

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

**Assess Habitat For Anadromous Fish Upriver Of
Chief Joseph Dam**

Bonneville project number, if an ongoing project 9018

Business name of agency, institution or organization requesting funding
Colville Confederated Tribes

Business acronym (if appropriate) CCT

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
none			

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

7.6A.2, 7.4A.1

NMFS Biological Opinion Number(s) which this project addresses.

A biological opinion is expected from NMFS addressing the affects of Chief Joseph Dam upon the mid-Columbia River summer steelhead. However, at this time a biological opinion has not been developed.

Other planning document references.

none

Subbasin.

not applicable

Short description.

Conduct surveys to determine the quantity and quality of spawning and rearing habitat for anadromous fish between Chief Joseph Dam and Grand Coulee Dam. Investigate the feasibility of providing passage for adult/juvenile fish through Chief Joseph Dam.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	*	Construction		Watershed
	Resident fish		O & M		Biodiversity/genetics
	Wildlife	X	Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.	*	Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement	X	Wildlife habitat enhancement/restoration
			Acquisitions		

Other keywords.

Passage, Cultural significance, Endangered species

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
	none	

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Estimate salmonid production upriver of Chief Joseph Dam	a	Assess the quantity and quality of spawning and rearing habitat
		b	Estimate production for indigenous anadromous stocks in the Columbia River between Chief Joseph Dam and Grand Coulee Dam
		c	Identify low or marginal quality spawning habitat for anadromous fish
		d	Consider restoration or enhancement of spawning habitat for anadromous fish
2	Provide passage for adult/juvenile anadromous fish through Chief Joseph Dam	a	Compile Chief Joseph Dam specifications and hydrologic flow requirements.
		b	Identify and develop a feasible alternative for providing passage for adult/juvenile anadromous salmonids through Chief Joseph Dam.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	5/1998	12/2003	70.00%
2	6/1998	12/2000	30.00%
			TOTAL 100.00%

Schedule constraints.

No schedule constraints are expected.

Completion date.

If this project is initiated in 1998, it is estimated the completion date would be December 31, 2003.

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel	2 Full time employees; 1 Seasonal employee	\$75,000
Fringe benefits	30% of salary (based on 1997 or 1998 figures)	\$22,500
Supplies, materials, non-expendable property	miscellaneous	\$2,000
Operations & maintenance	Fuel, vehicle servicing, outboard fuel and servicing	\$2,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	none	0
PIT tags	# of tags: none	\$0
Travel	Updates and presentations	\$1,000
Indirect costs	39.2% of salary (based on 1997 figures)	\$29,400
Subcontracts	Feasibility of adult/juvenile fish passage & collection of dam characteristics and hydrologic regime	\$40,000
Other	none	\$0
TOTAL		\$171,900

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	\$171,900	\$131,900	\$131,900	\$131,900
O&M as % of total	2.00%	3.00%	3.00%	3.00%

Section 6. Abstract

Mid-Columbia River summer steelhead (*Oncorhynchus mykiss*) was listed as an endangered specie on August 11, 1997. Chief Joseph Dam (CJD) was completed in 1958, and blocked passage of anadromous salmonids, including summer steelhead, to upriver reaches in the Columbia River and connected tributaries.

One alternative to improve anadromous salmonid stocks in the mid-Columbia River is to provide passage for adult/juvenile passage through CJD. This project would include assessing the feasibility to modify CJD to allow passage by juvenile/adult anadromous fish while meeting hydrologic flow and energy generating requirements. Estimates of production for each indigenous

anadromous salmonid, between CJD and Grand Coulee Dam, would be made based on surveys of available spawning and rearing habitat. Estimates of spawning habitat would be derived from field measurements of substrate, depth, and velocity. Assessing rearing habitat would include measuring water temperature, dissolved oxygen, and other water quality parameters required for juvenile salmonid survival. Results of this project would be updated on an annual basis and a final report is expected to be completed on or before the completion date December 31, 2003.

This project may strengthen declining anadromous stocks of the mid-Columbia River by providing access to inaccessible habitat that has been blocked by human development activities and restoration of eliminated populations as addressed in subsections 7.6A.2 and 7.4A.1, respectively, of the 1994 Columbia Basin Fish and Wildlife Program.

Section 7. Project description

a. Technical and/or scientific background.

The construction of Chief Joseph Dam (CJD) began in 1949 and was completed in 1958. Chief Joseph Dam is the tenth dam on the Columbia River and is located approximately 600 miles upriver from the mouth. Chief Joseph Dam does not provide upstream passage by to anadromous fish, however, the nine lower river dams do. Chief Joseph Dam combined with Grand Coulee Dam (GCD) contributes about 30% of the Columbia River system generating capacity (Heinith and Carr 1997).

Erickson et al. (1977) describes Rufus Woods Reservoir (CJD pool) as “retaining characteristics of the original free flowing river.” Since Rufus Woods Reservoir is a re-regulating type, velocities are typically more similar to riverine environments than storage reservoirs. Thus it is assumed that Rufus Woods Reservoir would be conducive to spawning and rearing for anadromous salmonids. In addition, some fishery biologists, familiar with Rufus Woods Reservoir, have observed areas similar in substrate and flow to that of a natural flowing reach in the Columbia River (Hanford Reach). The Hanford Reach is considered by many as one of the most productive areas for reproduction of anadromous salmonids particularly chinook salmon. Also, area fish biologists suspect there is suitable spawning habitat for anadromous salmonids near islands in Rufus Woods Reservoir, particularly Nespelem and Buckley Bar and “break points” or point bars further upriver towards GCD.

This project would assess spawning and rearing habitat for anadromous salmonids between CJD and GCD and provide an estimate of production within this reach of the mainstem Columbia River (approximately 52 miles) and

connected tributaries (estimated > 30 miles). In addition, this project would include the evaluation of the feasibility and an assessment of alternatives for adult and juvenile fish passage at CJD. This project would address the 1994 Columbia Basin Fish and Wildlife Program under subsections 7.6A.2 and 7.4A.1.

b. Proposal objectives.

- 1) Assessment of spawning and rearing habitat between Chief Joseph Dam and Grand Coulee Dam for anadromous stocks including summer steelhead, spring chinook salmon, summer chinook salmon, fall chinook salmon, and sockeye salmon. Parameters evaluated will include substrate composition, water depth, velocity, and water temperature, and dissolved oxygen.
- 2) Provide an estimate of production based upon the evaluation of available spawning and rearing habitat for each species.
- 3) Evaluate alternatives for anadromous adult and juvenile fish passage through Chief Joseph Dam

c. Rationale and significance to Regional Programs.

The significance of this project is to strengthen anadromous fish stocks of the mid and upper Columbia River Basin. One fish stock that may increase due to the fish passage through Chief Joseph Dam is summer steelhead, a species that was listed as endangered on August 11, 1997 by the National Marine Fisheries Service.

d. Project history

Not applicable

e. Methods.

Different techniques may be utilized to assess spawning habitat in the main river channel. Random sub-sampling using an Eckman dredge, using a map describing substrate, aerial photography, or information from previous studies may be employed to assess the quality of spawning substrate. Sampling of velocity and depth would be conducted in areas where potential spawning substrate was located. The area where all parameters meet the spawning requirements of each species would be considered suitable spawning habitat. This area of suitable spawning habitat would be the basis for an estimate of production. A conservative estimate may be generated based suitable habitat, redd size requirements of each species, and size and behavior of spawning fish (Burner 1951).

Production would be estimated from the area of suitable spawning habitat obtained from data collection and analysis. Egg to fry survival may be projected from research studies or areas in the basin with similar features and characters such as the Hanford Reach.

To evaluate fish passage through Chief Joseph Dam personnel competent in evaluation of different methods of juvenile and adult fish passage at hydroelectric projects would be consulted. Initially information would be summarized to evaluate anadromous fish passage at Chief Joseph Dam. Such information would include, but certainly not limited to, dam height, alternatives to provide adult fish passage (fish ladder, trap and haul, etc.), alternatives to provide juvenile fish passage (screened bypass system, barge, surface bypass channels, etc.), and required flows for hydro-electric generation.

Both objectives (habitat assessment and passage feasibility) would proceed concurrently. However, if the results of either objective determine the feasibility of this project is unrealistic than the total project (both objectives) would be terminated.

f. Facilities and equipment.

The facilities that would be used for this project would be the Fish and Wildlife Department of the Colville Confederated Tribes. Equipment would include but not limited to outboard motor and boat, velocity meter, Eckman dredge, temperature data loggers, depth finder, substrate sieves, Geographical Positioning System unit, etc. Most of the aforementioned equipment is available to the Colville Confederated Tribes Fish and Wildlife Department.

g. References.

Burner, C. J. 1951. Characteristics of spawning nests of Columbia River salmon. U. S. Fish and Wildlife Service Fishery Bulletin 52(61):97-110.

Erickson, A.W., Q. J. Stober, J. J. Brueggeman and R. L. Knight. 1977. An assessment of the impact on wildlife and fisheries resource of Rufus Woods Reservoir expected from the raising of Chief Joseph Dam from 946 to 956 FT. M. S. L. College of Fisheries, University of Washington. Seattle.

Heinith, R and M. Karr. 1997. Restoration of Anadromous Salmon to the Canadian Columbia River Basin. Initial Assessment. Canadian Columbia River Inter-Tribal Fisheries Commission. 73 pages.

Section 8. Relationships to other projects

Not applicable

Section 9. Key personnel

Chris Fisher, Anadromous fisheries biologist - CCT, principal investigator of potential spawning and rearing habitat for anadromous fish stocks upriver of Chief Joseph Dam

Gerald Marco, Senior fisheries biologist – CCT, Department head of fisheries for the Colville Confederated Tribes Fish and Wildlife Department

Section 10. Information/technology transfer

Information will be routed between key personnel by personal communication, memo, or email transfer. Updates between agencies or departments will be routed through personal communication or meetings.