
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Grande Ronde Supplementation - O&M/M&E - Nez Perce Tribe Lostine

BPA project number: 9800702
Contract renewal date (mm/yyyy): 1/2000 **Multiple actions?**

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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NPPC Program Measure Number(s) which this project addresses
Primary -7.4L & 7.4L.1, Secondary -7.2D.1, 7.2D.3, 7.3B, 7.4B 7.4D, 7.4F.

FWS/NMFS Biological Opinion Number(s) which this project addresses
NMFS BiOp for 1995-98 Hatchery Operations, ESA Section 10 Permits No. 973, No. 1011, Modification Permit No. 1011, and No. 1164, FWS Sec. 7 BiOp 501.1100, 1-4-98-F4 (bull trout), ESA Section 10 Applications, and more in section 8.b.of this document.

Other planning document references

Proposed Recovery Plan for Snake River Salmon (NMFS 1995), Wy-Kan-Ush-Mi Wa-Kish-Wit (CRITFC 1995), Grande Ronde Subbasin Plan (ODFW et al. 1990), Northeast Oregon Hatchery (NEOH) Final Siting Report (Montgomery Watson 1995a), NEOH Conceptual Design Report (Montgomery Watson 1995b), Wallowa County - Nez Perce Tribe Salmon Recovery Plan (Wallowa County and NPT 1993), Genetic Risk Assessment of the Grande Ronde Master Plan (Neeley et al. 1994), Environmental Assessment Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program (BPA 1998).

Short description

Operate adult trapping and juvenile acclimation facilities in the Lostine River to implement the Grande Ronde Endemic Spring Chinook Supplementation Program. Monitor and evaluate the Supplementation Program and provide basis for assessment.

Target species
spring chinook salmon

Section 2. Sorting and evaluation

Subbasin
Grande Ronde

Evaluation Process Sort

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

Section 3. Relationships to other Bonneville projects

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

Project #	Project title/description
20556	Grande Ronde Endemic Spring Chinook Supplementation Program
9801001	Grande Ronde Basin Captive Broodstock - ODFW
9604402	Grande Ronde Basin Captive broodstock capital construction
9801007	Captive Broodstock Artificial Propagation - NPT
9803800	Preserve Listed Salmonid Stock Gametes - NPT
9800703	Grande Ronde Supplementation - CTUIR
9800702	Grande Ronde Supplementation - NPT

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
9202604	Early Life History of Spring Chinook Salmon in the Grande Ronde Basin	This project's life history and trapping data will be used to evaluate the success of the GRESP.
9403300	Fish Passage Center's Smolt Monitoring Program	Juvenile hatchery and natural salmon resulting from the GRESP will provide release and migration data for in-river information on migration timing and survival.
8909600	Genetic Monitoring and Evaluation of Snake River Salmon and Steelhead	This project will utilize genetic data collected from fish in the targeted tributaries.
9405400	Bull Trout Studies in Central and Northeast Oregon	This project will utilize incidentally captured bull trout at the adult trapping facility for tagging, demographic and recapture data.
9604400	Grande Ronde Basin Spring Chinook Captive Broodstock Program	This is capital construction associated with implementing 9801001.
8402500	Grande Ronde Habitat Enhancement (ODFW)	Improve habitat and likelihood of program success
9608300	Grande Ronde Habitat Enhancement (CTUIR)	Improve habitat and likelihood of program success
9600800	PATH (Plan for Analyzing and Testing Hypotheses)	Naturally-produced juveniles will provide data for life cycle model
9402700	Grande Ronde Model Watershed	Juveniles produced by program will provide

		information on habitat utilization and juvenile production
9403900	Wallowa Basin Project Planning	Improve habitat and likelihood of program success
9702500	Wallowa/Nez Perce Salmon Habitat Recovery	Improve habitat and likelihood of program success
0	Lower Snake River Compensation Plan Hatchery Operations and Evaluations	Provides extensive sharing of data, facilities, expertise and cooperative research to assess program success.

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1997	Development of the Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program (GRESB).	
1997	Preliminary planning and design and environmental assessment (NEPA) documents were completed for the adult trapping/holding and juvenile acclimation/release facilities.	
1997	Land acquisition agreement for the adult trapping facility was procured through the BPA Lands Division	
1997	Operation of the adult trapping facility (July-October) resulted in the capture of a total of 27 adult spring chinook. Seven of these were collected as broodstock and resulted in approximately 12,000 smolts for release in 1999.	Yes, Objective 2
1997	Monitor and evaluate the adult weir and trap operation.	Yes, Objective 4.a,c
1997	Continue collection of baseline information on environmental conditions in the Lostine River.	Yes, Objective 7.a,b
1998	Completion of final design and the Environmental Assessment for the adult trapping and juvenile acclimation facilities.	
1998	Project was evaluated by an Independent Science Review through the Northwest Power Planning Council's 3-Step Review Process. The NPPC approved funding for the construction of the facilities in June.	
1998	Land acquisition agreement for the Lostine acclimation facility site was procured through the BPA Lands Division.	
1998	A comprehensive management plan was developed by the NPT and ODFW for the Lostine River which integrated conventional and captive broodstock production.	
1998	ESA Section 10 Permit Applications were cooperatively developed by ODFW and the NPT and submitted to NMFS for project authorization.	
1998	Operation of the adult weir (June-October)	Yes, Objective 2

	resulted in the capture of 23 adult spring chinook. None were utilized as broodstock.	
1998	Recruited project leader and biologist for M&E component of the program.	
1998	Monitored and evaluated the adult weir and trap operation.	Yes, Objective 3.a-c
1998	Continue collection of baseline information on environmental conditions in the Lostine River.	Yes, Objective 7.a-c
1998	Collected and analyzed baseline information on population abundance and life history characteristics.	Yes, Objective 4.a-f
1998	PIT tagged 5,000 BY 1997 chinook parr at Lookingglass Hatchery for release in 1999.	Yes, Objective 6
1998	Prepared quarterly reports and presented results.	

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Coordinate and continue development of Grande Ronde Endemic Spring Chinook Supplementation Program.	a	Coordinate production planning (adult collection, spawning, incubation, rearing, acclimation and release of progeny) for Lostine River broodstock.
		b	Coordinate research planning and activities with ODFW, CTUIR, and NMFS.
		c	Cooperatively develop appropriate permit applications and biological assessments for implementation and monitoring and evaluation of the GRESP.
		d	Coordinate with private landowners for operation and maintenance of trapping and acclimation facilities.
		e	Coordinate with cultural resource, construction and engineer consultants for operation and maintenance of trapping and acclimation facilities.
		f	Coordinate with other co-managers, regarding relevant management issues, through U.S. v. Oregon Production Advisory Committee and Technical Advisory Committee forums.
		g	Consult with NMFS regarding the consistency of various aspects of this project with regard to recovery planning for chinook salmon in the Grande Ronde subbasin.
		h	Facilitate the use of collected data with co-managers.
		i	Develop proposals, work statements and budgets for operation of Lostine facilities and monitoring and evaluation of program.
2	Operate and maintain a portable weir/trap facility on the Lostine River.	a	Set up facility as soon as flows allow - May to June.
		b	Maintain living quarters, facilities, and

			equipment in good working order
		c	Collect spring chinook adults for a broodstock source and assessment of adult escapement. Pass fish not selected for broodstock above the weir.
		d	Collect biological data on incidentally caught species (bull trout and steelhead) to other projects.
		e	Dissemble facilities and equipment on or about September 30
3	Monitor and evaluate operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River.	a	Monitor upstream and downstream reaches from the weir at regular intervals by snorkeling and stream-side surveys to determine presence and species composition of fish on both sides of the weir.
		b	Determine the number of chinook redds and fish in the stream reach below the weir and compare with historical records.
		c	Determine whether the movement of adult steelhead and bull trout is impeded by the presence of the weir by snorkeling the stream reaches between the weir and the mouth and the weir and Baker Road at night during weir operation.
4	Collect and analyze baseline information on abundance, genetic and life history characteristics prior to supplementation.	a	Utilize data collected from the operation of the portable weir/trap facility during spawning migration to assess adult returns.
		b	Collect run timing information from adults trapped.
		c	Collect mark, length, sex, and spawning maturation information from adults trapped and opercle punch all adults released upstream of the weir.
		d	Collect life history characteristics, and migration information on steelhead and bull trout incidentally captured at the weir.
		e	Collect tissue samples for baseline genetic (mtDNR) analysis.
		f	Conduct intensive multiple count spawning ground surveys with ODFW.
		g	Analyze scale samples collected from carcasses recovered during spawning ground surveys in order to determine age and origin (hatchery or wild).
		h	Determine total escapement above the weir based on number of adults released above the weir and mark to unmarked ratios.
		i	Calculate the fish per redd ratio
5	Operate and maintain a juvenile acclimation and release facility on the Lostine River.	a	Set up/assemble and test facility in February.
		b	Coordinate fish delivery, fish health inspections, and release with co-managers.
		c	Provide security and maintenance of living quarters, facilities and equipment.

		d	Perform necessary fish culture activities (i.e., feeding, cleaning)
		e	Acclimate and volitionally release up to 200,000 smolts.
6	Monitor and evaluate conventional and captive broodstock production released as smolts in the Lostine River.	a	Estimate marking efficiencies and retention rates prior to release.
		b	Estimate survival of brood year smolt releases to Lower Granite, Little Goose, Lower Monumental, and McNary dams using the SURPH.1 model.
		c	Determine smolt size influence on downstream survival
		d	Compare acclimation release strategies on smolt to adult survival
7	Establish baseline information on environmental conditions in the Lostine River.	a	Monitor constant recording thermographs located near the adult trapping and acclimation and release facilities.
		b	Monitor staff guage to determine water flows near the adult trapping and acclimation and release facilities.
		c	Obtain on-line discharge data from USGS.
8	Transfer of technology.	a	Prepare and provide quarterly reports summarizing activities accomplished during the quarter.
		b	Compile, analyze and present results in annual report summarizing all research activities
		c	Present reports on project activities and findings at Annual BPA/CBFWA Project Review and other forums
		c	Present reports on project activities and findings at Annual BPA/CBFWA Project Review and other forums

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	1/2000	12/2000			20.00%
2	5/2000	10/2000	Collection of adults for broodstock		20.00%
3	5/2000	10/2000			10.00%
4	5/2000	12/2000	Collection of biological data from remnant population		10.00%
5	2/2000	4/2000	Acclimation and release of juvenile smolts	First release of captive brood smolts - 2000	15.00%
6	3/2000	8/2000	Collection of biological data from hatchery fish		10.00%
7	1/2000	12/2000	Collection of environmental data		5.00%
8	1/2000	12/2000			10.00%
				Total	200.00%

Schedule constraints

ESA Section 10 permitting process, adult returns, conventional and captive broodstock production results, and funding constraints.

Completion date

Ongoing

Section 5. Budget

FY99 project budget (BPA obligated): \$327,125

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	O&M 121,448; M&E 67,495	%44	188,943
Fringe benefits	O&M 28,790; M&E 15,861	%10	44,651
Supplies, materials, non-expendable property	O&M ; M&E 5,000	%1	5,000
Operations & maintenance	O&M 48,528; M&E 11,308	%14	59,836
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	O&M 15,000; M&E	%3	15,000
NEPA costs	O&M ; M&E	%0	
Construction-related support	O&M ; M&E	%0	
PIT tags	# of tags: 10,000 (conv. & cap.)	%7	29,000
Travel	O&M ; M&E 13,515	%3	11,063
Indirect costs	O&M 45,518; M&E 25,918	%17	71,436
Subcontractor	M&E Genetic analysis: 6,000	%1	6,000
Other	O&M ; M&E	%0	
TOTAL BPA FY2000 BUDGET REQUEST			\$430,929

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
USFWS/LSRCP	Fish food during smolt acclimation	%0	1,000
ODFW/LSRCP	Production support/Fish Health Services	%0	2,000
		%0	
		%0	
Total project cost (including BPA portion)			\$433,929

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$450,000	\$475,000	\$500,000	\$500,000

Section 6. References

Watershed?	Reference
<input type="checkbox"/>	BIA (Bureau of Indian Affairs). 1998. Application for a permit to enhance the propagation or survival of endangered Grande Ronde River subbasin (Lostine River component) spring chinook under the Endangered Species Act of 1973. April 13, 1998.
<input type="checkbox"/>	BPA (Bonneville Power Administration). 1998. Grande Ronde basin endemic spring chinook supplementation program. Environmental Assessment. (DOE/EA - 1173). Portland, OR.
<input type="checkbox"/>	Carmichael, R.W., S.J. Parker, and T.A. Whitesel. 1998. Status review of the chinook salmon hatchery program in the Imnaha River Basin, Oregon. In Lower Snake River Compensation Plan Status Review Symposium, February 1998. USFWS LSRC, Boise, Idaho.
<input type="checkbox"/>	CRITFC (Columbia River Intertribal Fish Commission). 1995. Wy-Kan-Ush-Mi Wa-Kish-Wit, Spirit of the Salmon. The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs and Yakama Tribes. CRITFC, Portland, Oregon.
<input type="checkbox"/>	Cuenco, M.L., T.W.H. Backman, and P.R. Mundy. 1993. The use of supplementation to aid in natural stock restoration. In, Genetic Conservation of Salmonid Fishes, J.G., Cloud and G.H. Thorgaard, eds. Plenum Press, New York.
<input type="checkbox"/>	Currens, K., J. Lannan, B. Riddell, D. Tave, and C. Wood. 1996. Responses of the Independent Science Panel to questions about the interpretation of genetic data for spring chinook in the Grande Ronde basin. US v. OR Dispute Resolution Document.
<input type="checkbox"/>	Gross, M.R. 1985. Disruptive selection for alternative life histories in salmon. Nature (London) 313:47-48.
<input type="checkbox"/>	IHOT (Integrated Hatchery Operations Team). 1995. Policies and Procedures from Columbia River Basin Anadromous Salmonid Hatcheries. Bonneville Power Administration Report 92-043. Portland, OR.
<input type="checkbox"/>	Montgomery Watson. 1995a. Northeast Oregon Hatchery Project Conceptual Design Final Report. Bonneville Power Administration, Portland, OR.
<input type="checkbox"/>	Montgomery Watson. 1995b. Northeast Oregon Hatchery Project Final Siting Report. Bonneville Power Administration, Portland, OR.
<input type="checkbox"/>	Montgomery Watson. 1997a. NEOH - Captive Broodstock Satellites Design - 30% Design Technical Memorandum. Bonneville Power Administration, Portland, OR.
<input type="checkbox"/>	Montgomery Watson. 1997b. NEOH - Captive Broodstock Satellites Design - 90% Design Technical Memorandum. Bonneville Power Administration, Portland, OR.
<input type="checkbox"/>	Montgomery Watson. 1998. NEOH - Captive Broodstock Satellites Design -100% Design Technical Memorandum. Bonneville Power Administration, Portland, OR.
<input type="checkbox"/>	NMFS (National Marine Fisheries Service). 1995. Snake River Salmon Recovery Plan. National Marine Fisheries Service, Portland, OR.
<input type="checkbox"/>	NMFS (National Marine Fisheries Service). 1998. Draft Biological Opinion on Issuance of Section 10 Direct Take Permit for Artificial Propagation of Grande Ronde River Endemic Spring Chinook. National Marine Fisheries Service, Portland, OR.
<input type="checkbox"/>	Neeley, D., K. Witty, and S.P. Cramer. 1994. Genetic Risk Assessment of the Grande Ronde River Master Plan, Nez Perce Tribe, Lapwai, ID.
<input type="checkbox"/>	NPPC (Northwest Power Planning Council). 1994. Columbia River Basin Fish and Wildlife Program. Northwest Power Planning Council. Portland, OR.
<input type="checkbox"/>	ODFW (Oregon Department of Fish and Wildlife). 1996. Application for an emergency permit for scientific purposes and to enhance the propagation or survival of endangered Grande Ronde River Basin spring chinook under the Endangered Species Act.
<input type="checkbox"/>	ODFW (Oregon Department of Fish and Wildlife). 1998. Application request for modification of Permit 1011 ... endangered Grande Ronde River Basin spring chinook under the Endangered Species Act.
<input type="checkbox"/>	Oregon Department of Fish and Wildlife, Nez Perce Tribe and Confederated Tribes of the Umatilla Indian Reservation. 1990. Grande Ronde River Subbasin Salmon and Steelhead

	Plan. Columbia Basin System Planning. NPPC, Portland, OR.
<input checked="" type="checkbox"/>	R2 Resource Consultants. 1998. Lostine River instream flow study. Final Report. Prepared for the Nez Perce Tribe and ODFW. Redmond, WA.
<input type="checkbox"/>	RASP (Regional Assessment of Supplementation Project). 1992. Supplementation in the Columbia Basin. Part I - IV. RASP Summary Report Series. Bonneville Power Administration, Portland, OR.
<input type="checkbox"/>	Reiser, D.W. and T.C. Bjornn. 1991. Habitat requirements of anadromous salmonids. U.S. Forest Service, Technical Report. PNW-96. 54pp.
<input type="checkbox"/>	Smith, E.M., B.A. Miller, J.D. Rodgers, and M.A. Buckman. 1985. Outplanting anadromous salmonids - a literature survey. Bonneville Power Administration, U.S. Department of Energy, Project 85-68, Portland, Oregon.
<input type="checkbox"/>	Smith, S.G., J.R. Skalksi, J.W. Schlechte, A. Hoffmann and V. Cassen. 1994. Statistical survival analysis of fish and wildlife tagging studies. Report to Bonneville Power Administration. Contract DE-B179-90BP02341, Project 89-107. 268 p.
<input type="checkbox"/>	SRSRT (Snake River Salmon Recovery Team). 1994. Final recommendations to the National Marine Fisheries Service, Portland, Oregon.
<input type="checkbox"/>	Wallowa County and Nez Perce Tribe. 1993. Wallowa County-Nez Perce Tribe Salmon Recovery Plan. Nez Perce Tribe, Lapwai, ID.
<input type="checkbox"/>	Waples, R.S. 1995. Toward a Risk/Benefit Analysis for Salmon Supplementation. NOAA. NMFS/NWFSC. Seattle, WA.

PART II - NARRATIVE

Section 7. Abstract

This project proposal is for activities involving the 1) operation and maintenance of adult collection and juvenile acclimation and release facilities and 2) monitoring and evaluation of a spring chinook supplementation program on the Lostine River. These activities are an integral component of the Grande Ronde Basin Endemic Spring Chinook Supplementation Program (GRESP) which is a cooperative project between the NPT, ODFW, CTUIR, and USFWS. This program was initiated in 1994 as a conservation measure in response to severely declining runs of chinook salmon in the Grande Ronde Basin. The GRESP utilizes supplementation with conventional and captive brood production to prevent extirpation and begin rebuilding of ESA listed spring chinook. This proposal is an integral part of achieving the overall **goal** of the GRESP, “to prevent extinction, provide a future basis to reverse the decline in stock abundance, and ensure a high probability of population persistence”.

In 1997 and 1998, we operated the adult weir facility for the collection of broodstock and baseline data on adult escapement to the Lostine River prior to supplementation. In April 1999, we will release 12,000 conventionally produced smolts from the acclimation facility (the first artificially produced endemic Grande Ronde spring chinook) and will release F₁ captive brood produced smolts in 2000. The monitoring and evaluation program will assess life history traits, genetics, population abundance and status, environmental variables, smolt migration and in-hatchery performance of naturally and artificially produced fish.

Section 8. Project description

a. Technical and/or scientific background

The Grande Ronde River, tributary to the Snake River, is located in Northeast Oregon. Historically, the Grande Ronde River supported large runs of spring chinook salmon, but present escapement levels and recent trends indicate that Grande Ronde basin spring chinook are in imminent danger of extinction. Progeny-to-parent ratios have been below 1.0 (replacement) for the past eight completed broodyears (Carmichael et al. 1998). In response, the NMFS draft recovery plan states, “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” and “considering the critical low abundance of Grande Ronde spring chinook salmon, impacts to listed fish should be avoided and Lookingglass Hatchery should be operated to prevent extinction of local populations.”

In 1994, fisheries co-managers, ODFW, NPT, CTUIR, and USFWS implemented the Grande Ronde Basin Endemic Spring Chinook Supplementation Program in the Lostine River, Catherine Creek and the upper Grande Ronde River. The goal of this program is to prevent extinction of spring chinook in the three tributaries, provide a future basis to reverse the decline in stock abundance, and ensure a high probability of population persistence. The GRESP proposes to increase the survival of spring chinook salmon in the Grande Ronde River by increasing egg to smolt survival through hatchery incubation and rearing (80% survival as compared to 12% survival for wild/natural). An increase in adult returns and natural spawners would likewise increase the number of listed offspring. Artificial propagation under this program utilizes conventional and captive broodstock sources. Alternative actions considered by co-managers and the NEPA process to restore and rebuild Grande Ronde River spring chinook included: 1) restoration of Snake and Columbia River mainstem habitat and passage (dam removal/breaching) and 2) supplementation with Rapid River (non-native) hatchery stock.

The NPT is primarily responsible for operating supplementation facilities (adult collection and holding and juvenile acclimation and release) on the Lostine River, while the CTUIR is responsible for operating supplementation facilities on the upper Grande Ronde River and Catherine Creek. ODFW is responsible, in coordination with the Tribes, NMFS, and USFWS for production and activities occurring at Lookingglass SFH, Irrigon SFH, Bonneville SFH, and Manchester Marine Laboratory.

In addition to the potential benefits, the co-managers acknowledge that supplementation programs also have potential risks associated with them (Cuenco et al. 1993, Waples 1995). A comprehensive monitoring and evaluation program to assess effectiveness and provide information to manage associated risks of the supplementation program is an integral part of the GRESP. The Nez Perce Tribe, in coordination with ODFW is responsible for monitoring and evaluation of activities in the Lostine River.

b. Rationale and significance to Regional Programs

The Grande Ronde Endemic Spring Chinook Supplementation Program is based on recommendations of an Independent Scientific Panel (Currens et al. 1996) which was convened under the *U.S. v. Oregon* dispute resolution process to review the Grande Ronde spring chinook status and hatchery program and make recommendations on the most appropriate course of action. Additionally, this program has undergone intense scrutiny and review through the NMFS ESA Section 10 Application process and an Independent Scientific Review through the NPPC 3-Step Process.

The facilities and activities associated with the GRESP have been authorized under ESA Section 10 and Section 7 Permits and Biological Opinions. These documents include ESA Section 10 Permit No. 973, Permit No. 1011 (ODFW 1996), Modification of Permit No. 1011 and Permit No. 1164, FWS Section 7 Biological Opinion 501.1100,1-4-98-F4 (bull trout), ESA Section 10 Applications (ODFW 1998, BIA 1998), and NMFS Section 10 Biological Opinion (1998).

Production occurring under the GRESP is completely integrated with the Lower Snake River Compensation Plan (LSRCP) Program. Lookingglass Hatchery is the central facility for incubation and

rearing of spring chinook salmon smolts that are acclimated and released in the satellite facilities described in this proposal. Production under this proposal is in-kind, in-place mitigation.

The Lostine component of the GRESP relates to many of the Columbia Basin Fish and Wildlife Program (FWP) objectives and measures (NPPC 1994). Measure 7.2D.1, encourages incorporating effective husbandry practices and Measure 7.2D.3 includes the investigation of hatchery rearing operations and release strategies to improve survival of propagated fish. In addition, this project furthers development of FWP Measure 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). The monitoring and evaluation research outlined in this proposal is consistent with FWP Measure 7.1C (baseline data collection from naturally spawning populations), Measure 7.2A.6 which stresses the need for evaluating the genetic and ecological impacts of outplanting hatchery fish on wild populations, Measure 7.4L.1, which mandates evaluation of supplementation projects to increase production, and which Furthermore. Finally, Measure 7.4D.3 encourages the study of hatchery rearing and release strategies to improve survival and adaptation of cultured fish.

Additionally, this project relates to the Snake River Recovery Plan (NMFS 1995): 4.1.b, 4.4c. A...develop and implement management plans for Snake River spring/summer chinook salmon conservation hatchery programs..." and "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". The Recovery Plan also calls for genetic studies, evaluations of release strategies, and the development of smolt quality indices, all of which should accompany supplementation projects. These recommendations are addressed in the monitoring and evaluation objectives outlined in this proposal

Wy-Kan-Ush-Mi Wa-Kish-Wit (CRITFC 1995) recommends, "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."

c. Relationships to other projects

The GRESP is a cooperative project between NPT, ODFW, CTUIR, and USFWS composed of several different BPA contracts with each participating entity.

- Funding for development of new facilities in the Grande Ronde subbasin to implement the GRESP are through: 8805301 - Northeast Oregon Hatchery (NPT), 8805303 - Northeast Oregon Hatchery (CTUIR), and 8805305 - Northeast Oregon Hatchery (ODFW).
- Funding for operation and maintenance of Grande Ronde subbasin adult collection and juvenile acclimate and release facilities are through: 9800702 - Grande Ronde Supplementation (NPT) and 9800703 - Grande Ronde Supplementation (CTUIR).
- Funding for operation and maintenance of the captive broodstock production is through 9801001 - Grande Ronde Captive Broodstock O&M, M&E, Fish Health Monitoring (ODFW).
- Funding for cryopreservation, storage and reconstitution of semen utilized in the program is through: 9703800 - Listed Stock Gamete Preservation (NPT).
- Funding for monitoring and evaluation of the GRESP is through: 9801006 - Captive Broodstock Artificial Propagation (NPT), 9202604 - Early Life History of Spring Chinook Salmon in the Grande Ronde Basin (ODFW), 9800702, 9800703, and 9801001.

The Lower Snake River Compensation Plan program directly effects the success of the GRESP by providing the facilities, equipment, and personnel to facilitate production, evaluations, and fish health monitoring.

This project provides information to the following monitoring and evaluation projects funded under the Columbia River Basin Fish and Wildlife Program: 8712700 - Smolt Monitoring by Non-Federal Entities, 8909600 – Genetic Monitoring and Evaluation of Snake River Salmon and Steelhead.

Habitat improvement projects funded under the Columbia River Basin Fish and Wildlife Program that will enhance survival of spring chinook salmon associated with this proposal are: 5507000 - Grande Ronde Subbasin Watershed Restoration (CTUIR), 9402700 – Grande Ronde Model Watershed Habitat Projects (GRMWP), 9702500 - Wallowa County/NPT Salmon Habitat Recovery (NPT), 9800702 Grande Ronde Supplementation - O&M/M&E, and 8402500 - Grande Ronde Habitat Enhancement (ODFW).

d. Project history (for ongoing projects)

Until 1998, the NPT portion of this project was funded under NEOH Master Plan, project 8805301, which developed planning and design documents for adult trapping and juvenile acclimation facilities. Operation of the adult trapping facility in 1997 also occurred under 8805301.

Major Results Achieved

1997

Preliminary planning and design and environmental assessment (NEPA) documents were completed for the adult trapping/holding and juvenile acclimation/release facilities. Land acquisition agreements were also obtained for the trapping facility site. We operated the Lostine River adult weir/trap facility from July to October and captured a total of 27 adult spring. Daily monitoring of potential impacts of the weir on spring chinook or other fish species coincided with its operation. Seven of the adults collected were selected as broodstock and transported to Lookingglass Hatchery for spawning. The resultant production is approximately 12,000 smolts that will be acclimated and released from the Lostine juvenile facility in April 1999.

1998

Planning, design and the NEPA process for the collection and release facilities were completed. The project was then evaluated by an Independent Science Review through the Northwest Power Planning Council's 3-Step Review Process. The NPPC approved funding for the construction of the facilities in June. Land acquisition agreements for the acclimation facility site and access road were accomplished through the BPA Lands Division. A comprehensive management plan was developed by the NPT and ODFW for the Lostine River which integrated conventional and captivebrood production. An ESA Section 10 Permit Application was submitted to NMFS in April that reflected the management plan and requested authorization to operate the collection and release facilities described in this proposal. We operated the adult weir from June to October and captured a total of 23 adult spring chinook. Broodstock collected for conventional production were returned to the Lostine River to spawn naturally due to fish health concerns at Lookingglass Hatchery.

In 1998, the Lostine River monitoring and evaluation project leader and a fisheries biologist were hired and stationed at the Enterprise Field Office (Oregon). We conducted monitoring of the weir during its operation in 1998. We also conducted spawning ground surveys with co-managers and PIT tagged five thousand of the Lostine spring chinook parr (brood year 97) at Lookingglass Hatchery for migration and survival studies. We are currently analyzing environmental and biological data collected during the field season.

Reports and Technical Papers

- 1) Section 10 ESA Application Permit – Lothrop 1998
- 2) 1997 Annual Report, Lostine River Supplementation – Ashe et al. in prep.
- 3) Preliminary Environmental Assessment – BPA 1997

- 4) Final Environmental Assessment – BPA 1998
- 5) 30% Design Memorandum – Montgomery Watson 1997a
- 6) 90% Design Memorandum – Montgomery Watson 1997b
- 7) 100% Design Memorandum – Montgomery Watson 1998

Adaptive Management Implications

Production for this project can be either conventional, captive broodstock or both depending on management decisions made by the co-managers. The co-managers have attempted to design a program that will use conventional and captive production to increase numbers of natural spawners at low levels of abundance and produce a balance between natural and hatchery production at higher levels of natural spawner abundance. This will be accomplished through the use of a broodstock management tool called the “sliding scale”. This sliding scale is detailed and discussed in the Section 10 Permit Applications (Dehart 1998 and Lothrop 1998).

Years underway

Two (2) years.

Past Costs

Planning, design and construction costs for adult trapping/holding and juvenile acclimation/release on the Lostine River will be approximately \$750,000 when completed. In 2000, the adult trapping facility will be in its fourth year of operation. Construction began on the juvenile acclimation facility in December 1998 and we anticipate moving the first endemic spring chinook smolts ever released in the Grande Ronde basin into the facility March 1999 for release in April 1999. FY 1998 annual operation/maintenance and monitoring and evaluation costs were \$327,125.

e. Proposal objectives

O&M Goal: Operate and maintain adult collection and juvenile acclimation and release facilities necessary to implement the Lostine River portion of the Grande Ronde Endemic Spring Chinook Salmon Supplementation Program and achieve the overall program goal of increasing adult returns.

M&E Goal: To establish baseline information on the Lostine River spring chinook salmon population prior to supplementation and to monitor and evaluate the effectiveness of supplementation under the Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program.

Objective 1: Coordinate and continue development of Grande Ronde Endemic Spring Chinook Supplementation Program.

Objective 2: Operate and maintain a portable weir/trap facility on the Lostine River to collect spring chinook.

Objective 3: Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River. *Measurable*

Null Hypothesis 1: The operation of the Lostine weir does not significantly impede the upstream migration of spring chinook salmon.

Null Hypothesis 2: The operation of the Lostine weir does not significantly impede the movement of resident and other anadromous fish.

Objective 4: Collect and analyze baseline information on abundance, genetic and life history characteristics of the Lostine River spring chinook salmon prior to supplementation. *Measurable*

Null Hypothesis 1: Implementation of Grande Ronde Basin supplementation has not significantly increased natural spring chinook production in the Lostine River.

Null Hypothesis 2: Implementation of Grande Ronde Basin supplementation has not significantly altered the life history characteristics of natural spring chinook salmon in the Lostine River.

Null Hypothesis 3: Implementation of Grande Ronde Basin supplementation has not significantly altered the genetic diversity and composition of natural spring chinook salmon in the Lostine River.

Objective 5: Operate and maintain a juvenile acclimation and release facility on the Lostine River.

Objective 6: Monitor and evaluate conventional and captive broodstock smolt production. *Measurable*
Null Hypothesis 1: Smolt-to-adult survival is not significantly different among conventional and captive brood smolts.

Null Hypothesis 2: Smolt-to-adult survival is not significantly different among release years.

Null Hypothesis 3: Smolt-to-adult survival is not significantly different among acclimated release strategies.

Null Hypothesis 4: Smolt size does not significantly affect downstream survival.

Objective 7: Establish baseline information on environmental conditions in the Lostine River, with special attention to smolt emigration and adult spawning migration periods. *Measurable*

Null Hypothesis 1: Migration timing is not significantly correlated with the temperature profile of the Lostine River.

Null Hypothesis 2: Migration timing is not significantly correlated with the discharge profile of the Lostine River.

Objective 8: Transfer of technology.

f. Methods

Objective 1: Coordinate and develop Grande Ronde Endemic Spring Chinook Supplementation Program.

The GRESP was developed cooperatively by the fisheries co-managers, the Nez Perce Tribe, Oregon Department of Fish and Wildlife and the Confederated Tribes of the Umatilla Indian Reservation. All activities involving the GRESP (operation and monitoring and evaluation), i.e, spawning ground surveys, adult trapping, spawning, incubation, juvenile rearing, juvenile tagging and marking, and smolt release will be coordinated among the co-managers. Documents cooperatively prepared describing program operations include: ESA Section 10 permit applications (ODFW 1996, ODFW 1998, BIA 1998) and LSRCPC Annual Operating Plans (AOP). Forums that the co-managers participate in to coordinate operations are LSRCPC Evaluation Coordination Committee, Columbia Basin Fish and Wildlife Authority, Conservation Planning Oversight Committee, Captive/Conventional Broodstock Technical Oversight Team, and the U.S. v. Oregon Production and Policy Committees. All activities are permitted under the ESA Section 10 Permit process. Funding and program oversight is through BPA. Other entities involved in the project include USFWS, NMFS, NPPC, CBFWA. Coordination also occurs with landowners leasing property for facilities and cultural resource, construction and engineer consultants involved in developing and operating the adult and juvenile facilities.

- Coordinate production and M&E planning (adult collection, spawning, incubation, rearing, acclimation and release of progeny) for Lostine River broodstock.
- Cooperatively develop appropriate permit applications and biological assessments for implementation of the GRESP.
- Coordinate with private landowners for operation and maintenance of adult and juvenile facilities.
- Coordinate with cultural resource, construction and engineer consultants for operation and maintenance of adult and juvenile facilities.
- Coordinate with other co-managers, regarding relevant management issues, through *U.S. v. Oregon* Production Advisory Committee and Technical Advisory Committee forums.
- Consult with NMFS regarding the consistency of various aspects of this project with regard to recovery planning for chinook salmon in the Grande Ronde subbasin.
- Participate in the production planning and facility development to provide physical requirements for monitoring and evaluation tasks.

- Coordinate research planning and activities with Oregon Department of Fish and Wildlife (spawning ground surveys, emigrant trapping, PIT tagging, and captive and conventional brood evaluations).
- Facilitate the use of collected data with co-managers.
- Develop proposals, work statements and budgets for operation of Lostine facilities and monitoring and evaluation of program.

Objective 2: Operate and maintain a portable weir/trap facility on the Lostine River to collect spring chinook adults.

A portable weir and trap unit consisting of tripods, picket panels and an adjustable trap/holding box installed approximately one mile upstream from the mouth of the Lostine River will be utilized to collect adult spring chinook salmon. The weir and trap will be assembled in May or June, dependent upon river flow, and operated continuously until September 30. Protocols for operation of the Lostine River trapping facility will follow basic adult trapping and handling procedures consistent with IHOT guidelines (1995) and the LSRCP Annual Operating Plan. The weir/trap will be monitored 24 hr a day and routinely checked for accumulation of debris and proper operation. Design of the weir allows for unimpeded upstream and downstream movement of juvenile fish. As well as controlled movement of adult sized fish.

Captured adults will be sampled at least daily. Adults selected for broodstock will be transferred to a transportation vehicle and transported to Lookingglass Hatchery. Adults for natural spawning will be released upstream of the weir following recovery from anesthetic. Only a portion of adults of natural or conventional hatchery origin from across the run will be retained for broodstock. All captive broodstock origin adults will be released to spawn naturally. The level of take or number of adults necessary to implement the conventional production component is based on a sliding scale developed by the co-managers (ODFW 1998 and BIA 1998). The goal is 110 adults with the minimum being six (6). If the minimum is not achieved by August 10, we will transport the adults that have been collected back to the Lostine River and release them to spawn naturally.

Objective 3: Monitor and evaluate operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River.

The weir facility is a monitoring tool for biological data as well as a method for broodstock collection. The aluminum picket-style weir guides fish to the trap at a 45° angle. Pickets are spaced to allow juvenile passage. A monitoring and evaluation plan for the weir and trap was developed to assess potential impacts on adult fish passage. Daily monitoring of the facility coincides with its operation.

- Monitor upstream and downstream of the weir in regular intervals by snorkeling and stream side surveys to determine the presence and species composition of fish on both sides of the weir. Special attention will be given to monitoring whether spring chinook spawning migration is impeded
- Determine the number of chinook redds and fish in the stream reach below the weir and compare with historical records.
- Determine if the up and downstream movement of adult steelhead and bull trout is impeded by the presence of the weir by snorkeling between the weir and the mouth and the weir and Baker Road at night during weir operation.

Objective 4: Collect and analyze baseline information on abundance, genetic and life history characteristics of the Lostine River spring chinook salmon prior to supplementation.

If a supplementation program is to be successful, the phenotypes and the underlying genetic characteristics of hatchery fish should mimic those of the locally adapted wild chinook. It is through life history traits and genetic variability that salmon populations are able to exploit unique habitats (Gross 1985). Therefore, the Nez Perce Tribe will monitor both genetic and life history diversity in the wild population prior to supplementation. Once this diversity is measured it will be used as a performance standard against which hatchery fish will be compared. Accurate estimates of abundance are also needed to assess whether the population is responding to supplementation. Abundance will be indexed by adult escapement and estimated via redd counts and enumeration at the weir.

- Utilize data collected from the operation of the portable weir/trap facility during spawning migration to assess adult returns.
- Collect run timing information from adults trapped.
- Collect mark, length, sex, and spawning maturation information from adults trapped and opercle punch all adults released upstream of the weir.
- Collect life history characteristics, and migration information on steelhead and bull trout incidentally captured at the weir.
- Collect baseline genetic samples from adults collected and passed at the weir, from carcasses, and juvenile production in the hatchery that complements ongoing genetic monitoring programs.
- Conduct intensive multiple spawning ground surveys to bracket spawning timing, enumerate redds, live fish, and carcasses and to determine relative abundance of spawners.
- Collect length, sex, scales, determine percent spawned and record marks on all carcasses. Collect snouts from CWT tagged adults.
- Analyze scale samples collected from carcasses recovered during spawning ground surveys in order to determine age and origin (hatchery or natural).
- Determine hatchery to wild fish ratios based on marked and unmarked carcass recoveries.
- Determine total escapement above the weir based on number of adults released above the weir and mark to unmarked ratios.
- Calculate the fish per redd ratio above the weir.

Objective 5: Operate and maintain a juvenile acclimation and release facility on the Lostine River.

The Lostine River acclimation facility is located approximately twelve miles upstream from the mouth. Facility capacity is approximately 200,000 fish at 20 fish/lb. The facility consists of a water supply intake, supply pipeline, four raceways, and drain/release pipes. Water will be pumped from the Lostine River into the facility. The intakes are provided with stoplog slots and fish screens, which are designed to provide up to 1.9 cfs with a maximum approach velocity of 0.4 fps (consistent with NMFS protocols). The raceways are constructed of steel and are 8 ft. wide by 80 ft. long, 4.5 ft. high with a 3.5 ft. water depth. The raceways are fabricated in 20 foot sections and joints are flanged with a rubber gasket to minimize leakage. This facility has the potential to be portable if necessary. Protocols for operation of the Lostine River acclimation facility will follow basic juvenile acclimation procedures consistent with IHOT guidelines (1995) and the LSRCF Annual Operating Plan. The facility will be staffed 24 hr a day during the four to six week acclimation period. If the combined production of captive and conventional smolts exceeds the capacity of the acclimation facility we will acclimate smolts at two different times or consider direct stream release of a portion of the smolts. Fish will be released volitionally during nighttime hours.

Objective 6: Monitor and evaluate conventional and captive broodstock smolt production.

Monitoring of salmon hatchery production reared under the conventional and captive broodstock programs allows for comparison across years. Collection of biological data during the rearing process assists proper evaluation of the hatchery product used in supplementation. An identifying group mark is required of hatchery fish by *US vs Oregon*. Mark type will be coordinated by co-managers to ensure compatibility with other programs. Rearing and release strategies can then be evaluated according to smolt emigration survival and adult return.

- Estimate marking efficiencies/retention rates prior to release.
- Estimate survival of smolt releases to Lower Granite, Little Goose, Lower Monumental, and McNary dams using the SURPH.1 model.
- Determine smolt size influence on downstream survival.
- Compare acclimation release strategies for smolt-to-adult survival.

Objective 7: Collect baseline information on environmental conditions in the Lostine River.

Chinook population status and production potential should be evaluated with respect to environmental parameters in the watershed. Habitat, specifically adult passage, in the Lostine River has been adversely impacted by irrigation diversions and channelization (R2 Resource Consultants 1998). Therefore, we will compile historical and contemporary hydrological data pertinent to salmon passage. In addition, water temperature effects on salmon physiology, growth and survival are also well documented (Reiser and Bjornn 1979). Temperature profiles will be developed to determine when or if thermal regimes exceed chinook tolerance limits. Both temperature and flow will be correlated with smolt and adult migration timing.

- Monitor a constant recording thermograph to collect water temperature information near the adult trapping facility and smolt acclimation and release facility.
- Monitor staff gauge to determine water flows near the adult trapping facility and smolt acclimation and release facility.
- Collect on-line stream discharge information.

Objective 8: Technology Transfer

Communication of results is essential for practical adaptive management in the Grande Ronde basin. Information shared between co-managers from our respective monitoring and evaluation activities increases our collective knowledge of supplementation and the effectiveness of salmon management in the Lostine River.

- Prepare and provide quarterly reports summarizing activities accomplished. Reports will be submitted 15 days after the end of the quarter.
- Compile, analyze and present results in annual report summarizing all activities associated with the Lostine River spring chinook supplementation project and compare to similar supplementation work proceeding in the Columbia River basin (Idaho Supplementation Studies, LSRCP, NPTH).
- Present reports on project activities and findings at Annual BPA/CBFWA Project Review and other forums (i.e., AFS, NAFWS, LSRCP Annual Review).

Critical assumptions: We assume that limiting factors affecting survival of Snake River chinook salmon will be addressed in the near future. Our efforts will be negated if improvements in smolt-to-adult survival to allow net replacement are not forthcoming.

Justification of Sample Sizes: Sample size requirements for determining survival to Lower Granite and McNary dams are estimated using the SURPH.1 SAMPLE_SIZE program (Smith et al. 1994). Using observed survival and detection probability rates from recent hatchery releases estimated minimum release groups of 800 (Lower Granite Dam) to 7500 (McNary Dam) smolts will be required. Sample sizes to obtain juvenile life history data are based on obtaining 50 individual observations at Lower Granite Dam.

Expected Results: When fully implemented, the conventional and captive components are expected to return 250 adults per tributary (250,000 - 300,000 smolts). When anticipated increased survival rates are realized, the conventional component is expected to provide a majority of this production. The first adult returns from artificial production are expected in 2001. Anticipated results from this production are: an increase in the native spring chinook population, decreased demographic risk, comparable smolt-to-adult survival rates in hatchery and natural production fish, maintenance of life history characteristics and minimal interaction of supplementation fish with resident fish. We anticipate the monitoring and evaluation component of this program will give an accurate assessment of supplementation in the Lostine River, its effects, and information which will refine our approach to the supplementation program through adaptive management.

Potential Risks: Potential risks associated with any supplementation project 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; and change in the age composition of the spawning cohort. We also acknowledge that some uncertainty exists in terms of the application of supplementation for the purpose of preserving threatened chinook salmon. Some of the uncertainties include: ability of

supplementation to increase natural production; potential domestication effects; and genetic effects to both the artificially propagated population and the natural population once hatchery adults return to spawn.

g. Facilities and equipment

Lostine Adult Trapping Facility

The portable, picket style weir/trap is located on the Lostine River about a mile upstream from the mouth. It spans approximately 200 feet, is constructed of aluminum and steel, and is installed at a 45 degree angle to stream flow. It was designed, engineered, and constructed by River Masters Engineers and Montgomery Watson to ensure optimal fish passage performance. The weir/trap requires 24-hour monitoring by NPT personnel. To facilitate this a travel trailer and three GSA fleet pick-ups are necessary.

Fish Transport

The transport of the adults retained for broodstock is facilitated by ODFW equipment and personnel from Lookingglass Hatchery which is 75 miles from the site. To accomplish this, fish are held in the trap for three to four hours while the transport vehicles are dispatched. The transport trucks are shared with ODFW and CTUIR programs. Currently there is no design for water to water transport into Lookingglass Hatchery holding facilities which necessitates additional net handling of the adults. Purchase of adult/juvenile transportation vehicle and tanks is requested in this proposal.

Lostine Juvenile Acclimation Facility

Spring chinook smolts will be transported back to the Lostine River to the acclimation facility for final rearing and release. The acclimation facilities are scheduled for construction in 1998. When these facilities are in operation they will be staffed 24-hours a day by NPT personnel. To facilitate this a travel trailer and GSA fleet pick-ups will be available.

Monitoring and Evaluation

The M&E component utilizes administrative office space at the Enterprise Field Office (Oregon). The weir and trap allow for the collection and evaluation of adult salmon returning to the Lostine River. A PIT tagging station is necessary for the smolt tagging process. Two microcomputers are dedicated in part to the project's data needs. The project leases a GSA vehicle suitable for project activities. A fenced compound is available for parking of vehicles and equipment storage.

h. Budget

Personnel – To operate and maintain the trapping and release facilities and the monitoring and evaluation program requires 1 FTE biologist, 0.75 FTE hatchery manager, 2 FTE fish culture technicians, 1 FTE M&E technician, and 2 part time (1FTE) fish aides. Administrative support is necessary from the program director, contract administrator and program coordinator.

Fringe benefits – Fringe benefits are provided to full time employees at 24% and to non-taxable employees at 14%.

Operations and Maintenance – This category includes office rent, telephone expenses, equipment maintenance, office supply items, costs for port-a-potty service, propane gas, generator service, etc.

Capitol Acquisitions or Improvements - We are requesting the purchase of a \$15,000 fish transport truck to transport adults to Lookingglass Hatchery and juveniles from Lookingglass to the Lostine acclimation facility. Currently transport of fish retained for broodstock is facilitated by ODFW. Equipment and personnel from Lookingglass Hatchery is utilized which is 75 miles from the site. To accomplish this, fish are held in the trap for three to four hours while the transport vehicles are dispatched. The transport trucks are shared with ODFW and CTUIR programs and were not designed for water to water transport into LGSFH holding facilities which necessitates additional net handling of the adults.

PIT tags – PIT tags will be utilized to evaluate smolt to adult survival of supplementation juveniles released in the Lostine River.

Travel – This expense is for GSA related expenses for four project vehicles. It also includes per diem for employees during field season as well as funds for personnel to attend meetings, conferences and training.

Indirect costs – The Nez Perce Tribe indirect rate is 22.9%.

Subcontractor – A subcontractor is necessary for genetic analysis of fish tissue samples collected from adults and juveniles.

Section 9. Key personnel

Becky Ashe, Production Project Leader (0.04 FTE)

Nez Perce Tribe Department Fisheries Resource Management, Lapwai, ID office
General management, operations, and coordination.

EDUCATION:

M.S. in Biology with Fisheries emphasis, Eastern Washington University, 1991
B.S. in Biology, EWU, 1989

PROFESSIONAL EXPERIENCE:

- Project Leader, Nez Perce Tribe, Lapwai, ID, Jan. 1997 - Present
Northeast Oregon Hatchery Master Plan
Lostine Supplementation Project
Imnaha Steelhead Supplementation
- Project Leader, Nez Perce Tribe, Lapwai, ID, April 1997 - Present
Grande Ronde River Supplementation Project - Lostine River
- Project Leader, Nez Perce Tribe, Lapwai, ID, May 1994 - Present
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.

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.

RECENT PUBLICATIONS:

Primary Author:

- In prep. Master Plan for Imnaha and Lostine River Spring Chinook Salmon. Bonneville Power Administration, Portland, OR. (Nez Perce Tribe). 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, R.E. Larson, G.W. Walker, and D.B. Johnson.)
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., A.C. Miller, P.A. Kucera, M.L. Blenden).

James R. Harbeck, M&E Project Leader (0.5 FTE)

EDUCATION:

M.S. in Fisheries, Michigan State University, 1998
B.A. in Aquatic Biology, Grand Valley State University, 1994
EMS in Emergency Medical Technology, Davenport College, 1983

DUTIES:

Project implementation for the Lostine River monitoring and evaluation component of the Grand Ronde Basin Supplementation project. Specific duties include coordinating captive brood and conventional M&E

activities with ODFW, the collection and analysis of data associated with the programs, representing the Nez Perce Tribe in meetings with co-managers, personnel supervision, and proposal development.

PROFESSIONAL EXPERIENCE:

- Fisheries Biologist, Nez Perce Tribe – 7/98 to Present
Captive Broodstock Project Leader
Lostine River Monitoring and Evaluation Project Leader
- Research Assistant, MSU Department of Fisheries and Wildlife — 1995 -1998
Primary investigator for a steelhead trout evaluation study
Estimated the wild and hatchery composition and determined life history characteristics
- Fisheries Creel Clerk, MDNR Fisheries Division – 1994-1995
Collected biological and sociological data from commercial and recreational catch
Evaluated instream habitat structures
- Fisheries Aide, District 9, MDNR Fisheries Division – 1993-1995
Conducted lake and stream assessments and surveys
Assisted in stream rehabilitation projects
- Environmental Consultant, Applied Ecology Group – 1993
Collected and identified aquatic invertebrates
Conducted literature searches for research projects

SKILLS:

Fish Sampling: electrofishing (backpack, stream barge shocker, and boat units), trap netting, seining, fyke netting, gill netting, minnow traps, hook & line, snorkel surveys, temporary weir and trap, boat handling, and commercial and recreational creel sampling. *Population Dynamics:* fish identification, Peterson mark-and-recapture and DeLury removal methods, spawning ground surveys, Catch-at-Age analysis, and growth relationships. *Life History Evaluation:* scale pattern analysis (age composition, origin, and smolt size influence), radio telemetry, and bio-data interpretation. *Habitat Evaluation:* riparian and instream scoring, stream rehabilitation, and macroinvertebrate indices (collection, identification and interpretation). *Fish Culture:* salmonid and percid spawning, fish outplanting. *Computer Proficiency:* OPTIMAS (image-processing software), DISBCAL(back-calculation and regression statistics), MS Word, WordPerfect, Excel, and Powerpoint.

Rick Zollman, NEOH Assistant Project Leader (0.75 FTE)

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

EDUCATION:

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

DUTIES:

Manager of facility operation and maintenance, production and monitoring and evaluation coordination.

PROFESSIONAL EXPERIENCE:

- Acting Manager, Eagle Creek National Fish Hatchery,USFWS, 1993-1996
- Acting Assistant Manager, Eagle Creek National Fish Hatchery, USFWS, 1990-1993
- Work Leader, Eagle Creek National Fish Hatchery, USFWS, 1987-1990
- Fish Culturist, Eagle Creek/Dworshak National Fish Hatchery, USFWS, 1981 - 1987

SKILLS:

Management and operation of major anadromous hatchery program (2.5 million smolts), associated structures, and basin co-management. Experience with all life stages of culturing spring chinook salmon, coho salmon, and winter steelhead. 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. Experience with communication and coordination involving 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:

USFWS Special Achievement Award, several Quality Performance Awards, and Fish Culturist of the Year in 1987.

R. Glenn Szerlong, Fisheries Biologist (0.5 FTE)

EDUCATION:

B.Sc. (1996), Fisheries Biology; Colorado State University; Department of Fisheries and Wildlife Biology
Honors: Dale Hein award for outstanding performance, dean's list

DUTIES:

Assist in the monitoring and evaluation of the Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program.

PROFESSIONAL EXPERIENCE:

- **Nez Perce Tribal Fisheries; Research Department, 4/98-Present**
Title: Lower Snake River Compensation Plan Fisheries Biologist
Duties: Monitor smolt emigration in the Imnaha River, monitor Lostine River captive broodstock for Grande Ronde Basin Endemic Broodstock Program, monitor and report operations of Lostine River Adult weir/trap, monitor and evaluate NPT Lostine River conventional hatchery program.
- **Columbia River Inter-Tribal Fish Commission: 6/96-4/98**
Title: Fisheries Technician, Stock Assessment Team
Duties: Monitor escapement and report the age composition and condition of Columbia River chinook and sockeye salmon, develop Lamprey radio telemetry protocol, monitor prototype video weir, sample and tag wild juvenile fall chinook, and assist in stock identification using scale pattern analyses techniques.
- **Aquatic BioSystems, Inc.: 09/95-06/96**
Title: Laboratory Biologist
Duties: Develop and operate culture systems, develop methods for culture of marine top-smelt, monitor and maintain water quality, and train new personnel.
- **Colorado State University: 05/94-09/94, 05/95-08/95**
Title: Fisheries Field Technician
Duties: Sample and process samples of zooplankton species and fish of Blue Mesa Reservoir, analyze chlorophyll levels, measure and chart temperature profiles and thermal stratification, identify entrained zooplankton species and determine biomass.

SKILLS:

scientific writing experience, data analysis, boat safety and handling, extensive fish sampling (radio telemetry, hydroacoustics, gill nets, seining, and trawling), zooplankton sampling, invertebrate identification, salmonid scale analysis, water quality analysis, and chlorophyll analysis. I am also very familiar with the following computer packages: Excel, Quatro-pro, WordPerfect, and MS Word.

Section 10. Information/technology transfer

Technical information will be distributed through:

Reports – weekly (weir updates) monthly, quarterly, annual

Biological Assessments/Biological Opinions

ESA annual reports

ESA permits

Publications in scientific journals

Technical presentations (LSRCP program review, CBFWA project review workshops)

Construction Memorandums

Project cooperators meet regularly to exchange information and discuss project adaptations in several multiagency management oversight teams. Information is input to the *U.S. v. Oregon* Production Advisory Committee and the NMFS recovery plan process.

Congratulations!