

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

Section 1. General administrative information

Northeast Oregon Hatchery Master Plan

Bonneville project number, if an ongoing project 8805301

Business name of agency, institution or organization requesting funding
Nez Perce Tribe

Business acronym (if appropriate) NPT

Proposal contact person or principal investigator:

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Subcontractors.

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Nez Perce Tribe Cultural Resource Dept.	P.O. Box 365	Lapwai, ID 83540	Jason Lyon
Engineering Firm -	Final Design and Construction	To Be Determined	

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

7.4L.1, 7.3B, 7.4A, 7.4A.2, 7.4C.1, 7.4O, 7.4O.1

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

Other planning document references.

Snake River Salmon Recovery Plan, Wy Kan Ush Me Wa Kush Wit, Wallowa

County/Nez Perce Tribe Recovery Plan, Imnaha and Grande Ronde subbasin plans, master plans (Ashe et al., in prep.; Bryson 1990, 1993; Larson 1990) final siting reports (Montgomery Watson 1992b, 1995b), conceptual design reports (Montgomery Watson (1992a, 1995a), genetic risk assessments (Neeley et al.1993 and Neeley et al. 1994)

Subbasin.

Imnaha River, Grande Ronde River

Short description.

Implement supplementation programs in the Imnaha and Grande Ronde rivers by constructing low cost, small scale, conservation facilities for incubation, rearing, acclimation and release of indigenous, ESA listed, spring, summer, and fall chinook. Also begin reintroduction and restoration programs for fall chinook, coho and sockeye (all currently extinct). Rearing techniques are designed to mimic natural conditions to produce as "wild" a fish as possible aimed at improving survival and decreasing potential impacts on wild stocks.

Section 2. Key words

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

Other keywords.

NATUREs rearing systems, acclimated releases, environmental monitoring, stock identification, life history, hatchery-wild interactions, ecological interactions, ESA

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
8805302	CTUIR	Co-sponsor
8805305	ODFW	Co-sponsor

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Planning/Coordination	a	Participate in, and coordinate with NEPA subcontractors, BPA, NMFS, ODFW, and CTUIR to complete NEPA for proposed facilities outlined in master plans and supporting documents.
1		c	Participate in, and coordinate final design with engineering and design subcontractors, BPA, NMFS, ODFW, and CTUIR to establish artificial propagation facilities outlined in the master plans and supporting documents.
		d	Develop monitoring and evaluation plan integrating ongoing LSRCP and Smolt Monitoring M&E to evaluate proposed supplementation.
		e	Complete master planning for summer steelhead in Imnaha and Grande Ronde River subbasins.
		f	Develop captive broodstock alternative for Imnaha spring chinook.
1		g	Coordinate existing LSRCP production planning, incubation, rearing and release of progeny from Imnaha and Grande Ronde River broodstock (AOP meetings with ODFW, CTUIR, and USFWS).
1		h	Coordinate supplementation research planning and field evaluation program activities. Apply prudent management recommendations for the Nez Perce Tribe.
1		i	Assist in obtaining appropriate permits for production or M&E requiring biological evaluation of effects.

1		j	Coordinate with other fisheries agencies on matters regarding this project, e.g., WDFW, USFWS, NMFS, NPPC, BPA. The US v. OR PAC shall aid in this process.
1		k	Participate with ODFW and CTUIR in interagency technical and policy management meetings quarterly (every three months) providing co-management of fisheries resources.
1		l	Consult with NMFS regarding the consistency of various aspects of this project with regard to recovery planning for chinook salmon in the Imnaha and Grande Ronde River subbasin. Activities include Biological Assessments and Biological Opinions.
1		m	Coordinate and share biological data collected by M&E activities with interagency task groups assigned to monitor habitat and biological conditions of streams inhabited by T&E species (Snake River chinook, steelhead and bull trout).
2	Implementation	a	Implement acquisition of sites identified for proposed facilities.
2		b	Implement construction of acclimation and release facilities for spring chinook on the Imnaha River
2		c	Implement renovation of smolt trapping facilities at mouth of Imnaha River
2		d	Implement a NPT-ODFW Fisheries Management Plan for the Imnaha, Wallowa, and lower Grande Ronde rivers. Elements included in the plan are captive broodstock, cryopreservation, and conventional hatchery program. Partition management actions

			based on adult production threshold for ESA delisting conservation, and harvestable production.
2		e	Implement cultural resource monitoring at acclimation site construction. Apply prudent management recommendations for the Nez Perce Tribe.
3	O&M	a	Prepare project budgets, statement of work, project prioritization process, project review documents.
		b	Prepare necessary subcontracts for work to be accomplished by subcontractors
		c	Purchase necessary equipment for operation of project.
4	M&E	a	Collect baseline fisheries information on Imnaha steelhead population.
		b	Monitor effects of project implementation on target species.
5	Technology Transfer	a	Prepare and provide quarterly reports summarizing activities accomplished during the quarter.
		b	Compile, analyze and present project results in annual report summarizing all activities and comparing to similar supplementation work (Idaho Supplementation Studies, LSRCP, NPTH) proceeding in the Columbia River basin.
		c	Present reports on project activities and findings at Annual BPA/CBFWA Project Review and other forums (i.e., AFS, NAFWS, LSRCP Annual Review).

Objective schedules and costs

	Start Date	End Date	
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Objective #	mm/yyyy	mm/yyyy	Cost %
1	Jan 1999	Dec 1999	15
2	Jan 1999	Dec 1999	70
3	Jan 1999	Dec 1999	5
4	Jan 1999	Dec 1999	5
5	Jan 1999	Dec 1999	5

Schedule constraints.

The NPPC 3-step review process, completion of NEPA, ESA requirements, site acquisition, well performance tests (1998), availability of salmon for supplementation in 1999 may change the focus of the project to a captive brood stock program instead of supplementation project. Also, availability of qualified engineering design firms and construction firms could set design and construction time lines back into 2000 or 2001.

Completion date.

Supplementation under this project is planned for 5 full salmon generations or 25 years. A decision will be made on or before 2024 whether it is necessary for supplementation to continue under this project.

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		\$192,069
Fringe benefits		\$51,058
Supplies, materials, non-expendable property		\$6,000
Operations & maintenance		\$33,340
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Acclimation facilities on the Imnaha River, land acquisition, renovation of smolt trapping facility	\$1,750,000
PIT tags	# of tags:	
Travel		\$17,122
Indirect costs	0.292	\$72,880
Subcontracts	Final design, project facilitation, NEPA	\$250,000
Other		
TOTAL		\$2,372,469

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	4000000	3000000	2000000	1000000

O&M as % of total	12	17	45	90
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Section 6. Abstract

The goal of this project is to identify and develop artificial propagation facilities to protect and enhance anadromous salmonid species native to the Imnaha and Grande Ronde River subbasins as authorized by the NPPC in 1987 (NPPC). Actions authorizing and directing this project are found in the Columbia Basin Fish and Wildlife Program, NPPC 94-55, Section 7.4. The strength of these mandates is intensified by the inclusion of Imnaha and Grande Ronde River spring and fall chinook populations under the Endangered Species Act in 1992.

Master plans for facilities in the Imnaha and Grande Ronde River subbasins (Ashe et al., in prep.) will be submitted to the NPPC for approval in 1998. Species addressed in the master plans include spring chinook, fall chinook, coho, and sockeye salmon. Support documents to the master plans include: genetic risk assessments (Neeley et al. 1993 and Neeley et al. 1994), feasibility studies for reintroducing coho and sockeye salmon (Cramer and Witty, in prep.), fisheries management plans (Mundy, in prep.), facility conceptual design (Montgomery Watson 1995), facility siting (Montgomery Watson 1995), cultural resource surveys (Lyon, in prep.)

Facilities detailed in the above documents are low cost, small scale, portable facilities designed for conservation and supplementation of native fish stocks. Rearing techniques will utilize NATURE's techniques and mimic natural rearing conditions with the intent to improve post-release and smolt-to-adult survival and decrease potential impacts on wild fish. Production will be integrated with LSRCF program. Supplementation under this project is planned for a minimum of five salmon generations or 25 years.

A monitoring and evaluation plan modified from Steward (1996) will be developed for this project in 1999. This plan will integrate M&E occurring under LSRCF and needs specific to this supplementation project. It will include at a minimum data collection on life history information, ecological interactions, genetics, fish health, adult returns, spawning ground surveys, juvenile releases, juvenile outmigration and survival. The plan will be used as an adaptive management tool and to gauge the effectiveness of the program relative to its purposes.

Section 7. Project description

a. Technical and/or scientific background.

Spring, summer and fall chinook populations in the Snake River basin have declined precipitously during the past three decades resulting in their listing under the Endangered Species Act in 1992. Sockeye and coho salmon in the Snake River basin are presently classified as extinct. This project provides identification and development of facilities to protect, reintroduce, recover and enhance anadromous salmonid species native to the

Innaha and Grande Ronde River subbasins as authorized by the NPPC in 1987 (NPPC). This production is in place, in kind mitigation. Actions authorizing and directing this project are found in the Columbia Basin Fish and Wildlife Program, NPPC 94-55, Section 7.4.

Spring chinook

Peak escapement of spring chinook to the Innaha River was estimated at 3,459 adults in 1957 (Carmichael et al. 1990). Returns in recent years have declined to levels below 150 individuals (ODFW 1998). Population declines are principally attributed to reduced production that has resulted from juvenile and adult mortalities that occur at Snake and Columbia River mainstem dams and reservoirs. It was estimated that the four lower Snake River dams alone resulted in a 48% reduction in annual production of chinook salmon above Lower Granite Dam (USACOE 1975). Congress authorized the Lower Snake River Compensation Plan (LSRCP) in 1976 to mitigate for losses of salmon, steelhead and other resources that resulted from the construction of the four lower Snake River dams. Mitigation goals for Innaha spring chinook were established at 3,210 adults annually. This production currently occurs in the form of conventional production 120 miles from the Innaha River at Lookingglass Hatchery located in the Grande Ronde River subbasin. Proposed facilities will place this production in the Innaha River subbasin in the form of supplementation production.

Declines of Grande Ronde River spring chinook populations have mirrored those of other Snake River populations. The Lostine River contains some of the most productive spawning and rearing habitat in the Grande Ronde subbasin. Redd counts for spring chinook in the Lostine River have declined from 893 in 1958 to 16 in 1994 and 11 in 1995. Mitigation for lost production in the Grande Ronde River was accomplished under the LSRCP Lookingglass Hatchery using non-native (Rapid River) stock. In 1994, fisheries co-managers, ODFW, NPT, and CTUIR implemented a programmatic change to using a native broodstock in the Grande Ronde River. This was accomplished by implementing a Grande Ronde River Spring Chinook Supplementation Program and collecting indigenous stock from the Lostine River, Catherine Creek and the upper Grande Ronde River for a captive broodstock program. This program is addressed in Section 7.4 of the Columbia Basin Fish and Wildlife Program (NPPC 1995) and ESA Section 10 Permit 973 (1995) and 1,011 (1996). In 1997, sufficient adult spring chinook salmon were available for collection and initiation of conventional supplementation under a modification of Permit 1,011 (1997). This production occurs at Lookingglass Hatchery, which has limited space for expansion, is dealing with fish health issues, lacks a sufficient disease free water supply, and is currently overloaded, due to the care of eight different, segregated populations. Proposed facilities will help facilitate the Grande Ronde Supplementation Program by increasing incubation and rearing space and acclimation facilities.

Fall chinook

Snake River fall chinook salmon numbered over 72,000 fifty years ago, but only 400 adults were counted at Lower Granite Dam in 1994 (NMFS 1995). Snake River

spring/summer and fall chinook were listed as endangered under the ESA in 1992. The LSRCP program mitigates for lost fall chinook production with production at Lyons Ferry Hatchery on the Snake River. However, until 1996, all releases of Lyons Ferry fall chinook were released below Lower Granite Dam. Fall chinook have never been supplemented in the Imnaha and Grande Ronde rivers. Spawning surveys of the lower Grande Ronde documented 55 fall chinook redds in 1997 (Arnsberg, NPT, pers. comm.)

Coho salmon

Historically, the Grande Ronde River subbasin was the largest producer of coho salmon in the Snake River. Estimated returns at the turn of the century were 20,000 fish. Coho were eliminated from the Grande Ronde River system due to overharvest in the Columbia River mainstem and ocean, passage mortality at mainstem dams and habitat degradation within historic spawning and rearing areas (Bryson 1990, Cramer and Witty 1990, Wallowa County and Nez Perce Tribe 1993). Coho were declared extinct in the Snake River in 1986. Coho were not included in the LSRCP program and the loss of this population has never been mitigated for.

Sockeye salmon

Sockeye salmon became extinct in the Wallowa Lake/River (tributary to Grande Ronde River) system in the early 1900's as a result of unscreened irrigation diversions, overharvest, and a poorly operated fish culture program (Bryson 1990, Cramer and Witty 1990, Wallowa County and Nez Perce Tribe 1993). A dam built at the outlet of Wallowa Lake in 1916 has precluded the establishment of sockeye runs. The loss of this population has never been mitigated for.

Key project personnel have been involved in developing Nez Perce Tribal Hatchery, a supplementation facility for spring and fall chinook on the Clearwater River.

b. Proposal objectives.

OBJECTIVES

- 1) Implement and coordinate a supplementation program (adult collection and holding, incubation, rearing, acclimation and release facilities) for spring and fall chinook salmon in the Imnaha River.
- 2) Implement and coordinate a supplementation program (adult collection and holding, incubation, rearing, acclimation and release facilities) for spring chinook and fall chinook salmon in the Grande Ronde River subbasin (specifically, Wallowa River and tributaries).
- 3) Implement and coordinate a reintroduction and restoration program (adult collection and holding, incubation, rearing, acclimation and release facilities) for sockeye and coho salmon in the Grande Ronde River subbasin (specifically the Wallowa Lake, Wallowa River and tributaries).

- 4) Enhance natural production of spring and fall chinook in the Imnaha and Grande Ronde River subbasins to increase the probability of survival for the remaining native populations through use of a locally-adapted broodstock.
- 5) Maintain the genetic attributes and life history characteristics of the naturally-spawning spring and fall chinook in the Imnaha and Grande Ronde River subbasins.
- 6) Develop new knowledge on the use of NATURE's rearing concept and supplementation as a means to assist the recovery of endangered species.
- 7) Use acclimation as a means to maximize smolt-to-adult returns and minimize adult straying.
- 8) Monitor and evaluate facilities operated under the proposed supplementation program. A monitoring and evaluation plan modified from Steward (1996) will be developed for this project in 1999. This plan will integrate M&E occurring under LSRCF and needs specific to this supplementation project. It will include at a minimum data collection on life history information, ecological interactions, genetics, fish health, adult returns, spawning ground surveys, juvenile releases, juvenile outmigration and survival. The plan will be used as an adaptive management tool and to gauge the effectiveness of the program relative to its purposes.
- 9) Maintain consistency with the NPPC's Fish and Wildlife Program and NMFS's Draft Recovery Plan for Snake River Salmon.
- 10) Provide for efficiency and cost-effectiveness.
- 11) Promote the protection and maintenance of tribal treaty rights.
- 12) Protect other species and environmental resources.
- 13) Prepare and present reports including quarterly, annual, and on an as needed basis.

EXPECTED OUTCOMES

A. The Imnaha spring chinook component is designed to produce up to 560,000 smolts annually for final rearing/acclimation into Imnaha River. This production will be integrated with ongoing LSRCF production. To achieve this objective, the following numbers of adult salmon, eggs, and survival rates will be expected:

Broodstock: 346 (173females) adult salmon collected for brood; 50:50 sex ratio; 15% pre-spawning mortality.

Egg Take: 147 females spawned; average fecundity of 4500; 661,500 green eggs.

Smolts Production: 85% green egg-to-smolt survival; 560,000 Smolts.

Adult Return: 0.21% smolt-to-adult survival; 1,176 adult chinook salmon.

B. The Imnaha fall chinook component is designed to produce up to 120,000 acclimated smolts annually for release into Imnaha River. Broodstock source will be Snake River fall chinook. To achieve this objective, the following numbers of adult salmon, eggs, and survival rates will be expected:

Broodstock: 66 (33 females) adult salmon collected; 50:50 sex ratio; 15% pre-spawning mortality; 28 females spawned.

Egg Take: 28 females spawned; average fecundity of 5,000; 141,176 green eggs.

Smolts Production: 85% Green Egg to Smolt Survival; 120,000 Smolts.

Adult Return: 0.25% Smolt to Adult Survival; 300 adult fall chinook salmon.

C. Adult return goals for the Grande Ronde spring chinook are 2,500 - 5,000 by 2024. Facilities will provide adult collection, adult holding, incubation, rearing, acclimation and release into the Wallowa River and tributaries (Lostine, Bear, Hurricane, and Lightning Creeks). This project will provide necessary additional facilities for the ongoing Grande Ronde Basin Endemic Spring Chinook Supplementation Program.

D. Goals for the Grande Ronde fall chinook program

E. Adult return goals for the Grande Ronde coho salmon are 2,000 to 5,000 by the year 2024. Facilities will provide adult collection, adult holding, incubation, rearing, acclimation and release into the Wallowa River and tributaries (Lostine, Bear, Hurricane, and Lightning Creeks).

F. Adult return goals for sockeye salmon to Wallowa Lake are 3,000 to 6,000 by the year 2024. Facilities will provide adult collection, adult holding, incubation, rearing, acclimation and release into the Wallowa River and tributaries (Lostine, Bear, Hurricane, and Lightning Creeks). Implementation of the sockeye salmon program is contingent upon a broodstock source becoming available.

The projected benefits of these objectives are:

- X Increased number of returning adult spring and fall chinook, salmon to the Columbia Basin and Imnaha and Grande Ronde River subbasins;
- X Increased number of naturally spawning adult chinook salmon in the Imnaha and Grande Ronde River subbasins;
- X Reintroduction and restoration of extinct species (sockeye and coho) to the Grande Ronde River subbasin;
- X Improved smolt to adult survival through the use of NATURE's rearing technique and acclimated releases;
- X Increased sport and tribal harvest opportunities

c. Rationale and significance to Regional Programs.

The NEOH Master Plan project relates to the following FWP (NPPC 1994) objectives

and measures. Section 2.1 is “the Council system goal is a healthy Columbia Basin...≡ “To implement this goal, the program will deal with the Columbia Basin as a system; will protect, mitigate and enhance fish and wildlife...≡ Section 2.2A supports native species in native habitats. It states “The program preference is to support and rebuild native species in native habitats, where feasible. This means that remaining fish and wildlife habitat should be protected and restored to promote production of native species, especially habitat that supports weak populations of fish and wildlife.≡

Section 4.1 addresses doubling salmon and steelhead runs without loss of biological diversity. It is illustrated in this section that “Both the potential biological value of weak stocks and the requirements of the Endangered Species Act suggest that the path to doubling must begin with weak populations.≡ In addition, it states “this weak stock priority includes populations listed under the Endangered Species Act, but is not limited to these populations.≡

The 1994 FWP measure number 7.4 addresses the pursuit of new production initiatives, 7.4L identifies Northeast Oregon Production Facilities. Section 7.4L1 authorizes the BPA to fund planning, design, construction, operation, maintenance and evaluation of artificial production facilities to raise chinook salmon and steelhead for enhancement in the Hood, Umatilla, Walla Walla, Grande Ronde and Imnaha rivers and elsewhere. Project Objectives listed in section 7.b of this document were designed to meet this mandate. This project furthers development of FWP Measures 7.4D (Captive Brood Stocks), 7.4F (Portable Facilities for Adult Salmon Collection and Holding, and for Juvenile Salmon Acclimation), and 7.4O (Small-Scale Production Projects). This project is similar to other supplementation projects authorized by the FWP Measures 7.4K (Yakama Production Facilities) and 7.4M (Nez Perce Tribal Hatchery).

The NPPC (Section 7.4C.1) “recognizes that immediate actions may be required for emergency cases, such as badly damaged populations with decreasing escapements.≡ Unprecedented efforts will be needed to prevent species extinction and preserve fish for the future. NPPC (7.4F) also states, “as weak stocks or populations of salmon and steelhead are identified and assessed, supplementation will be one option to consider to help rebuild these stocks.≡ Artificial propagation programs are one measure to attempt to enhance populations and increase natural production in Snake River tributaries. The NMFS draft recovery plan states that “captive broodstock and supplementation programs should be initiated and/or continued for populations identified as being at imminent risk of extinction, facing severe inbreeding depression, or facing demographic risks.≡

Additionally, this project relates to the Snake River Recovery Plan (NMFS 1995): 4.1.b, 4.4c. “...develop and implement management plans for Snake River spring/summer chinook salmon conservation hatchery programs which should include: ..., 2. Genetic Management Strategy,...≡ “The fisheries agencies and Tribes should design and carry out production-scale experiments at appropriate Columbia River Basin hatcheries to test individual release strategies and evaluate smolt quality indices believed to improve smolt quality. The fisheries agencies and the Tribes should develop methods of achieving high

quality fish.≡ “Using acclimation ponds and volitional release strategies.≡

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“Implement supplementation projects that have met the screening criteria of RASP (1992) and Cuenco et al (1993)≡, which includes the proposed Imnaha and Grande Ronde River projects. “Establish additional programs for each of the subbasin tributary systems to monitor adult escapement and resulting smolt production, and to evaluate (by measuring the number of adults returning) the ability of managers to meet goals set by the Columbia River Management Plan.≡

This is a cooperative project between NPT, ODFW, CTUIR, and USFWS. Production identified under this project will be integrated with LSRCP production.

d. Project history

In 1987, the Northwest Power Planning Council (NPPC) authorized planning, design and construction of propagation facilities for the Grande Ronde, Imnaha, Walla Walla, Umatilla and Hood River basins with the intent of doubling adult salmon returns to the mouth of the Columbia. The Nez Perce Tribe was contracted to develop master plans for the Grande Ronde and Imnaha River subbasins in coordination with the Oregon Department of Fish and Wildlife (ODFW) and Confederated Tribes of the Umatilla Indian Reservation (CTUIR). The Imnaha and Grande Ronde subbasins are located in northeastern Oregon, encompass more than 300 miles of tributaries and empty into the Snake River approximately 500 miles from the Pacific Ocean.

Phase I of the NEOH master planning project began in 1987 and was completed in 1990. Draft master plans for the Imnaha (Larson 1990) and Grande Ronde (Bryson 1990) subbasins were developed under Phase I. These plans described fisheries management history, artificial production goals, conceptual design and operation of new facilities, and potential locations for hatchery and weir sites. The final Master Plan (Phase II) was scheduled for completion in 1993 but was postponed because of critical management issues associated with the listing of Snake River Chinook and sockeye under the Endangered Species Act.

Phase II was reinitiated in 1996 under measures 7.4L and 7.4B.1 of the 1994 Fish and Wildlife Program. The final Master Plans, scheduled for presentation to the Council in 1998, finalizes elements identified in Phase I, integrates new production with captive broodstock production and current conventional production, addresses cultural resource issues and considers critical management issues.

To date, \$1,232,000 has been expended on this project. Adaptive management has shifted the emphasis of this project from meeting the Councils doubling goal when it was initiated to preventing extinction and addressing recovery of ESA listed fish.

Major results achieved can be ascertained from reports produced from this project. They are:

- 1) Imnaha River Master Plan for spring and fall chinook salmon (Ashe et al., in prep.)
- 2) Grande Ronde River Master Plan for spring and fall chinook, coho and sockeye salmon (Ashe et al., in prep.)
- 3) Northeast Oregon Salmon and Steelhead Draft Master Plan, Imnaha River (Larson 1990).
- 4) Northeast Oregon Salmon and Steelhead Draft Master Plan, Grande Ronde River (Bryson 1990).
- 5) Feasibility for Reintroducing Sockeye & Coho Salmon in the Grande Ronde River and Coho and Chum in the Walla Walla River, Draft Report (Cramer et al. 1993).
- 6) Feasibility for Reintroducing Sockeye & Coho Salmon in the Grande Ronde River, Final Report (Cramer et al., in prep).
- 7) Draft Siting Report for Northeast Oregon Hatchery Project (Montgomery Watson 1992)
- 8) Northeast Oregon Hatchery Project Final Siting Report (Montgomery Watson 1995).
- 9) Draft Conceptual Design Report for Northeast Oregon Hatchery Project (Montgomery Watson 1992).
- 10) Northeast Oregon Hatchery Project Conceptual Design Final Report (Montgomery Watson 1995).
- 11) Preliminary Report of Test Well Drilling Northeast Oregon Project (Montgomery Watson 1992)
- 12) Genetic Risk Assessment of the Imnaha Master Plan (Neeley et al. 1993)
- 13) Genetic Risk Assessment of the Grande Ronde River Master Plan (Neeley et al. 1994)
- 14) Northeast Oregon Hatchery Project, Grande Ronde River Master Plan, Final Report (Bryson 1993).
- 15) Imnaha River Spring Chinook Fisheries Management Plan (Mundy and Witty, in prep).

e. Methods.

Operation and Maintenance

Production facilities proposed for this project are low cost, small scale, portable facilities designed for conservation and supplementation of native fish stocks. Location and description of facilities for proposed for the Imnaha and Grande Ronde subbasins are displayed in detail in conceptual design (Montgomery Watson 1995a) and final siting reports (Montgomery Watson 1995b).

Production occurring under this project will be integrated with ongoing LSRCP production. Description of production goals and objectives, broodstock acquisition, NATURE's rearing techniques, acclimated releases and fish management objectives are

detailed in the Imnaha River (Ashe et al., in prep.) and Grande Ronde River (Ashe et al., in prep) Master Plans. Annual operating procedures of proposed facilities will be developed with co-managers in 1999. This document will detail spawning protocols, incubation strategies, rearing programs, monitoring and evaluation, pathology, and facility operation and maintenance.

Critical Assumptions:

The following critical assumptions apply to this project: 1) Adult return goals identified in the master plans assumes mainstem passage conditions will allow for a net replacement/increase in adult production. Our efforts will be negated without improvements in mainstem passage and acceptable water flows, 2) Sufficient water is available at proposed facility sites to accomplish production goals outlined in the master plans. Well performance tests are being conducted in 1998 to verify this assumption, and 3) Master plans will receive NPPC approval and project will advance to step 2 in the 3 step review process.

Potential Risks:

There are several risks associated with any supplementation project. These risks include, but are not limited to: decreases in genetic variability; increased incident of disease transmission; loss of animals because of stress, lack of water supply or other mishaps; change in the age composition of the spawning cohort.

Monitoring and Evaluation:

A monitoring and evaluation plan modified from Steward (1996) will be developed for this project in 1999. This plan will integrate M&E occurring under LSRCF and needs specific to this supplementation project. It will include at a minimum data collection on life history information, ecological interactions, genetics, fish health, adult returns, spawning ground surveys, juvenile releases, juvenile outmigration and survival. The plan will be used as an adaptive management tool and to gauge the effectiveness of the program relative to its purposes.

Methods for Data Analysis:

Analysis of juvenile production will be achieved through tracking the survival rates of the animals collected for use as broodstock. This will involve keeping accurate numbers on the total number of adults spawned, green eggs collected, eyed eggs, fry hatched, and smolts produced.

Life history characteristics/status can be identified and quantified at several life history stages: emigration (summer, fall, spring) from natal streams, survival and timing of smolt movement past a given location (Lower Granite Dam), and adult escapement (lower Granite Dam and or spawning grounds (natal stream), smolt to adult survival (SAR).

Fall and spring emigrate (presmolt and smolts) numbers and timing will be estimated with emigrant rotary screw traps. Traps are operated to sample the summer, fall, and spring emigration periods until icing or water velocity is prohibitive. Capture efficiency

is estimated by recapture of marked emigrants transported above traps. Capture efficiencies are monitored as a function of stream flow and water temperature.

Smolt characteristics (timing and survival) at Lower Granite Dam will be assessed using PIT tag detections. Depending on the release strategy 1500 to 6000 PIT juveniles will be PIT tagged prior to release into the study stream. Multiple release sites, strategies, or locations will be monitored independently. Arrival timing and survival will be analyzed using PTAGIS databases and the SURPH model.

Adult escapement will be monitored directly by weir capture and indirectly by multiple redd count/carcass surveys above the weir. Biological characteristics (arrival date, size, sex, origin, marks) will be recorded and used to assure prescribe escapement above the weir will be obtained. Salmon spawning ground surveys are conducted three to four times to bracket spawning timing, increase redd count accuracy and maximize adult carcass collection. Carcasses are examined and biological information collected. Fish are examined for any marks/tags and measured (fork length and mid-eye to hypural). Scales are removed from carcasses and placed in coin enveloped for ageing. Fish are opened to determine sex and percent spawned. Analysis of adult returns will be accomplished through CWT recoveries, PIT tag detections, mainstem dam counts, and redd counts. Supplementation effects will be evaluated by comparing weir returns, redd counts, juvenile production, juvenile survival, fecundity, age structure, and genetic structure and variability in supplemented streams.

Expected Results:

Expected results of this project are: Increased post-release survival of smolts, increased smolt to adult survival, increased recruit per spawner ratios, increased adult return to the Columbia Basin and Imnaha and Grande Ronde River subbasins, decreased demographic risk.

f. Facilities and equipment.

The Northeast Oregon Hatchery master plan project conducted out of the Nez Perce Tribe's office in Lapwai, ID and Enterprise, OR. Office facilities are considered adequate for all administrative and personnel needs.

Juvenile acclimation and release facilities scheduled for construction in 1999 are designed to be "portable" raceways if possible rather than permanent concrete structures.

They will be patterned after portable facilities utilized in the Grande Ronde Basin Endemic Spring Chinook Supplementation Program (BPA 1998).

g. References.

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Ashe, B.L., R.L. Zollman, D.B. Johnson, D. Bryson, and R.E. Larson. (In prep.). Grande Ronde River Master Plan for spring and fall chinook, coho and sockeye salmon. Bonneville Power Administration, Portland, Oregon.

Bryson, D. 1990. Northeast Oregon Salmon and Steelhead Draft Master Plan, Grande Ronde River. Nez Perce Tribe, Lapwai, ID.

Bryson, D. 1993. Northeast Oregon Hatchery Project, Grande Ronde River Master Plan Final Report. Nez Perce Tribe, Lapwai, ID.

Cramer, S.P. and K. Witty. 1990. Feasibility for Reintroducing Sockeye & Coho Salmon in the Grande Ronde River and Coho and Chum in the Walla Walla

Cramer, S.P. and K. Witty. (In prep.) Feasibility for Reintroducing Sockeye and Coho Salmon in the Grande Ronde River. Bonneville Power Administration, Portland, OR.

Larson, R.E. 1990. Northeast Oregon Salmon and Steelhead Draft Master Plan, Imnaha River. Nez Perce Tribe, Lapwai, ID.

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Montgomery Watson. 1992. Draft Conceptual Design Report for Northeast Oregon Hatchery Project. Montgomery Watson, Bellevue, WA.

Montgomery Watson. 1992. Preliminary Report of Test Well Drilling Northeast Oregon Project. Montgomery Watson, Bellevue, WA.

Montgomery Watson. 1995. Northeast Oregon Hatchery Project Conceptual Design Final Report. Bonneville Power Administration, Portland, OR.

Montgomery Watson. 1995. Northeast Oregon Hatchery Project Final Siting Report. Bonneville Power Administration, Portland, OR.

Mundy, P.R. and K. Witty. (In prep). Imnaha River Spring Chinook Fisheries Management Plan. Nez Perce Tribe, Lapwai, ID.

Neeley, D., K. Witty, and S.P. Cramer. 1993. Genetic Risk Assessment of the Imnaha Master Plan, Nez Perce Tribe, Lapwai, ID.

Neeley, D., K. Witty, and S.P. Cramer. 1994. Genetic Risk Assessment of the Grande Ronde River Master Plan, Nez Perce Tribe, Lapwai, ID.

Nez Perce Tribe of Idaho, Confederated Tribes of the Umatilla Indian Reservation, and Oregon Department of Fish and Wildlife. 1990. Imnaha River Subbasin Salmon and Steelhead Plan. Columbia Basin System Planning. Northwest Power Planning Council, Portland, OR.

NMFS. 1995. Snake River Salmon Recovery Plan. National Marine Fisheries Service, Portland, OR.

NPPC. 1994. Columbia River Basin Fish and Wildlife Program. Northwest Power Planning Council. Portland, OR.

Oregon Department of Fish and Wildlife, Nez Perce Tribe of Idaho and Confederated Tribes of the Umatilla Indian Reservation. 1990. Grande Ronde River Subbasin Salmon and Steelhead Plan. Columbia Basin System Planning. Northwest Power Planning Council, Portland, OR.

RASP (Regional Assessment of Supplementation Projects). 1992. RASP summary report series. December 1992, Parts I-IV. Bonneville Power Administration, Portland, Oregon.

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Wallowa County and NPT. 1993. Wallowa County and Nez Perce Tribe Salmon Recovery Plan. Nez Perce Tribe, Lapwai, ID.

Wy-Kan-Ush-Me Wa-Kush-Wit, Spirit of the Salmon. 1995. The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs and Yakima Tribes. Columbia River Intertribal Fish Commission, Portland, OR.

Section 8. Relationships to other projects

ODFW and USFWS are intimately involved in the coordination and implementation of this project. Production occurring under the LSRCP program will be integrated with production from the proposed facilities. Lookingglass Hatchery and satellite facilities and Lyons Ferry Hatchery were included in the planning process

Permits necessary to perform activities outlined in this proposal (i.e., capture, rearing, and release of listed fish used in supplementation projects) will be obtained through

consultation with National Marine Fisheries Service (NMFS).

Artificial Production projects identified in the FWP that integrate with this proposal are: 5520600 - Listed Stock Gamete Preservation (NPT), 5520700 - Captive Brood Stock Artificial Propagation (NPT), 9604400 - Grande Ronde Basin Spring Chinook Captive Broodstock (ODFW).

Monitoring and Evaluation projects identified in the FWP that will complement this proposal are: 8712700 - Smolt Monitoring Project - Imnaha River and LSRCP M&E studies. These studies focus on survival and life history characteristics and intensively monitor emigration of hatchery and natural chinook salmon and steelhead from the Imnaha River system. 9202604 - Spring Chinook Salmon Early Life History (ODFW), and 5519100 - Meadow Cr. Instream Structure & Riparian Evaluation (USFS).

Habitat improvement projects identified in the FWP that provide for habitat improvements that will enhance survival of fish produced under this proposal are: 5507000 - Grande Ronde Subbasin Watershed Restoration (CTUIR), 9402700 - Grande Ronde Model Watershed Habitat Projects (GRMWP), 9202601 - Grande Ronde Model Watershed Admin/Impl/Research (GRMWP-USFS), 9702500 - Wallowa County/NPT Salmon Habitat Recovery (NPT), 9403900 - Wallowa Basin Project Planning (NPT), 8402500 - Grande Ronde Habitat Enhancement (ODFW), 9607700 - Meadow Creek Restoration (USFS).

Section 9. Key personnel

Roy Edward Larson, Director of Production (.15 FTE)

Nez Perce Tribe Department Fisheries Resource Management, Lapwai, ID office

EDUCATION

M.S. in Veterinary Science, University of Idaho, 1972

B.S. in Agriculture, University of Idaho, 1970

PUBLICATIONS

Larson, R.E. and Mobernd, L. 1992. Nez Perce Tribal Hatchery Master Plan and appendices. Bonneville Power Administration. Project No. 83-350. Contract No. DE-AI79BP36809.

Larson R.E. and Jose, J.R. 1988. A report of the 1987 - 88 mid-winter supply survey for the Nez Perce Tribe's low capital low technology anadromous salmonid hatchery project: 83-350 BPA agreement No. DE-AI79BP36809.

Klontz, G.W., Chacko, A.J. and R.E. Larson. 1979. Epidemiology of respiratory diseases in juvenile spring chinook salmon. University of Idaho, Fisheries Resources, College of FWR Sciences Bulletin.

Larson, R. E. 1977. Kelp meal as a diet supplement for salmonids. Proceedings of 38th Northwest Fish Culture Conference, p. 28.

Dulin, M.P., Huddleston, T., Larson, R.E. and Klontz G.W. 1976. Enteric Redmouth Disease. University of Idaho, Fisheries Resources, College of FWR Sciences Bulletin.

TECHNICAL EXPERIENCE

Production Director - Nez Perce Tribe Lapwai, ID Oct 1990 - Present.

Project: Nez Perce Tribal Hatchery, North East Oregon Hatchery, Johnson Creek Supplementation Project, Fall Chinook Acclimation Facilities, Sturgeon Research, Early Action Watershed Projects.

Production Biologist - Nez Perce Tribe Lapwai, ID Sept 1987 - Sept 1990

Project: Nez Perce Tribal Hatchery, Imnaha Master Plan, Subbasin Planning

Licensed General Contractor - Private Business, Sitka AK Oct 1984 - Sept 1987

Hatchery Manager - Northern Southeast Regional Aquaculture Association, Sitka AK, Sept 1980 - Oct 1984

Project: Medvedjie Central Incubation and Rearing Facility for spring chinook, chum and coho salmon.

Project Leader - Northern Southeast Regional Aquaculture Association, Juneau AK, Apr 1980 - Sept 1980.

Project: Salmon Creek Central Incubation and Rearing Facility for pink, chum and coho salmon.

Research Technician I - University of Idaho Fish Disease Lab, Moscow ID Jul 1976 - Apr 1980. Project: Fish health management and fish disease diagnostics

Duties: Provide direction, supervision and management of NPT Fisheries Production program. Co-author Nez Perce Tribal Hatchery Master Plan and Imnaha Master Plan. Responsible for integrating production needs into the multi-species recovery and restoration program of the Nez Perce Tribe. Write proposals for funding. Coordinate project development, production and ESA issues with State, Tribal and Federal agencies. Contract supervision on NPT Fisheries Production projects.

Skills: Twenty two years of experience managing fish culture, fish health, multiple species and innovative supplementation techniques to restore and recover weak or endangered species. Eleven years experience developing the Nez Perce Tribe anadromous and resident fish production programs and coordinating tribal production activities under the Northwest Power Planning Act. Fifteen years experience developing and overseeing contracts for various funding agencies. Twenty two years of experience supervising technical and professional fisheries staff.

David B. Johnson, Production Coordinator (.25 FTE)

Nez Perce Tribe Department Fisheries Resource Management

EDUCATION

M.S. in Biology, Northern Arizona University, 1982

B.S. in Biology, Northern Arizona University, 1979

PUBLICATIONS

- Johnson, D.B. and S. Sprague. 1996. Preliminary monitoring and evaluation results for coho salmon outplanted in the Clearwater River subbasin, Idaho, 1995. Nez Perce Tribe Department of Fisheries Resources Management, Lapwai, Idaho.
- Johnson, D.B., R.E. Larson and C. Steward. 1995. Supplement to the Nez Perce Tribal Hatchery master plan. Department of Fisheries Resources Management, Nez Perce Tribe, Lapwai, Idaho.
- Johnson, D.B. 1990. Indian Tribes of the Northern Region: A brief history, description of hunting and fishing treaty rights and fish and wildlife management programs. U.S.D.A. Forest Service, Northern Region Office, Missoula, Montana.
- Murphy, P.K. and D.B. Johnson. 1990. Nez Perce Tribal review of the Clearwater River Lower Snake River Compensation Plan. Department of Fisheries Resources Management, Nez Perce Tribe, Lapwai, Idaho.
- Johnson, D.B. 1987. Preliminary assessment and selected reference information for the proposed Zuni Pueblo warmwater fish hatchery. Report submitted to the Zuni Agency.

TECHNICAL EXPERIENCE

- Production Coordinator - Nez Perce Tribe Lapwai, ID Oct 1997 - Present.
Project: Nez Perce Tribal Hatchery, North East Oregon Hatchery, Johnson Creek Supplementation Project
- Senior Monitoring and Evaluation Biologist - Nez Perce Tribe, Lapwai ID Oct 1993 - Oct 1997.
Project: Nez Perce Tribal Hatchery
- District Fish Biologist - North Fork Ranger District, Clearwater National Forest, Orofino, ID. May 90 - Oct 1993
Project: Staff leader for fish, wildlife and watershed programs.
- Assistant to Fisheries Program Manager - US Forest Service, Northern Region, Regional Office, Missoula, MT. Jan 1989 - May 1990.
Project: Snake River Basin Adjudication, technology transfer.
- Area Fisheries Biologist - Bureau of Indian Affairs, Albuquerque Area Office, Albuquerque NM Mar 1987 - Dec 1988.
Project: Technical assistance in fisheries to 14 Indian Tribes
- Fisheries Biologist - Nez Perce Tribe, Lapwai, ID. May 1984 - Mar 1987.
Project: stream surveys, steelhead ecology, production planning

Duties: Assist in developing departmental direction, project and budget development and coordination, contract and subcontract review, report writing, NEPA document preparation, personnel supervision, tribal representation in meetings with interagency quorums, and private consultants, public speaking and presentations.

Skills: Fifteen years of experience conducting field work, and providing management direction on fisheries and watershed projects. Responsible for providing and coordinating analysis of effects, including hatchery production, on aquatic habitat and biota sufficient to meet NEPA and ESA requirements. Responsible for overseeing development and

completion of NPTH M&E Plan. Eleven years of experience working in the Snake River basin, specifically in the Clearwater Subbasin, on issues related to hatchery and natural production, interagency coordination, ESA, and Nez Perce Tribal fishing rights.

Becky Ashe, Project Leader (1 FTE)

Nez Perce Tribe Department Fisheries Resource Management, Lapwai, ID office

EDUCATION

M.S. in Biology with Fisheries emphasis, Eastern Washington University, 1991

B.S. in Biology, EWU, 1989

PUBLICATIONS

Primary Author:

Ashe, B.L., R.L. Zollman, D.B. Johnson, D. Bryson, and R.E. Larson. (In prep.) Imnaha River Master Plan for spring and fall chinook salmon. Bonneville Power Administration, Portland, OR.

Ashe, B.L., R.E. Larson, G.W. Walker, and D.B. Johnson. 1996. Nez Perce Tribe 1994 Annual Production Report, Sweetwater Springs Hatchery, Spring Chinook Salmon. Nez Perce Tribe Department of Fisheries Resource Management, Lapwai, ID.

Ashe, B.L., A.C. Miller, P.A. Kucera, M.L. Blenden. 1995. Spring outmigration of wild and hatchery chinook salmon and steelhead trout smolts from the Imnaha River, March 1 - June 15, 1994. Bonneville Power Administration, Portland, OR. 76 pp.

Ashe, B.L. and A.T. Scholz. 1992. Assessment of fishery improvement opportunities on the Pend Oreille River: Recommendations for fisheries enhancement. Final Report. Bonneville Power Administration, Portland, OR, 295 pp.

Developed Nez Perce Tribe Fish Health Policy and Kalispel Tribe Fisheries Management Plan, primary author of four other publications, co-authored over 10 other publications regarding Integrated Hatchery Operations Team Policies and Procedures Manual, reintroduction of coho salmon in the Clearwater River, predation by northern squawfish, assessment of thermomechanical pulp mill, and baseline fisheries investigations.

TECHNICAL EXPERIENCE

Project Leader, Nez Perce Tribe, Lapwai, ID, Jan. 1997 - Present

Project: Northeast Oregon Hatchery Master Plan

Project Leader, Nez Perce Tribe, Lapwai, ID, April 1997 - Present

Project: Grande Ronde River Supplementation Project - Lostine River

Project Leader, Nez Perce Tribe, Lapwai, ID, May 1994 - Present

Project: Integrated Hatchery Operations Team

Assistant Project Leader, Columbia River Inter-Tribal Fish Commission, Lewiston, ID,

July 1991 - Feb. 1993

Project: Managed CRITFC field office, manage and coordinate northern squawfish predation project on Snake and Columbia River mainstem dams.

Project Director/Research Associate, Upper Columbia United Tribes, Cheney, WA Sept. 1990 - Feb. 1992

Projects: Directed a three year baseline fisheries assessment of the Pend Oreille River, directed an EPA Coordinated Tribal Water Quality Program, directed an environmental impact assessment of pulp mill effluent discharged adjacent to Kalispel Indian Reservation, developed fisheries management plan for Kalispel Indian Reservation, tribal natural resource representative at CBFWA, EPA, NPPC, BPA, WDFW, and other state and local forums. Master thesis - Movement and migration of largemouth bass in the Pend Orielle River by sonic and radio telemetry.

Duties: project implementation, management and coordination, budget preparation and management, contract and subcontract preparation and management, report writing, personnel supervision, tribal representation in meetings with ODFW, IDFG, WDFW, NMFS, BPA, NPPC, CBFWA, IHOT, and private consultants, data analysis, computer modeling, public speaking and presentations, and proposal development

Skills: spawning adult salmonids, fish culture activities, field data collection and laboratory analysis of marine and fresh water benthic macroinvertebrates, terrestrial insects, zooplankton, fish handling and identification, boat operation and maintenance, boat and backpack electrofishing, seining, gill netting, trawl netting, screw trapping, adult weirs and traps, hook and line, transect stream survey methodology, snorkel, redd surveys, life history research, age scales, diet analysis, water chemistry analysis, mapping and GPS, reach descriptions, and sonic and radiotelemetry.

Rick Zollman, NEOH Assistant Project Leader (1FTE)

Nez Perce Tribe Department of Fisheries Resource Management, Enterprise, OR office

EDUCATION

A.S. Fisheries Science from Mt. Hood Community College

EXPERIENCE AND EXPERTISE

USFWS, Region 1 - 16 years total, 14 years permanent.

Experience attained and expertise established in the management and operation of major anadromous hatchery programs, associated structures, and basin co-management. The main station of operations revolved around Eagle Creek NFH, but also included a tour of duty at Dworshack NFH and application of my abilities to other facilities needs. While at ECNFH I managed all facets of a major production program that exceeded 2.5 million smolts and other life-stage products as required. The species that I have successfully managed programs for include spring chinook salmon, coho salmon, and winter steelhead. My tour of duty at ECNFH included the positions of acting assistant

manager, 4 years, and acting manager, 11/2 years.

Duties included the management and training of hatchery staff : four FTE fish culturists, maintenance personnel, and temporary helpers that ranged from 2 to 12 depending on work loads. I am considered to have expertise in all life-stage care of fish and application of most general equipment, activities, and facilities required to perform a major hatchery program. Management duties included involvement in co-managed activities and plans. Communications involved federal, state, tribal, and private entities.

Training : Training was implemented by USFWS and included disease short courses, work force management and cross training at other federal hatcheries. The most recently completed training was Fish Genetics in February 1997.

Awards: Notable awards presented to me by USFWS includes Special Achievement Award, several Quality Performance Awards, and I was named the Fish Culturist of the Year in 1987.

Section 10. Information/technology transfer

Technical information will be distributed through quarterly and annual progress reports to Bonneville Power Administration, submittal of findings to scientific journals, Master Plan documents, LSRCP program review workshops, CBFWA Project Review Workshops, Section 10 Permit Reports, Biological Assessments, Biological Opinions, NEPA documents, Final Design Reports, and Construction Memorandums. Project cooperators meet regularly to exchange information and discuss project adaptations.