  
Section 7 and / or Section 10 Biological Assessment and Biological Opinion for 1995to 1998 Hatchery Operations in the Columbia River Basin.  
Cramer, S.P. 1991. Genetic risk assessment of the Hood River component, Northeast Oregon Salmon and Steelhead Facilities. Progress Report to the Nez Perce Tribal Executive Committee and Nez Perce Fisheries Resource Management. S.P. Cramer and Associates, Fisheries Consultants. Corvallis, Oregon.  
Confederated Tribes of the Warm Springs Reservation of Oregon. Undated. Hood River/Pelton Ladder Master Agreement. Project Plan of Confederated Tribes of the Warm Springs Reservation of Oregon and Oregon Department of Fish and Wildlife (Project 89-029; Contract DE-BI79-93BP81758) to Bonneville Power Administration, Portland, Oregon. (Unpublished draft).  
Smith, M., and Confederated Tribes of the Warm Springs Reservation of Oregon. 1991. Pelton Ladder Master Plan. Final Report of the Oregon Department of Fish and Wildlife and the Confederated Tribes of the Warm Springs Reservation (Project 89-029, Contract DE BI79 89BP01930) to Bonneville Power Administration, Portland, Oregon.

**ADAPTIVE MANAGEMENT IMPLICATIONS:**

Spring chinook rearing in the ladder takes place in the modified lower portion of the ladder. This existing rearing space represents only 40 percent of the available ladder capacity suitable for rearing fish. Therefore, it is estimated that the ladder could potentially accommodate almost three times the existing production level. With the potential to improve survival, augmentation of spring chinook returns to the Deschutes River Subbasin would provide more fish available for harvest, more potential harvest opportunities, and the opportunity for equitable harvest sharing of spring chinook in recreational and Warm Springs tribal fisheries. Improved survival of Deschutes stock to the Hood River Subbasin will better realize the goal of re-establishing a naturally reproducing spring chinook population into the basin.

---

**PURPOSE AND METHODS**

**SPECIFIC MEASUREABLE OBJECTIVES:**

The purpose of the expansion of propagation in Pelton Ladder is to contribute, in a low-cost manner, to the spring chinook salmon production goal outlined in the Deschutes River and Hood River subbasin plans and to the Council's system-wide goal of substantially increasing salmon runs to the Columbia River Basin. By expanding the spring chinook rearing capability of Pelton Ladder to 187,000 smolts it has doubled the production of the ladder and allowed development of the spring chinook program in the Hood River. The first group of the expanded ladder reared smolts will be released into the Hood River in 1996 and the first complete brood will return in 1999.

The measurable objectives will include: (1) compare smolt survival of spring chinook reared in the new vs. old cells in Pelton Ladder; (2) measure adult survival from returns to Pelton Ladder; (3) compare smolt "quality" between ladder reared and Round Butte Hatchery reared fish; and (4) compare spring chinook smolts transferred to Pelton Ladder in September vs. November.

**CRITICAL UNCERTAINTIES:**

(1) With doubling the capacity of Pelton Ladder production, an additional 210 adults will be needed for broodstock for the Hood River/Pelton Ladder Project. The primary source of broodstock for the Hood River will eventually be from adults captured at the Powerdale fish trap, with adults from the Pelton Ladder as a backup source. (2) The addition of three rearing cells in Pelton Ladder may reduce spring chinook production growth rates and influence overall survival. (3) Increasing production of chinook salmon at Pelton ladder may increase the potential for disease proliferation or incidence in the hatchery facilities or in the Deschutes or Hood rivers. Studies in Pelton Ladder have shown no more than a four percent loss to *Ceratomyxa* when fish are transferred to the ladder in mid-to-late July.

**BIOLOGICAL NEED:**

The Deschutes River Subbasin Plan identified a need to increase spring chinook salmon production in the Subbasin to achieve a run size goal of 8,500 to 12,000 adults. Given an achievable 1.6 percent survival rate, each 10,000 smolts reared and released from Pelton Ladder represents an additional potential return of 160 adults to the Deschutes River. The Genetic Risk Assessment for Hood River (Cramer, 1991) concluded that the native Hood River stock of spring chinook became extinct in the mid-1960s, and that use of Deschutes stock for re-establishing runs in this stream is suitable and has certain advantages. First, and foremost, it is expected smolt to adult survival will improve over Carson stock. Natural production of Deschutes River stock in the Hood River Subbasin is also expected to surpass any potential natural production of the Carson stock. The expansion of Pelton Ladder is a productive use of Deschutes smolts, and this action will contribute to the goal for adult returns to the Columbia River.

**HYPOTHESIS TO BE TESTED:**

(1) smolt to adult survival of spring chinook in the new and old ladder sections will not be substantially different. (2) survival of smolts reared in Pelton Ladder will not be different than smolts produced at Round Butte Hatchery. (3) spring chinook smolt quality will not be different between ladder reared and Round Butte Hatchery reared spring chinook. (4) smolt to adult survival between spring chinook transferred to Pelton Ladder in September will not be different than smolts transferred in November.

**ALTERNATIVE APPROACHES:**

Refer to Hood River Fishery Project Draft Environmental Impact Statement (DOE/EIS-0241) March 1996.

**METHODS:**

Studies will be conducted comparing the following: (1) Pelton Ladder vs. Round Butte Hatchery reared spring chinook; (2) spring chinook reared in the old cells of Pelton Ladder vs. the new cells of Pelton Ladder; (3) survival of 8 fish per pound spring chinook smolts vs. 12 fish per pound at release from both Pelton Ladder and the hatchery. All experimental groups are to be coded-wire tagged and reared under as identical conditions as possible. A total of 454,000 spring chinook smolts are used in this study.

---

**PLANNED ACTIVITIES**

**SCHEDULE:**

**O&M Phase**                      **Start** 07/01/96                      **End** 06/30/97                      **Subcontractor**

**Task** As specified in the Annual Operation Plan (AOP) activities for 1997 are as follows: spawning of spring chinook adults to occur in early September; ponding of fry to occur in early January; finclipping and coded-wire tagging to occur in July-August; ladder transfer to occur in mid-September and mid-November; release of smolts to occur in April; collection of adult returns and broodstock to occur May-August. Collection of broodstock from 1998-2001 may include collection of adults from returns to Hood River for the Hood River smolt program. Deschutes River returns could provide a backup if

adults collected from Hood River fall short of total broodstock needs.

**PROJECT COMPLETION DATE:**

Ongoing O&M

**CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:**

On July 6, 1993, ODFW submitted an application for a general incidental take permit under the Endangered Species Act of 1973 to the National Marine Fisheries Service (NMFS) for the 1994 through 1998 operation of Round Butte Hatchery and associated facilities. The application evaluates whether the proposed operation of Round Butte Hatchery and associated facilities are likely to adversely affect the continued existence of Snake River sockeye salmon, Snake River spring/summer chinook salmon, Snake River fall chinook or their critical habitat.

Based on information provided in the permit application, ODFW determined that the proposed operation at Round Butte Hatchery from 1994 through 1998 would not likely affect listed Snake River salmon or their critical habitat.

On April 8, 1994, NMFS issued ODFW Permit 899 authorizing the incidental take of threatened and endangered Snake River salmon for the years 1995 through December 31, 1998. Operation of Round Butte Hatchery and associated facilities is also included within the most recent Biological Opinion issued by NMFS (April 11, 1995). Round Butte Hatchery Operations will comply with all prudent alternatives contained in this Biological Opinion to reduce competition with and predation on chinook salmon and sockeye fry.

---

**OUTCOMES, MONITORING AND EVALUATION**

**SUMMARY OF EXPECTED OUTCOMES**

**Expected performance of target population or quality change in land area affected:**

Rearing additional fish in Pelton Ladder provides fishery managers with a low-cost alternative to making major financial investments in new formal hatchery facilities. Adult chinook returning from this rearing program will help bolster the dwindling runs of upper Columbia River spring chinook, thus helping to meet the Council's goal for increased production of this species. The Deschutes River Subbasin Plan envisions need for additional return of hatchery-produced spring chinook in order to meet goals for increased harvest opportunity. The majority of smolts produced in the new ladder section will be released in the Hood River. Because of unique survival and adult production attributes, low cost and excellent quality, chinook smolts produced in Pelton Ladder represent an unparalleled opportunity to restore the Hood River population. The M&E program, conducted by CTWS and ODFW researchers, will guide the program once fish are released in the Hood River.

**Present utilization and conservation potential of target population or area:**

Spring chinook salmon harvest has been precluded for sport anglers in the Columbia River in order to provide optimum protection for Threatened and Endangered (T&E) Upper Columbia River Basin stocks. Tribal and non-tribal harvest of this species in the Columbia River has also been restricted to protect T&E upriver stocks. There is limited sport harvest opportunity for spring chinook in the Hood River Basin.

**Assumed historic status of utilization and conservation potential:**

Historical fishing data for the Hood River subbasin is generally limited to the past 40 years. Available sport harvest data show harvest approached 2500 fish in the mid-1960's. Salmon harvest was estimated at 250 fish in 1958. Steelhead runs began slowly declining in the 1980's and 1990's which likely reflected problems with mainstem passage, subbasin fish passage, screening and habitat degradation. Spring chinook salmon were extirpated from the Hood River subbasin by the early 1970's. Steelhead and spring chinook (reintroduced) numbers are well below the carrying capacity of the subbasin based on habitat availability and condition. The fish stock spawner escapement objectives (i.e. 2,400 summer steelhead, 2,400 winter steelhead, and 400 spring chinook) are based on the quality and quantity of available habitat in the subbasin.

**Long term expected utilization and conservation potential for target population or habitat:**

The target populations are expected to significantly contribute to the NPPC's Columbia River doubling goals and the establishment or supplementation of naturally reproducing populations in the Hood River and increased sport and Tribal harvests and increased adult returns to Pelton Ladder. When the adult spring chinook run into the Hood River objective is met there will

be up to 1,100 fish available for in-river harvest. When the spring chinook salmon population has reached the target objective for the run to the river there would be at least 400 adult spawner escapement, with an additional 200 available for hatchery broodstock.

**Contribution toward long-term goal:**

Products of the project will contribute to: re-establishment of spring chinook populations in the Hood River Basin; evaluate critical uncertainties about re-establishing anadromous fisheries in the Hood River Basin; the NPPC's Columbia River doubling goal; the evaluation of new rearing methods that will have implications for production throughout the Columbia Basin.

**Indirect biological or environmental changes:**

Smolt releases into the Deschutes River at Pelton Ladder have been designed to minimize effects on naturally produced fish in the Deschutes subbasin. This introduces a degree of uncertainty about interactions between naturally-produced fish and hatchery fish. Catches of adult wild and hatchery chinook in the Deschutes River fisheries and carcass surveys of spawning areas will be conducted to determine if hatchery produced salmon begin to encroach into critical areas of natural production. Program will maintain the objective of isolating wild from hatchery spring chinook in the Lower Deschutes River. In the Hood River subbasin, concerns focus primarily on the differences in the genetic, physiological, and behavioral characteristics of hatchery reared fish compared to those wild fish occupying the waters into which the hatchery fish are released. Refer to Hood River Production Project Genetic Risk Assessment, Project Master Plan (O'Toole, et al., 1991) and ODFW Natural Production and Wild Fish Management Policy 1992).

**Physical products:**

At Pelton Ladder, rear and release 125,000 smolts into the Hood River subbasin and 123,000 smolts into the Deschutes River subbasin. All smolts (100%) will be adipose fin clipped and coded-wire tagged. Regularly scheduled fish health monitoring activities at Round Butte and Pelton Ladder will be conducted by ODFW Fish Pathologists.

**Environmental attributes affected by the project:**

Rearing additional fish in Pelton Ladder provides a means of increasing artificial production without incurring the major capital construction costs associated with building a new hatchery facility.

**Assessment of effects on project outcomes of critical uncertainty:**

The Monitoring and Evaluation (M&E) plan developed for the program is designed to assess whether program goals are being met. Program goals include evaluation of the effects of ladder modification on the ability of the ladder to produce effective spring chinook smolts. This analysis provides the inference that if the existing expansion is successful, we may be able to make further use of the ladder rearing potential. In addition, the program goals include the need to identify hatchery practices at the Round Butte Hatchery / Pelton Ladder complex that not only promote survival rates from released smolts to returning adults, but also protect naturally-reared fish in the Deschutes / Hood River subbasins.

**Information products:**

Specific hatchery - effectiveness experiments within the monitoring and evaluation program include controlled tests with tagged smolts to assess effects of smolts size on survival rates, survival effects of time of transfer of rearing juveniles from Round Butte Hatchery to Pelton Ladder, and continued comparison of the relative survival rates observed between Round Butte Hatchery and Pelton Ladder produced smolts. Field studies are designed to document possible genetic impacts, harvest of adults produced, potential changes in hatchery/natural composition of the catch, and potential generated adults into natural production areas, see also related project #9301900 for M&E to occur on relevance of Deshute stock spring chinook into the Hood River from Pelton Ladder. The projects repairs and distribution annual project M&E progress reports and other special reports.

**Coordination outcomes:**

The sequence of milestones were 1. Hood River Master Plan; 2. Hood River/Pelton Ladder Master Plan agreement (outlines/work schedules); 3. Initiation and completion of baseline studies; 4. Initiation and completion of NEPA Analysis; 5. Hood River Fisheries Project Draft & EIS. Separated section, construct water lines, summer 1994, and install screens spring 1995. Auxillary water supply. Design 1995 construction spring and summer 1996,. Outcomes of Project are used annually to coordinate hatchery planning and rearing schedules, scheduling acclimation/release schedules, marking/tagging schedules, plan future experiments, evaluate and plan fishery goals, and plan regional research and monitoring activities. FY 1995/96: Begin rearing spring chinook

smolts. FY 1996 First smolt releases. FY 1998 Final report on experiment to determine ladder rearing capacity.

**MONITORING APPROACH**

Studies will be conducted comparing the following: (1) Pelton Ladder vs. Round Butte Hatchery reared spring chinook; (2) spring chinook reared in the old cells of Pelton Ladder vs. the new cells of Pelton Ladder; (3) survival of 8 fish per pound spring chinook smolts vs. 12 fish per pound at release from both Pelton Ladder and the hatchery. All experimental groups are to be coded-wire tagged and reared under as identical conditions as possible. A total of 454,000 spring chinook smolts are used in this study.

**Provisions to monitor population status or habitat quality:**

Extensive marking and tagging is conducted annually to monitor the population status of all target stocks. Returing adults currently and/or will be enumerated and several locations to ensure the target populations are adequately monitored including, coordination of tag recoveries with PSMFC, counts at Sherars Fall, Pelton Trap, WSNFH, Powerdale Dam creel surveys, and spawning ground surveys. [Project #8805304 ODFW M&E, and #805303 CTWS M&E]

**Data analysis and evaluation:**

Data will be summarized and analyzed and reported in the M&E Annual Progress Reports. [Project #8805304 ODFW M&E, and #8805303 CTWS M&E]

**Information feed back to management decisions:**

Information is fed back to management personnel through monthly and quartely reports, annual reports, and various research and propagation meetings.

**Critical uncertainties affecting project's outcomes:**

Refer to Project #8805304 ODFW M&E, and #8805303 CTWS M&E.

**EVALUATION**

Refer to Project #8805304 ODFW M&E and #8805303 CTWS M&E. The Projects' overall performance can be assessed through completion of the specific measurable objectives, other measures include annual reports, completion of tasks identified in annual work statements, number of fish tagged/marked and released numbers of returning adult spring chinook salmon, commercial, tribal and sports fishing benefits provided and the achievement of restoring natural runs of adult CHS into the Hood River sub-basins.

**Incorporating new information regarding uncertainties:**

Refer to Project #8805304 ODFW M&E and #8805303 CTWS M&E. We will use the adaptive management process to reevaluate current and planned programs. Changes may include adding or eliminating planned experiments or releases, increasing or decreasing numbers of fish to be released.

**Increasing public awareness of F&W activities:**

We are increasing public awareness through ODFW outreach programs and environmental education efforts. The physical presence of fish facilities in the Hood River sub-basins and Pelton and the opportunity for the pubic and/or volunteers to observe or assist in various project activities will heighten pubic interest and awareness in efforts to restore extirpated spring chinook studies in the Hood River sub-basins.

---

**RELATIONSHIPS**

**RELATED BPA PROJECT**

**RELATIONSHIP**

Parkdale Facilities, Oak Springs Construction, Operation

9500700 PGE Operation and Maintenance

8805304 Hood River Production Program (HRPP) - ODFW - M&E

**RELATED NON-BPA PROJECT**

Irrigation canal fish salvage / ODFW, CTWS, USFS, and volunteers

Fish Passage / ODFW (BPA)

Fish habitat restoration (ODFW / STEP)

Fish inventory and fish stock restoration (ODFW)

Instream water right (ODFW)

Fish Habitat Restoration / CTWS (BPA)

East Fork Irrigation District

Downstream migrant screening and habitat restoration / Farmers Irrigation District

Temporary adult holding / Middle Fork Irrigation District

Fish Habitat inventory and restoration / USFS

Fish Inventory / USFS

Powerdale Hydroelectric / Pacific Corp.

**RELATIONSHIP**

End of season fish salvage in Hood River irrigation canals

Moving Falls Fishway construction (West Fork Hood River)

Habitat restoration on Hood River tributaries

Operation of temporary Powerdale trap and preliminary winter steelhead brood collection

Acquire instream water rights for Hood River and tributaries

Hood River tributary habitat restoration

Downstream migrant screening

Screening and habitat restoration on Hood River tributaries

Winter steelhead brood holding area

Stream habitat improvements on Hood River tributaries

Radio Telemetry / Upstream migrant trapping

Passage / Environmental and fish studies

**OPPORTUNITIES FOR COOPERATION:**

Initial spring chinook broodstock for the Hood River will come from returns to Round Butte Hatchery, but eventually when Deschutes stock starts returning to Hood River, a portion of those adults will be used in the broodstock. Adult brood will be held at facilities planned at Parkdale. Should construction of those facilities be delayed, it would be difficult to use Hood River fish as broodstock. The M&E component of HRPP is vital to assessing the conversion of Carson to Deschutes stock in the Hood River subbasin.

**COSTS AND FTE**

**1997 Planned:** \$142,000

**FUTURE FUNDING NEEDS:**

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$120,000			100%
1999	\$126,000			100%
2000	\$132,000			100%
2001	\$139,000			100%
2002	\$146,000			100%

**PAST OBLIGATIONS (incl. 1997 if done):**

<u>FY</u>	<u>OBLIGATED</u>
1989	\$49,306
1993	\$101,872
1994	\$275,000
1995	\$102,620
1997	\$98,397

TOTAL: \$627,195

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

<u>FY</u>	<u>OTHER FUNDING SOURCE</u>	<u>AMOUNT</u>	<u>IN-KIND VALUE</u>
1998	PGE	\$295,000	
1999	PGE	\$310,000	
2000	PGE	\$325,000	
2001	PGE	\$341,000	
2002	PGE	\$359,000	

**OTHER NON-FINANCIAL SUPPORTERS:**

Oregon Department of Fish and Wildlife, Confederated Tribes of the Warm Springs Indian Reservation, Washington Department of Fish and Wildlife, National Marine Fisheries Service, Bureau of Reclamation, Pacific States Marine Fisheries Commission, Fish Passage Center, Hood River Soil & Water Conservation District, Hood River Watershed Group, Farmers Irrigation District, Columbia Gorge Fly Fishers, Hood River Rotary Club, Parkdale Lions Club, Hood River County Parks and Forestry Department, Columbia Gorge Commission, Columbia Gorge Scenic Area - USDA Forest Service, Northwest Power Planning Council.

**LONGER TERM COSTS:** In excess of \$155,000.  
Operation and Maintenance.

**1997 OVERHEAD PERCENT:** 22%

**HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:**

[Overhead % not provided so BPA appended older data.] Indirect rate applies to all items except Fish feed, Contract Services, and Capital expenditures.

**SUBCONTRACTOR FTE:** N/A

---