

**Bonneville Power Administration Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal
Section 1. General administrative information**

“Restore Chinook salmon passage into woodard creek and enhance spawning **habitat.**”

Bonneville project number, if an ongoing project 9058

Business name of agency, institution or organization requesting funding

Columbia River Gorge National Scenic Area, U.S.D.A., U.S. Forest Service

Business acronym (if appropriate) CRGNSA

Proposal contact person or principal investigator:

Name	Derrick B. Bawdon
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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Beacon Rock S.P.	Kueffler Rd.	Skamania, WA 98648	Steve Johnson (509)427-8265

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

Unknown

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

Other planning document references.

Watershed restoration and stream restoration are both called for in the Columbia River Gorge National Scenic Area, "Management Plan" (page I-77,I-85 to 98 and II-51), the Gifford Pinchot, "Land and Resource Management Plan" (page III-2, IV-3, IV-31 and IV-69), and the "Northwest Forest Plan" (Page B 11 and Pages B30-32). This project will be implemented in partnership with Washington State Parks and Recreation Department, Beacon Rock State Park.

Subbasin.

Lower Columbia River

Short description.

Restore passage for chinook salmon to Woodard Creek and enhance pool habitat and restore spawning ground for salmonids. Log and rock structures will be constructed to achieve desired fish and channel restoration objectives. Restore riparian area to dissipate high flow energy and maintain channel stability using indigenous plant species and woody material.

Section 2. Key words

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

Other keywords.

Passage, channel stability

Section 3. Relationships to other Bonneville projects

N/A

Section 4. Objectives, tasks and schedules

Objectives and tasks

Briefly describe measurable objectives and the tasks needed to complete each objective. Use Column 1 to assign numbers to objectives (for reference in the next table), and Column 3 to assign letters to tasks. Use Columns 2 and 4 for the descriptive text. Objectives do not need to be listed in any particular order, and need only be listed once, even if there are multiple tasks for a single objective. List only one task per row; if you need more rows, press Alt-Insert from within this table.

Obj 1,2,3	Objective	Task a,b,c	Task
1	Design	a	inter-disciplinary team (IDT) design of project with Washington State Parks and Recreation
2	NEPA	b	Environmental Analysis
3	Channel restoration	c	Install Large Wood
4	Riparian restoration	d	Remove invasive plants, revegetation using indigenous spp.
5	Monitoring	e	5 year program; Level III survey to monitor width to depth ratio & spawning ground, Population estimation using “removal depletion”(electroshocking), Spawning surveys.
6	Operation & Maintenance	f	Maintenance of structures, and maintaining vegetation at 80% survival.

Objective schedules and costs

Objective #	Start Date Mm/yyyy	End Date Mm/yyyy	Cost %
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1	10/1998	01/1999	2
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9058 Restore Chinook salmon passage into woodard creek and enhance spawning habitat

2	01/1999	06/1999	3
3	07/1999	08/1999	27
4	08/1999	09/1999	17
5	09/1999	09/2003	38
6	06/2000	09/2003	13

Schedule constraints.

The National Environmental Policy Act (NEPA) process should be completed by 06/1999 and the Decision Notice signed by 07/1999 for the channel and riparian restoration work to begin on schedule. Proper permits must be received from the State of Washington and the Corp of Engineers by 07/1999 for work to begin on schedule.

Completion date.

2003

Section 5. Budget

List FY99 budget amounts for each category. If an item needs more explanation, provide it in the Note column. If the project uses PIT tags, include the cost (\$2.90/tag). **Be sure to enter a total on the last line: this is the amount of your budget request.**

Item	Note	99
Personnel	Technical work and crews	19,550
Fringe benefits	N/A	0
Supplies, materials, non-expendable property	Logs, Boulders, Indigenous vegetation and bio-matting	17,000
Operations & maintenance	N/A FY 99	0
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	N/A Project on State Land (Beacon Rock State Park)	0
PIT tags	# of tags:	0

Travel	from work center to project	1,500
Indirect costs	Design & NEPA	7,890
Subcontracts	Spyder backhoe contracts	30,000
Other	set-up Monitoring, collect base line data	11,684
TOTAL	First year cost	87,624

Outyear costs

Outyear costs	2000	01	02	03
Total budget	21,760	18,684	14,760	11,684
O&M as % of total	.46	.37	.21	

Section 6. Abstract

Woodard Creek is a third order stream that is located at T2N, R6E, section 36 NW 1/4. The watershed covers approximately 7,000 acres and is 70% federal and 24% State owned. Historically the watershed was extensively logged and was burned over during the “Yacolt burn”. Past logging practices removed most of the woody debris from the stream channel.

Lack of woody material and an extensive road network in the watershed has degraded the habitat conditions in Woodard Creek. The pool per mile ratio was found to be 6/mile compared to the optimal of 56/mile as published in the FWP. The lower quarter mile of stream has increased its wetted width from 17 feet to over 40 feet due to deposition, and there is relatively no woody material or usable pool habitat. The deposition at the mouth of the stream has created a fish barrier and prevented fall chinook salmon from entering the stream during low flows.

Our main goals are to remove the deposition at the mouth and return fall chinook to the stream, and restore the fish habitat in the lower reach. At the mouth log structures will be constructed specifically designed to create one channel, remove deposition, stabilize banks and allow access for chinook salmon. Up-stream the structures will be designed to control water velocity, develop pools and retain spawning gravel. Riparian vegetation will be added using indigenous plant species to rehabilitate the flood plain and increase bio-diversity.

A level III survey of the stream channel will be done by measuring tape and elevated rod method, to achieve a cross-sectional profile of the stream bottom (Rosgen, 1996). A fish population estimation will be done using electroshocking removal depletion methodology. Spawning surveys will be performed by qualified contractors to document active anadromous distribution in Woodard Creek. Wolman pebble counts will be done to track changes in sediment size moving through the system.

Baseline data will be collected prior to any work being done, and each of the above mentioned inventories will be repeated yearly for five years to predict long term trends.

We expect that at the end of our five year monitoring program we will see results that meet our objectives, or a trend that indicates that each objective will eventually be achieved.

Section 7. Project description

a. Technical and/or scientific background.

Location & Ownership:

The mouth of Woodard Creek is located at T2N, R6E, section 36 NW 1/4. The creek flows out at Beacon Rock State Park directly below Bonneville Dam. The Woodard Creek watershed covers approximately 7,000 acres to the west of Hardy Creek and the east of Duncan Creek. Since 1986 the federal government has acquired 4975 acres or 70% of the watershed. The State of Washington owns 24% of the watershed most of which lies within Beacon Rock State Park and the balance of 6% is privately owned.

Watershed History:

The watershed was originally logged at the turn of the century using small gauge railroads. In the 1920's it was burned over during the "Yacolt Burn" and shortly after was again logged for salvage. Since this time the watershed was periodically logged by private logging companies on a regular basis. The logging activity removed most of the woody debris from the stream channel and created an extensive road network through-out the watershed.

Current Condition:

The lack of woody material in the stream has allowed the smaller substrate to migrate downstream at an accelerated rate. During spring runoff in the Columbia River high amounts of water are released through Bonneville dam to control flood waters. The high water release creates fluctuating water levels in the mouth of Woodard Creek. The largest amount of bedload migration in the stream coincides with the high release of water through the dams. The fluctuating water levels in the mouth have allowed this bedload to settle in the lower quarter mile of Woodard Creek.

The floods of 1996 deposited approximately five feet of deposition in this area. The floods also removed most of the riparian vegetation and increased the width of the stream from 17 feet to over 40 feet. The large depositional area has forced the stream channel to each side creating a split channel. Both the east and west banks are now very unstable and highly erodible. These conditions have forced the water to go subterranean during the time when fall chinook enter the stream.

In the original survey in 1994 the pool per mile ratio was found to be very low (5.6) compared to the CBFWA FWP, which is stated to be approximately 56 pools per mile for a stream with a wetted width of 20 feet. The first quarter mile of Woodard creek lacks large woody material with less than 10 pieces of large wood in this section. The heavy deposition may be responsible for the lack of pools but the lack of wood is more likely due to past logging practices.

Significance:

In 1995 an environmental analysis was done by the Columbia River Gorge National Scenic Area (CRGNSA) which identified the need for restoration of the stream. The need was based on the fact that this stream supports populations of anadromous fish that are listed as sensitive species under the U.S. Endangered Species Act, and its overall habitat potential. These species include : Coho salmon (*Oncorhynchus kisutch*) and candidate species winter steelhead trout (*Oncorhynchus mykiss*). The stream has a potential for approximately seven miles of anadromous habitat and coho salmon and Steelhead trout have been found 5 1/2 miles up the main channel. coho salmon have also been found 1 1/2 miles up the East Fork, and steelhead trout have been found 3 miles up the East Fork. Both species have been observed as wild stock (with all fins intact), which suggest that both populations are naturally spawning.

Woodard Creek is also suspected to be a historical chinook salmon (*Oncorhynchus tshawytscha*) stream, and this species has been observed schooling in the estuary of this stream in the fall, but the heavy deposition near the mouth creates a barrier. There is also speculation that Woodard was historically a chum salmon (*Oncorhynchus keta*) stream due to its proximity to other known Chum salmon streams (i.e. Hamilton Creek).

The watershed itself contains potential habitat for threatened terrestrial species which include: peregrine falcon (*Falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*) and the northern spotted owl (*Strix occidentalis*). Potential western pond turtle (*Clemmys marmorata*) and larch mountain salamander (*plethodon larselli*+) habitat also exists in the watersheds many ponds and wetlands. The presence of these terrestrial species made the restoration effort watershed wide, and not just confined to the stream channel.

Restoration opportunities:

The CRGNSA interdisciplinary team (IDT) looked closely at the entire watershed and identified many areas in need of restoration. This included several specific areas of the stream channel, many old roadbeds that were no longer being used or maintained and landslides that were potentially creating excess bedload in the stream. The IDT prioritized these areas and formed a restoration strategy to address the problems.

Restoration Success:

In 1996, a preliminary fish population estimation was performed on the upper reaches of the main channel of Woodard Creek. Several areas in need of in-stream fish structures

were identified. One of these areas was identified for the addition of multiple piece fish structures, and we added 22 large logs and 17 boulders. 18 individual structures were designed to promote pool development and increase diversity, as well as retain spawning gravel in this area. In mitigation to this project 200 western red cedar trees and 100 western hemlock trees were planted in the riparian area to increase future coniferous development. Local deciduous species were also transplanted into the disturbed areas of the stream bank to accelerate revegetation.

In 1997 our efforts turned to overall watershed restoration. Another 22 logs were added to the stream extending the 1996 project area downstream. A large road related landslide (6 acres) was stabilized and revegetated on the East Fork, which reduced excessive sand and silt introduction to the stream. Eight miles of old roads were obliterated and another twelve miles closed to vehicular traffic. From these roads eight culverts were removed and the banks pulled back to a low gradient to allow for natural drainage. The landslide, roads and areas of disturbance were revegetated using 33,000 indigenous plants that consisted of both woody and herbaceous species.

Our efforts have increased overall diversity of the fish habitat in Woodard Creek, increased spawning gravel in the upper reaches, increased available pool habitat and improved the riparian area vegetation. Siltation has been reduced through-out the entire watershed due to slide stabilization and road closures. Natural drainage has been returned to eight tributary streams, which has also reduced siltation of the stream.

Partnership coordination:

All of this work has been accomplished in total cooperation and extensive coordination between many agencies. These agencies include Federal, State and private organizations that include: CRGNSA, Washington Parks and Recreation department, Skamania County, Washington Department of Natural Resources, Bonneville Power Administration and Longview Fiber. A memorandum of understanding (MOU) will be written in 1998 between all concerned agencies to cover long-term management of this watershed and the monitoring of all work done, as well as a cooperative road maintenance program.

In 1998 we are planning to restore two beaver ponds by limiting human access and revegetating areas impacted by past recreation activities. The final area to be addressed is the lower quarter mile of the stream, which would allow chinook salmon to enter the stream and hopefully re-establish a viable population. This would be the final step in an overall watershed restoration effort covering 7,000 acres.

Proposed action:

This project would address the problems in this lowest section of Woodard Creek, and allow a five year monitoring program to document the effectiveness of the work done. We are proposing to add 67 logs and 20 boulders to create structures that will be designed to naturally move the gravel deposition out of the mouth into the Columbia River. This

will allow access for Chinook salmon into the stream and also promote Columbia River main stem spawning below Bonneville dam.

At the mouth, the structures will be designed to create one channel, stabilize the banks and to allow access for chinook salmon. Up-stream the structures will be designed to control water velocity, develop pools and retain spawning gravel. Riparian vegetation will be added using indigenous plant species to rehabilitate the flood plain.

The design of this project will be accomplished using the Columbia River Gorge National Scenic Area (CRGNSA) inter-disciplinary team (IDT), in close cooperation with Washington State Parks and Recreation and Beacon Rock State Park. Technical assistance will be given from Gifford Pinchot National Forest, Wind River Ranger District, natural resource department. Data collected during monitoring of the project will be gathered by CRGNSA personnel and Beacon Rock State Park. Each year a report will be generated documenting the progress of the project, and this will be made available to all concerned agencies.

The previous data collection and project work in Woodard Creek has been conducted by Derrick B. Bawdon, who works for the CRGNSA. He has a Degree in Zoology and six years of experience working on streams.

b. Proposal objectives.

1. Return chinook salmon to the stream, providing 7 miles of useable habitat.
2. Reducing overall width to depth ratio in the first quarter mile from 19.1 to under 10.
3. Increasing available pool habitat in the first half mile of the stream from 5.3% of total area to 15% of total area.
4. Increasing available flood plain from less than 10% of bankfull width to 25% of bankfull width.
5. Increasing biodiversity within the riparian area for the first half mile of the stream.
6. Reducing invasive weed population and replacing with indigenous species.
7. Increasing young conifer production in the first quarter mile of the riparian from approximately 1% of overall vegetation to 10%, to provide for future Large Wood Debris recruitment.
8. Increasing fish population by 25%.
9. Increasing Large Woody Debris in the first half mile of stream from 2 to 40.

To meet our objectives we are proposing to construct approximately 20 multiple piece structures using both large logs (>32" DBH) and large boulders. The structures from river mile (RM) .25 to .50 will be designed to promote local scour in the thalweg towards the middle of the stream, while allowing for the deposition of fines near the stream edge. The structures from RM 0.0 to .25 will be designed to promote the movement of gravel downstream while protecting the stability of the banks, and increasing dispersal of energy in the floodplains. Restoration of the stream channel will meet objectives of the "CRGNSA management plan", the Gifford Pinchot National Forest "Land and Resource Management Plan" and the "Northwest Forest Plan".

Restoration of the riparian area will be accomplished by adding approximately 3,000 indigenous plants to the floodplain, and maintaining an 80% survival rate over the next five years. These will be plants that produce large root mass to help absorb water during high flows as well as woody species to increase the ability to dissipate energy. Addition of vegetation and woody debris to the floodplain will increase the biodiversity of the riparian area and enhance the ability to dissipate the energy of high flows. Restoration of the riparian area and floodplain will meet objectives of the Aquatic Conservation Strategy.

Removal of invasive noxious weeds will be attempted using mechanical methods and the roots will be grubbed out using a hand crew, this will meet the CRGNSA “Noxious weed eradication program”. The areas disturbed during this process will be revegetated with indigenous plant species for the purpose of increasing biodiversity.

c. Rationale and significance to Regional Programs.

d. Project history

e. Methods.

Each proposer should complete the methods section with an objective assessment of factors that may limit success of the project and/or critical linkages of the proposal with other work (e.g., a smolt monitoring program, etc.).

Preliminary base line data will be collected prior to project implementation to provide a comparison for long range monitoring. This will include a Level III stream survey of the project area, fish population estimation and a spawning survey of the stream. The riparian area will have a complete plant association evaluation done and an assessment for proper functioning condition, as described in “Riparian Area Management”, technical reference 1737-9, U.S. Department of Interior, BLM (Prichard, et al, 1993). A preliminary channel stability evaluation will also be performed on the project area using the “Pfankuch methodology”(Rosgen, 1996).

The base line data will give us a starting evaluation to track our objectives. After five years the data should show a trend of parameters moving closer to our objective results. If the parameters that we will be following reach our initial objectives after five years we can consider this project a complete success. After collecting our baseline data in the fall and winter of 1999 the construction phase will begin in the summer of 1999.

Channel Restoration:

The stream channel restoration will be divided into two separate areas, with distinctly different objectives. The first area RM 0.0 to RM 0.25 is a heavy deposition area with approximately 5 feet of excessive gravel aggrading, that is functioning as a fish barrier at low flows. This mid-channel gravel bar has also created a split channel with no real main

channel, thus reducing the flow to either channel. The second area, RM 0.25 to RM 0.55, is a higher gradient area which has been channelized and has predominantly a cobble/boulder substrate with no good spawning ground and no significant pool habitat. These areas will be referred to as area 1 and area 2 respectively, as they occur moving upstream.

In area 1 several random log-jams will be constructed specifically designed to promote the movement of the excess gravel downstream into the Columbia River (Rosgen, 1996). The logs will also be placed in a way that creates one main channel and a side-channel overflow, which will make the stream more accessible for fish. Logs will also be placed on the banks and on the flood plain with the intention to dissipate energy and retain fines. The logs will be placed using a Spyder backhoe to further reduce the impact on the stream-bed. Spyder backhoes have four hydraulic independently moving legs and weigh half as much as conventional tracked excavators, which reduces the impact on the stream-bed. Logs will be anchored to the stream-bed or banks to ensure long-term functioning of the structures; however, the logs will be anchored to result in a low contrast to the surrounding landscape and shall meet the forest service visual quality objective of partial retention, as stated in the CRGNSA "Management Plan". Ten large boulders will be moved into this area to help anchor the structures and provide diversity to the stream substrate and enhance fish hiding cover. Access to the stream by the Spyder will be confined to one point, to further reduce the negative impact to the riparian area.

The movement of gravel deposition in area 1 should increase water depth at low flow, which is the time of year that fall chinook are migrating up-stream to spawn. This should allow for natural re-introduction of chinook salmon into Woodard Creek. As time passes the population should gradually increase and establish itself as a viable self-sustaining population. This would not only benefit the overall fisheries restoration efforts in the Columbia River system, but it would also benefit the recreational value at Beacon Rock State Park.

Area 2 is a channelized section which is predominantly cobble/boulder dominant with an average gradient of 5-6%. This area has no woody debris or spawning gravel and lacks good pool habitat. The objective in this section is to add woody debris designed to promote pool habitat and retain spawning gravel. We are proposing to create up-stream V structures followed by down-stream V structures in tandem. The up-stream V structure is designed to create a plunge pool and slow the velocity of the water. The following down-stream V structure will catch and hold the gravel due to the slower water velocity. Both structures are suitable for this B2/B3 channel type (Rosgen, 1996). The structures will be placed 50 feet apart with each tandem placed at intervals of 200 feet, which is based on the stream size and type (Rosgen, 1996). The first tandem structure will be placed 300 feet above area 1, and five tandem structures in all will be placed.

The logs will be placed using a Spyder backhoe to minimize negative impact to the stream-bed and riparian area. The logs will be anchored to the stream bottom using 5 foot sections of 1 1/8" rebar to ensure long term functionality of the structures. The Spyder backhoe will be limited to one access point to reduce possible negative impacts to the riparian area, and any disturbed area will be rehabilitated using indigenous plant species.

All of the logs placed in the stream will have the root-wads attached and any ends showing will be broken, to meet the forest service visual quality objective of partial retention.

These structures should increase the overall available pool habitat from the current 5.3% to 15%, which is the objective. Each structure should create usable spawning ground below the down-stream V, and fine sediments should accumulate near the banks. In the long term the vegetation should naturally move in and use the fines that accumulate near the banks and reduce the width to depth ratio. The addition of this wood should also increase the amount of woody debris in the stream from 2 to 40 overall and reach our objective for large woody debris.

Riparian Restoration:

The width to depth ratio should gradually decrease as the gravel deposition moves out of the main channel. The riparian vegetation should follow as the soil builds along both banks, which should increase the amount of usable floodplain. This should result in more lateral stability in the stream-channel. A fully functional riparian area will be achieved over time as an equilibrium is reached between reduced gravel deposition and lateral stream channel stability. To accelerate this we are proposing to plant approximately 3,000 indigenous plants to the riparian area. The exact species will be determined by the plant association assessment, which will be completed prior to June, 1999. Both banks presently are covered with Himalayan blackberries, which have been identified for eradication. A Spyder backhoe with a brushing attachment will be used to remove as much of the Himalayan blackberry as possible before new vegetation is planted. A hand crew will come in and grub out the blackberry roots and plant the indigenous plants in the areas of disturbance. This should increase riparian diversity and meet the objectives of the CRGNSA "Noxious weed management plan".

The riparian area also lacks conifer trees in the lower section, which is a vital component for healthy fish habitat. To provide a source for future large coniferous wood recruitment there will be 300 coniferous seedlings planted, which will further increase bio-diversity in the riparian area.

Monitoring Plan:

A five year monitoring program will be used to track and document the progress of the project. This will include a Level III stream survey that will establish permanent control points along the stream to closely monitor changes in the stream bottom. Wolman pebble counts will also be performed to track changes in sediment size that is moving through the system. Fish population estimations will be made on the project area and two other well defined areas up-stream to track the changes in fish population size and distribution. Spawning surveys will be done quarterly to monitor the changes in anadromous fish use in the project area.

Spawning surveys will be contracted out to qualified individuals outside of the CRGNSA. All of the other monitoring efforts will be performed by the CRGNSA fisheries department and time donated by a representative of Beacon Rock State Park.

The level three survey of the stream will be done by measuring tape and elevated rod method, to achieve a cross-sectional profile of the stream bottom (Rosgen, 1996). Population estimation of the fisheries will be done using electroshocking removal depletion methodology.

We expect that at the end of the five year monitoring program we will see results that reflect our objectives, or a trend that indicates that the parameter will eventually reach our objectives. A yearly progress report will be written to summarize the findings of the monitoring efforts, and this will be made available to all interested agencies or individuals.

f. Facilities and equipment.

The Spyder backhoes will be contracted through solicitation of open bids in line with governmental regulations. All hand crews hired will be either youth crews or adult correctional crews hired out of Multnomah County. The remainder of the work will be performed by CRGNSA employees and Beacon Rock State Park employees. All equipment needed for this project is already owned by the CRGNSA, that includes vehicles for transportation to and from the project site. Computer equipment used for compiling data and writing reports will be that of the CRGNSA office.

g. References. Columbia River Gorge Commission. 1991. "Management Plan for the Columbia River Gorge National Scenic Area".

Lawlor, Timothy E. 1979. "Handbook to the orders and Families of Living Mammals". Mad River Press Inc. Eureka, California.

Prichard, Don et al. 1995. "Riparian Area Management: Process for assessing proper functioning condition". Technical reference 1737-9 1993. USDI Bureau of Land Management.

Slaney, P.A. and D. Zaldokas. 1997. "Fish Habitat Rehabilitation Procedures". Ministry of Environment, Lands and Parks. Vancouver, British Columbia.

Rosgen, Dave. 1996. Applied river morphology. Printed media companies. Minneapolis, Minnesota.

USDA Forest Service, Pacific Northwest Region. 1990. "Gifford Pinchot National Forest: Land and Resource Management Plan".

USDA Forest Service, National Forest System. 1992. "FEIS on Management for the Northern Spotted Owl in the National Forests".

Wydoski, Richard S. and Richard R. Whitney. 1979. " Inland Fishes of Washington". University of Washington Press. Seattle, Washington.

Section 8. Relationships to other projects

Woodard creek was first surveyed in 1994, which identified several restoration and enhancement opportunities. In 1995 the CRGNSA IDT investigated the watershed more closely to include habitat for fauna and flora, cultural concerns, and recreational opportunities. From this investigation several projects were identified and prioritized.

In 1996 and 1997 the implementation of fisheries projects, wildlife projects and watershed restoration projects began. Since then many of the identified problems of the upper watershed have been addressed and corrected. These include the following; road closures (18 miles), road obliterations (8 miles), landslide stabilization (6 acres), fisheries structures (44 logs, 17 boulders), culvert removals (8) and re-vegetation (33,000 indigenous plants).

All of the work in the past has been performed and paid for by the CRGNSA using federal money (approximately \$200,000.00 over 4 years). The proposed project will benefit the federal concerns up-stream and Beacon Rock State Park, as well as the overall fisheries concerns of the Columbia River.

The original stream survey report is available through the CRGNSA office, to include historical State stocking records, fish distribution data and a population estimation of the upper reaches. Copies of post-flood stream survey data are also available, however a final report has not been written. A Fisheries Environmental Analysis (EA) and a watershed EA are also available through the CRGNSA office in Hood River, Oregon. A final project report will be written when all work is completed in Woodard creek watershed.

Beacon Rock State Park had their access road washed out in the flood of 1996. Washington State Parks and Recreation Department is presently planning to rebuild the access road in 1998/99, and this project will function as some mitigation to their proposed project. Federal and State agencies will work closely on this project to ensure that it protects the habitat as well as the new access road and surrounding riparian area.

The gravel deposition in the mouth of Woodard creek should move to the main Columbia River channel and complement any efforts to restore main-stem salmonid spawning grounds.

Section 9. Key personnel

Project Coordinator: Derrick B. Bawdon Degree : BS - Zoology, Minor - Chemistry
Experience: 6 years in Fish & Wildlife with Forest Service
Expertise: Fish habitat analysis and restoration
Major Projects: 1995 Good Bear Creek Fish Habitat Restoration
1996 Woodard Creek Fish Habitat Restoration
1996 Indian Creek Restoration design, Heppner RD
Umatilla Nat. Forest
1997 Woodard Creek Fish Habitat Restoration
1997 Woodard Creek Watershed Restoration

Interdisciplinary team:

Ecologist/Botanist: Robin Dobson Degree: Doctorate - Plant Pathology
Experience: 6 years in plant pathology, 12+ years in ecology/botany
Expertise: Since 5 years of age he has been exploring nature, raising
hawks, catching mice, watching dragonflies change from
larvae to adults, collecting insects, etc. From this he has
distilled an in depth appreciation and understanding of
ecology. His formal education was directed more at
botany, biochemistry and plant pathology. As a result, at
heart, he is a naturalist with specific strengths in ecology
and botany; always trying to bring to a project a sense of
balance to ensure its long term ecological viability.
Publications/Jobs: Natural resource evaluation for land acquisitions
in the Columbia River Gorge.
Restoration of "East Pit", gravel pit east of Hood
River, Oregon.
NEPA and subsequent evaluation of the fisheries
restoration work on upper Woodard Creek.
Member of interdisciplinary team working to
conceptualize, plan, and implement the restoration of the
Sandy River Delta. Worked with Ducks Unlimited in
wetland restoration and with Friends of the Trees in
reforestation.
Active participant in creating the Management
Plan for the Columbia River Gorge Nat. Scenic Area.

Land Use Coordinator: Michael Boynton Degree: Masters - Anthropology
Experience: 24 years with Federal government, 3 private/academic.
Expertise: Native American cultural concerns.

Archaeologist: Thomas J. Turck Degree: Masters of Letters and Science - Anthropology
Experience: 13 years with federal government
publications:

Turck, T. J., and D. L. Lehman Turck. 1992. "Trading Posts Along the

Yukon River: Noochulghoyet Trading Post in Historic Context". *Arctic* 45(1)51-61.

Turck, T. J. 1992. Response to K. Dubbs. (Letters to the editor) *Arctic* 45(3)321-322.

Turck, T. J. 1993. Book Review. "Exploration of Alaska, 1865-1900. Morgan Sherwood, *Arctic* 46(2)185-186.

Planning Team Leader: Virginia Kelly Degree : BA - Biology, MLA - Landscape Arch.
Experience: 10 years with federal government.

Team leader on following projects:

- Sandy River Delta Master Plan and EIS
- Columbia Tribs East Watershed Analysis
- Columbia Tribs West Watershed Analysis
- CRGNSA Monitoring strategy and comp. Database
- Wells Island Open Space Plan
- Dog Mountain Open Space Plan
- Etc!

Section 10. Information/technology transfer

An annual report will be generated documenting the findings of the monitoring program. The annual reports will be made available to any concerned agency that requests it. All data collected will be kept in a data base and will also be available to any concerned agency.