
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Yakima Basin Side Channels

BPA project number: 9705100
Contract renewal date (mm/yyyy): 12/1999 Multiple actions?

Business name of agency, institution or organization requesting funding
Yakama Indian Nation Fisheries Resources Program

Business acronym (if appropriate) YIN

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
Habitat goal 7.6A.2, Policy 7.6B.3, Policy 7.8E.1

FWS/NMFS Biological Opinion Number(s) which this project addresses
Not applicable to this project

Other planning document references

Wy Kan Ush Me Wa Kish Wit p. 58, 59; Policy of Washington Department of Fish and Wildlife and Western Washington Treaty Tribes Concerning Wild Salmonids; Yakima Subbasin Plan p. 36; and, Yakima River Watershed Council - a 20/20 Vision, p.114.

Short description

Protect, restore and reestablish access to productive off-channel rearing habitats, and protect and reconnect floodplains associated with the mainstem Yakima and Naches Rivers.

Target species

Spring and fall chinook, coho, steelhead and resident trout

Section 2. Sorting and evaluation

Subbasin

Yakima Subbasin

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
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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 checked="" type="checkbox"/> Watershed councils/model watersheds <input type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input 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
20547	Yakima Subbasin Habitat/Watershed Project Umbrella
9206200	Yakama Nation Riparian/Wetlands Restoration
9603501	Satus Watershed Restoration
9803300	Restore Upper Toppenish Creek Watershed
9705300	Toppenish-Simcoe Instream Flow Restoration and Assessment
9705100	Yakima Basin Side Channels (this proposal)
9803400	Reestablish Safe Access Into Tributaries of the Yakima Subbasin
9901300	Ahtanum Creek Watershed Assessment
9705000	Little Naches Riparian and In-Channel Restoration

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1998	Secured landowner signature of MOU, conducted appraisals, hazardous and cultural assessments and property boundary surveys for a 60 acre parcel with intent to purchase	
1998	Restored habitat function and passage in degraded alcove.	yes
1998	Conducted coarse-screen inventory of available parcels in key reaches of the basin.	
1998	Developed and forwarded MOU to owner of 192-acre parcel with intent to purchase	
1998	Secured permits for removal of passage barrier in ground-water fed alcove, to restore migratory access to two miles of off-channel habitat.	

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Identify priority reaches, based upon surface-groundwater interaction, floodplain connectivity, and risk of loss to residential encroachment. Protect at-risk rearing habitats and floodplain areas through conservation easement and property acquisition.	a	Collect maps, ownership information, consult with real estate organizations. Formulate data sheets.
		b	Obtain permission to access private properties.
		c	Conduct field surveys.
		d	Prioritize habitat protection candidates based on cost/benefit analysis. If necessary, conduct Habitat Evaluation Procedures to develop priority list for purchase.
		e	Develop MOA's with interested private landowners and land trust organizations.
		f	Conduct land appraisals, hazardous materials assessments and lot line surveys where required.
		g	Purchase property and/or conservation easements.
		h	Construct fences where necessary
2	Restore connectivity to off-channel rearing habitats and floodplains through migration barrier removal and levee removal/relocation.	a	Consult aerial photographs, conduct field surveys in key stream reaches
		b	Prioritize habitat reconnection candidates based on cost-benefit analysis, and risk of flood damage. Consult with fluvial hydrologist(s), planners and county engineers to determine risk of flood damage.
		c	Develop MOA's with affected agencies, companies and private landowners.
		d	Develop construction plans.
		e	Release construction proposals for bids.
		f	Secure bids, implement projects.
3	Restore habitat function in off-channel habitats through fencing, and possibly revegetation	a	Consult aerial photographs, conduct field surveys in key stream reaches.
		b	Prioritize habitat restoration projects based on cost-benefit analysis.
		c	Develop MOA's with affected agencies, companies and private landowners.
		d	Develop restoration plans.
		e	Release construction-related portions of restoration projects for bids.
		f	Secure bids, implement projects.
4	Monitor and report results of project activities.	a	Conduct snorkle, beach seine and/or electrofishing surveys in restored stream reaches.

		b	If necessary conduct statistical analysis' on smolt outmigration numbers at the Chandler juvenile facility.
		c	Report project activities, including findings of snorkle surveys.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	3/1998	12/2001	yes	x	76.00%
2	3/1998	12/2001	yes	x	20.00%
3	3/1998	12/2001	yes	x	3.00%
4	6/1998	12/2001	no	x	1.00%
				Total	100.00%

Schedule constraints

Time constraints include land availability, coordinating with private landowners, potential limitations of conservation easement recipients, construction season limitations, contractor scheduling and permitting delays.

Completion date

FY2001

Section 5. Budget

FY99 project budget (BPA obligated): \$1,000,000

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	1.0 fte Biologist II 0.5 fte Bookkeeper 0.5 fte Office Assistant	%8	62,188.00
Fringe benefits	25.3%	%2	15,734
Supplies, materials, non-expendable property	Hip boots, computer software, film developing, maps, miscellaneous supplies	%0	3,400
Operations & maintenance	Rental Vehicle, vehicle insurance, cell phones, miscellaneous field gear	%1	10,282
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Conservation easements, land purchases	%62	500,000
NEPA costs	SEPA, NEPA, Hydraulics Code and Shoreline permitting	%0	1,000
Construction-related support	Engineering	%1	10,000
PIT tags	# of tags:	%0	
Travel		%0	2,000
Indirect costs	Current rate 23.5%	%4	34,569
Subcontractor	Property surveys	%2	15,000
Subcontractor	Property appraisals	%2	17,500

Subcontractor	Legal Services	% 1	10,000
Subcontractor	Heavy equipment contractor	% 15	120,000
Other		% 0	
TOTAL BPA FY2000 BUDGET REQUEST			\$801,673

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
		% 0	
		% 0	
		% 0	
		% 0	
Total project cost (including BPA portion)			\$801,673

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$800,000	\$0	\$0	\$0

Section 6. References

Watershed?	Reference
<input checked="" type="checkbox"/>	Confederated Tribes and Bands of the Yakima Indian Nation, Washington Department of Fisheries, and Washington Department of Wildlife. 1990. Yakima River Subbasin Plan. Columbia Basin Fish and Wildlife Authority.
<input type="checkbox"/>	Independent Scientific Group. 1996. Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem.
<input type="checkbox"/>	Washington Office of Financial Management. 1990. 20-year Population Projections for Washington State.
<input type="checkbox"/>	

PART II - NARRATIVE

Section 7. Abstract

Items included in this proposal include:

1. Protection of important off-channel rearing habitats associated with the Yakima and Naches mainstems;
2. Reconnection of currently inaccessible off-channel rearing habitats;
3. Protection and reconnection of stream channels with their attendant floodplain; and,
4. Restoration of off-channel rearing habitat function through riparian revegetation.

The goal of the project is to rebuild Yakima River spring and fall chinook, coho and steelhead populations, by working in concert with other fish recovery efforts in the basin. Most notably, the Yakima Klickitat Production Facility, now in place, intends to rebuild naturally spawning populations of wild anadromous salmonids. To reach this overarching goal, watershed protection and recover efforts, such as this proposal, must be implemented.

Off-channel and floodplain habitats in the target reach have been severely degraded through construction of transportation corridors, irrigation development, diking, and through control of the river hydrograph. Project objectives include protection, reconnection and habitat restoration in off-channel rearing habitats (side channels and backwater alcoves) associated with the Yakima and Naches Rivers. Where practical, stream channels will be reconnected with their associated floodplains through levee obliteration or relocation.

Five key reaches have been identified for primary activities. These areas are typically located immediately upstream of a geological feature that restricts down-gradient movement of groundwater. As a result, these reaches indicate strong interaction between surface and groundwater, resulting in a productive hyporheic zone. With several noted exceptions, these reaches remain well-connected to their attendant floodplains. In some other locations, poorly constructed dikes have constricted floodplains. However, at present development behind these unstable structures is minimal. Once they fail, the costliness of repair may prevent their reconstruction. Thus, an opportunity exists to purchase easements, and relocate or fully remove these structures.

Specific project reaches include the Easton reach, the reach immediately above the Teanaway River, the reach immediately above the north end of the Ellensburg Canyon, the reach above Union Gap, and the Glead reach of the Naches River.

The project is relevant to the 1994 Columbia Basin Fish and Wildlife program in that it will contribute to the protection and restoration of anadromous fish stocks in the Yakima Basin. Further, the project will protect and restore terrestrial wildlife species through riparian habitat restoration and protection.

The project is based on the scientific principle that protecting, reconnecting and restoring off-channel rearing habitats and floodplains into perpetuity will provide fry/parr with more opportunities to access optimal rearing habitats, ultimately contributing to the rebuilding of Yakima Subbasin anadromous fish populations. This will be achieved by the end of FY2001.

The results of reconnection and restoration will be monitored through pre- and post-treatment snorkel or beach seining surveys. It is important to note that the project focuses primarily on protection, and passive restoration, i.e. leaving the habitat alone. Thus it is likely that monitoring will not provide demonstrable project benefits, except in the very long term. Protection of habitat will prevent further degradation.

A final report will be submitted to the Bonneville Power Administration at the close of the fiscal (calendar) year and Bonneville will distribute copies to all individuals and agencies on its mailing list. Excerpted data will be appropriately formatted and submitted to the Northwest Aquatic Information Network (StreamNet) and made available to the public via the Internet.

Section 8. Project description

a. Technical and/or scientific background

The Yakima Subbasin Plan, a collaborative effort of the YIN, WDF and WDW, described the limiting factors for salmonid production in the basin. To wit, the Subbasin Plan explained the impacts stemming from river management to convey irrigation water. Throughout much of the summer, flows are higher than normal in the upper 105 River Miles of the mainstem, and as a result chinook and steelhead fry/parr are often unable to find suitable rearing habitats. During the winter, irrigation reservoir releases are kept to a minimum, with flows too low for optimal rearing. Many side channels and alcoves become isolated or dewatered altogether, while others become too shallow to provide functional rearing habitat. The result is a reduction in mainstem rearing habitat quantity and quality throughout the year (Yakima Subbasin Plan, 1990).

At the same time, suburban development in sensitive habitats is occurring at an unprecedented rate. In Yakima County, the State Office of Financial Management expects 80,000 new residents in the next twenty years (OFM, 1990). Kittitas County, in the headwaters of the Yakima Basin, is currently growing at roughly three percent per year. As residential encroachment enters the river bottoms, opportunities to protect and restore floodplain connectivity are irrevocably lost.

Fisheries restoration in the Yakima obligates protection of remaining functional rearing refugia, and restoration of floodplain connectivity where practical. This project strives to accomplish these goals.

This project is inseparable from several other BPA-funded projects, as well as numerous other watershed restoration efforts undertaken by the YIN and others. These linkages are fully described in 8.c. below.

Mitigation for losses will occur in place, by protecting and restoring access to off-channel rearing habitats. During conceptual planning, the project focused primarily on four reaches. While the target reaches have multiple side channels and backwater alcoves, some have been compromised by diking, and all are at risk of rapid conversion from farming/ranching to residential development. Much of the residential development will occur along the river corridor, as this is viewed by many as the most aesthetically valuable development property in the region. As structures are built on the river floodplain, opportunities to allow natural channel migration to continue are irrevocably lost.

The proposed work is a logical component of the *Wy-Kan-Ush-Mi Wa-Kish-Wit*, the Yakima Subbasin Plan, and the 1994 Fish and Wildlife Program, because the project strives to put the fish back into the habitat, and to protect the most productive habitat abutting the mainstems of the Yakima and Naches Rivers.

b. Rationale and significance to Regional Programs

As stated in 8.a., under current conditions in the Yakima Subbasin, rearing habitat function in the mainstem is sharply compromised because of irrigation delivery-related impacts on the hydrograph. Further, riparian and floodplain habitat function continues to degrade as more land is converted from farming/ranching to suburban development. In many locations, floodplain function has been permanently lost, because homes have been constructed within the channel migration zone, effectively precluding further natural channel meandering. Legal and illegal diking has been undertaken in an attempt to protect floodplain dwellings from inundation. Even illegal dikes become institutionalized through time, and permits are issued for their repair when they are ultimately destroyed during a flood. At present this may not happen in some areas, as the value of capital structures that are “protected” by these unstable levees is low. However, as development increases so does the perceived need to maintain levee structures.

Residential development is occurring at a rapid rate along most of the Yakima mainstem, and additional recreational development is occurring that is not reflected in the census data. This project would help protect what remains of the best riparian, floodplain and off-channel habitats.

This project will further the goals of the Fish and Wildlife Program (FWP), through protecting at-risk, highly productive habitat, and through restoring migratory access to productive tributary habitats. At section 7.6, the FWP states:

“wild and naturally spawning populations of salmon and steelhead are generally at low levels throughout the Columbia River Basin as a result of impaired mainstem passage, blocked habitat, habitat degradation...”

Later in the same section, the FWP states:

“However, maintenance and recovery of anadromous fish resources will not be possible unless dramatic steps are taken to protect existing high quality habitat, improve the quality of degraded habitat, and increase the quantity of presently blocked habitat that could be made accessible...
“**Habitat has decreased by more than a third...**” (emphasis mine).

Under section 7.6A, the FWP states that the goals for rebuilding Columbia River salmon stocks include:

"At a minimum, maintain the present quantity and productivity of salmon and steelhead habitat. Then, improve the productivity of salmon and steelhead habitat critical to recovery of weak stocks. Next, enhance the productivity of habitat for other stocks of salmon and steelhead. Last, provide access to inaccessible habitat that has been blocked by human development activities."

Tasks identified in "Yakima Side Channels" will help achieve these goals.

This project fits well with other habitat and fish production efforts ongoing in the basin, in that it focuses on protecting, reconnecting and restoring habitat function in off-channel rearing habitats of the mainstem Yakima and Naches Rivers. Inasmuch as ongoing fish restoration efforts strive to rebuild the natural-spawning population, addressing the compromised nature of rearing habitat in the mainstem is a critical step toward achieving anadromous fish restoration.

c. Relationships to other projects

This project is inseparable from project #9704700, titled "Yakima River Basin Side Channel Survey & Rehabilitation", which was proposed as a one-year project, and was funded in FY97. The primary goal of the survey & rehabilitation project is to quantify inaccessible off-channel habitat abutting the mainstem Naches and Yakima Rivers, as well as seasonally accessible habitat that strands and kills juvenile salmonids when the irrigation season ends. These findings will formulate the basis for habitat restoration and protection prescriptions. Funding to implement the prescriptions of the survey and rehabilitation project is intended to come from ongoing funding under the Yakima Basin Side Channels project.

This project is a complement to project #9006900, the Yakima Hatchery, which strives to rebuild naturally spawning/rearing stocks of anadromous salmonids. The intent to rebuild natural runs obligates fish managers to restore watershed health, in part through the protection, reconnection and restoration of off-channel rearing habitats.

The success of this project is facilitated by BPA project #96FC96064, the Wilson Creek Riparian Zone Restoration Project, which has raised awareness of salmon habitat requirements among several influential agricultural producers in lower Kittitas County. To date, riparian restoration has taken place on over four miles of shoreline, mostly on private land. Several landowners are now supportive of the YIN's objectives for habitat protection and restoration. The awareness and support that has been raised will help implement this project's objectives for habitat protection and restoration.

Another complementary YIN riparian restoration project was implemented in 1995-96, in the Cowiche Creek watershed. This project was funded through the Environmental Protection Agency with Clean Water Act Section 319 funds. Again, demonstrating the benefits of maintaining riparian habitat on agricultural land was the goal. Through this project, habitat restoration/protection occurred on 15 private parcels. Meetings were conducted with 40 landowners. Awareness of the YIN's objectives for habitat protection and restoration came about through this project, which will facilitate the implementation of this project in that geographic region.

Coordination with other entities has occurred on a regular basis. The Bureau of Reclamation has funding for land purchase when a water right is associated. The Nature Conservancy is placing greater emphasis on habitat protection in the Yakima Basin as well. Numerous contacts have been made with these two entities to strategize on how to maximize project effectiveness.

d. Project history (for ongoing projects)

Previous work related to this proposal was done under this project, and under BPA project #9705200 "Enhancement between Selah and Union Gaps", which has now been broadened and joined with this project.

1. Kershaw/Gleed floodplain protection project- This involves property acquisition and flood protection in the Gleed area of the Naches River. In this reach, the river underwent channel avulsion during the February 1996 flood. In an effort to address private landowner concerns while protecting newly created side channel habitat, Washington State Regional Fisheries Enhancement funding was secured to construct a bioengineered setback levee at the extreme edge of the floodplain to protect a landowner's residence. Downstream, a 60-acre privately-owned parcel is in the process of being purchased with BPA funding. This parcel was previously divided into several lots, with zoning provisions that would allow further subdivision to parcels of two acres in size. This area has a substantial amount of side channel rearing habitat, and is completely inundated during a 25-year flood event. Completed tasks include the appraisal, lot-line adjustment and hazardous materials assessments. The transaction is expected to take place in the next two months.

2. Rambler's Park floodplain reconnection project- This project involves plans to relocate frequently flooded residences and businesses in the Rambler's Park vicinity of the Naches River. This project has received funding from the Federal Emergency Management Agency, the eastern Washington Regional Fisheries Enhancement Group, and the Interagency Committee for Outdoor Recreation. The objective of the project is to relocate all structures to areas outside of the floodplain, to move a 1100 foot long levee roughly $\frac{3}{4}$'s of a mile from the river channel, and to initiate riparian recovery through limited riparian plantings, in clumps throughout the property. As a result of the project, roughly 200 acres of floodplain will be reconnected to the river.

3. Granger side channel enhancement- This project lies on WDFW property, and involves restoring a 35 acre parcel of floodplain property that is currently dominated by weedy species to a cottonwood/willow/dogwood riparian community. This project will enhance habitat function in an alcove of the Yakima River through construction of grade controls and relocation of large woody debris that is onsite. Total project cost is estimated at \$10,000.

4. Spring Creek enhancement- This project involves habitat restoration along a groundwater fed channel near Union Gap. To date, russian olive trees, which are non-native to the basin and highly competitive, have been mechanically removed and native cuttings and bare-root stock of black cottonwood, willow and dogwood have been planted. Large woody debris has been placed in the channel, and permit applications have been processed to allow removal of a migration barrier downstream and construction of a sinuous channel in a section that has been heavily impacted through human activities. The end result will be reestablishment of passage and habitat restoration in a channel that is three miles in length.

5. Henne property acquisition- In the spirit of "protecting the best" the project is striving to protect one of the most intact floodplain private parcels in the middle portion of the watershed. Within this 192-acre parcel the Yakima River flows through multiple, active channels, the riparian canopy is intact, and virtually the entire parcel meets criteria for jurisdictional wetland status. A Memorandum of Understanding has been forwarded to the landowner, to allow the appraisal and survey process to begin. The landowner intends to sell most or all of the parcel to the YIN with funding from this project.

6. Selah Ditch channel enhancement- This ongoing project involves riparian revegetation, placement of large woody debris, stormwater treatment and environmental education with the local school district. Students from the local school have gathered water quality data, as well as an inventory of flora and fauna that utilize the channel. The Washington Department of Transportation has used the lower portion of the project area as a mitigation site for a bridge project. The Selah City Council has expressed strong support for the project, and is working toward improved stormwater treatment in the city as a result.

Preliminary work has been done on a host of other projects, including side channel restoration on a BLM-owned property, possible acquisition of a 100-acre floodplain parcel, and purchase of an eight acre parcel near Union Gap. An introductory meeting was held with representatives of the Army Corps of Engineers and City of Union Gap officials to discuss cost-sharing with the Corps on channel enhancement within the city.

e. Proposal objectives

Objectives of this project include:

1. Identify priority reaches, based upon surface-groundwater interaction, floodplain connectivity, and risk of loss to residential encroachment. Protect at-risk rearing habitats and floodplain areas through conservation easement and property acquisition.
2. Restore connectivity to off-channel rearing habitats and floodplains.
3. Restore habitat function in off-channel habitats through fencing and possibly revegetation.
4. Monitor and report results of project activities.

Products of this project include:

1. Permanent protection of sensitive habitats that are currently at risk from development.
2. Greater interaction between the Yakima and Naches Rivers and their attendant floodplains.
3. Restored riparian habitat function through fencing and revegetation.
4. Improved migratory passage into alcoves and side channels.
5. Quarterly reports on project efforts and results, including acreage of habitat protected through acquisition and conservation easements, amount of alcove/side channel habitat that is reconnected to the channel and acreage of floodplain that is reconnected to the channel.

f. Methods

This watershed restoration project is based upon the following scientific principles:

- 1 In the face of rapid residential development, off-channel and floodplain habitats that have high functional value must be protected in perpetuity in order to maintain their function;
- 2 Reconnection of floodplain and off-channel rearing habitats is a necessary component of restoring ecosystem productivity; and,
- 3 Opportunities to protect, reconnect and restore rearing and floodplain habitats are being lost incrementally, as land is converted from low-intensive to high-intensive uses.

Each of these principles are called for in the document Return to the River, which recommends:

“A well-distributed network of reserve watersheds and riverine habitat patches, based on the current distribution of strong subpopulations of native salmonids, should be designated and protected from new land-disturbing activities in order to establish experimental natural baselines for evaluation of effectiveness of management practices and to establish a biological hedge against possible failure of BMP’s to conserve and enhance aquatic habitat in treated areas” (Return to the River, 1996).

The tasks are summarized below:

- Task 1.1: Collect maps, ownership information, consult with real estate organizations. Formulate data sheets.
- Task 1.2: Obtain permission to access private properties.
- Task 1.3: Conduct field surveys.
- Task 1.4: Prioritize habitat protection candidates based on cost/benefit analysis. If necessary, conduct Habitat Evaluation Procedures to develop a priority list for purchase.
- Task 1.5: Develop MOA’s with interested private landowners and land trust organizations.
- Task 1.6: Conduct land appraisals, hazardous materials assessments and lot line surveys where required.
- Task 1.7: Purchase property and/or conservation easements.
- Task 1.8: Construct fences where necessary.
- Task 2.1: Consult aerial photographs, conduct field surveys in key stream reaches.
- Task 2.2: Prioritize habitat reconnection candidates based on cost/benefit analysis.

- Task 2.3: Develop MOA's with affected agencies, companies and private landowners.
- Task 2.4: Develop construction plans.
- Task 2.5: Release construction proposals for bids.
- Task 2.6: Secure bids, implement projects.
- Task 3.1: Consult aerial photographs, conduct field surveys in key stream reaches.
- Task 3.2: Prioritize habitat restoration projects based on cost/benefit analysis.
- Task 3.3: Develop MOA's with affected agencies, companies and private landowners.
- Task 3.4: Develop restoration plans.
- Task 3.5: Release construction-related portions of restoration projects for bids.
- Task 3.6: Secure bids, implement projects.
- Task 4.1: Conduct snorkel and/or electrofishing surveys in restored stream reaches.
- Task 4.2: Conduct statistical analysis on smolt outmigration numbers at the Chandler juvenile facility.
- Task 4.3: Report project activities, including findings of snorkel surveys.

Project benefits will be tested through snorkel and/or beach seining surveys in reconnected off-channel habitats. Environmental protection requirements will be met for all work within the ordinary high water mark via the Washington State Hydraulics Code. Additional environmental protection measures will be complied with through the National Environmental Protection Act. Temporary risks to other organisms stem from construction related activities. Permanent alteration of riparian habitat may occur through reconnection of streams to their attendant floodplains, and through increasing flow into off-channel rearing habitats.

Fisheries managers expect that permanent protection of off-channel rearing habitats and floodplains will provide improved riverine productivity for anadromous salmonids. Improving flow conditions to off-channel habitats that, under the current regulated flow regime function as "death traps", is expected to improve egg to smolt survival rates. Improving habitat function through fencing and limited riparian revegetation is expected to improve egg to smolt survival over the long-term.

g. Facilities and equipment

The project utilizes the YIN fisheries office building as a main office. The vehicle is leased through GSA. Budgeting for necessary field equipment was made in the fy97 application. Additional field equipment is available through the YIN fisheries program. One office computer has been secured. No special or high-cost equipment will be required.

h. Budget

Subcontracting is for levee obliteration and relocation, large-scale riparian restoration efforts, fencing and barrier removal. The funds for conservation easements and fee simple purchase are expected to provide permanent protection of 200 acres of sensitive habitat.

Section 9. Key personnel

Le Roy Adams, Jr., Watershed Restoration Specialist, YIN Fisheries Resources Program. Duties will include project implementation. Qualifications include Bachelors degree in Forestry with concentration in Science and Engineering. One year experience in contract administration and supervision. Nine months experience with Fisheries program implementing this and one other BPA project. Has accomplished permitting, tasks associated with land acquisition, and general stream restoration. Has received intensive training on stream geomorphology and restoration techniques.

Scott Nicolai, Assistant Environmental Manager, YIN Fisheries Resources Program. Duties will include project oversight. Qualifications include Masters Degree in Natural Resources Management, six years experience working in the field of fisheries habitat management, project oversight on five large habitat restoration projects and numerous small projects. Current employer is the Confederated Tribes and Bands of the Yakama Indian Nation. Job completions include the Cowiche Creek Riparian Zone Restoration Project, the lower Wilson Creek barrier/diversion survey report, the Brunson bioengineering bank stabilization and riparian habitat restoration project, and the Teanaway Junction Side Channel enhancement project. Additional ongoing job requirements include review and comment on SEPA documents, NEPA documents, Shoreline, Hydraulics and 404 permits, and Growth Management Act Plans. Also tracks and provides technical input to local Watershed Councils.

Section 10. Information/technology transfer

The technical information resulting from this project (and its component tasks) will be distributed in the following ways:

Annual reports will be submitted to the Bonneville Power Administration at the close of the fiscal (calendar) year and Bonneville will distribute copies to all individuals and agencies on its mailing list.

Excerpted data will be appropriately formatted and submitted to the Northwest Aquatic Information Network (StreamNet) and made available to the public via the Internet.

Community “town hall” type meetings will be held as deemed necessary in areas near where work is proposed.

Congratulations!