Bonneville Power Administration
Fish and Wildlife Program FY98 Watershed Proposal Form

Section 1. General administrative information

Title # John Day Watershed Restoration

Bonneville project number, if an ongoing project 8027

Business name of agency, institution or organization requesting funding
The Confederated Tribes of the Warm Springs Reservation of Oregon

Business acronym (if appropriate) CTWSRO

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Grant Soil and Water Conservation District	721 S. Canyon Blvd	John Day, OR 97845	Kenneth Delano

NPPC Program Measure Number(s) which this project addresses.
5.4D.8, 7.8H.2, 7.8G.2, 7.10, 10.2C.2

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

Other planning document references.
John Day Basin Water Optimization Projects, Phase III. BOR 1996, John Day River Water Conservation Demonstration Project, Phase III, Planning Aid Memorandum. USFWS 1996. Stream Restoration Program for the Upper Mainstem of the John Day River, BOR 1996. Upper John Day River Basin Master Water Plan Working Paper. BOR

1990. Wy Kan Ush Me Wa Kush Wit, CRITFC, 1996.

Subbasin.
Upper mainstem John Day River, Middle Fork John Day River

Short description.
Protection and restoration actions are proposed to improve water quality and fish habitat, eliminate passage barriers for andromous and resident fish, reduce summer water temperatures, and enhance seasonal river flows in the John Day River.

Section 2. Key words

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

Other keywords.
water optimization, passage improvements, water quality improvements,

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Enterprise Ditch Diversion - Demonstrate actions to improve	a	Install a permanent concrete and rock diversion structure with fish

	water quality and fish habitat and eliminate passage barriers for anadromous and resident fish in the John Day River.		passage facilities approximately 100' downstream of existing structure.
		b	Construct a concrete turnout box and spillway; construct trash screen to protect turnout box; and construct headgate in turnout box.
		c	Incorporate layflat stanchions for installations of flash boards to regulate water level in spillway,
		d	Place approximately 400 cubic yards of 42" minus riprap in conjunction with sheet steel piling in the ged of the river on grade relative to the point of diversion to ensure flow over the fishway under all normally occurring water conditions.
		e	Incorporate the existing water measuring device and hydraulically powered fish wheel to screen fish from the ditch.
		f	Stablilize the south bank of the stream as necessary with riprap to protect the installation.
		h	Shape existing spoils on the bank and plant grasses and hardwoods. Stablize the north bank and promote rapid riparian vegetation recovery by seeding with grasses and planting hardwoods.
		i	Rebuild existing riparian corridor fence.
2	Rudishauser Diversion Demonstrate actions to improve water quality and fish habitat and eliminate passage barriers for anadromous and resident fish in the John Day River.	a	Install a permanent concrete and rock diversion structure with positive fish passage facilities at existing ditch head (legal point of diversion
		b	Construct a concrete turnout box and spillway; install trash screen to protect turnout box and water measurement weir as appropriate.
		c	Incorporate layflat stanchions in

			speillway for insertion of flach boards to regulate water level at headgate.
		d	Place approximately 80 cubic yards of 36” minus riprap in conjunction with sheet steel piling in the bed of the river or grade relative to the point of diversion to ensure flow over the fishway under all normally occuring water conditions.
		e	Incorporate the existing hydraulically powered fish wheel to screen fish from the ditch.
		f	Stablize the east and west banks of the stream as necessary with riprap rock to protect the installation.
		g	Shape existing spoils on the banks and plant grasses and hardwoods to promote rapid riparian vegetative recovery in disturbed areas.
		h	Rebuild existing riparian corridor fence.
3	Morris Conversation Demonstrate actions to improve water quality and fish habitat and eliminate passage barriers for anadromous and resident fish in the John Day Basin	a	Install a permanent concrete and rock diversion structure with positve fish passage facilities.
		b	Construct a concrete turnout box in spillway; install trashscreen to protect turnout bos; and install headgate in turnout box and water measurement weir as appropriate.
		c	Incorporate layflat stanchions in speillway for insertion of flach boards to regulate water level at headgate.
6		d	Place approximately 180 cubic yards of 36” minus riprap in conjunction with sheet steel piling in bed of the river or grade relative to the point of diversion to ensure flow over the fishway under all normally occuring water

			conditions.Place approximat
		e	Install 300 feet of 24 in PVC pipe immediately downstream of headgate to replace existing high loss open conveyance ditch which crosses old mining tailings adjacent to river.
		f	Incorporate the existing hydraulically powered fish wheel to screen fish from the ditch.
		g	Stablize the east and west banks of the stream as necessary with riprap rock to protect the installation.
		h	Shape existing spoils on the banks and plant grasses and hardwoods to promote rapid riparian vegetative recovery in disturbed areas.
		i	Rebuild existing riparian corridor fence.
4	Lee Conversion: Reorganize flood irrigation systems to sprinkler systems to improve irrigation efficiency, stream flow and resident fish in the John Day River	a	Install a system of buried mainlines using 3700 feet of 3”-4” high pressure PVC pipe with riser outlets every 50-60 feet.
		b	Assemble one 4” wheeline with mover and three 3” hand lines.
		c	Consturct pump pad, instll electric panels and assemble 15 HP pump system with screened intake.
5	Beech Creek/Panama Ditch Crossing: Improve water quality and fish habitat by passing Panama Ditch irrigation water across Beech Creek; eliminate passage barrier for anadromous and resident fish and add fish screen.	a	Install a permanent concrete and pipe structure to carry irrigation ditch water under Beech Creek using an inverted flume application.
		b	Restore stream banks in construction area.
		c	Install approximately 200 feet of conveyance pipe to replace existing open ditch approach to Beech Creek to assure desired head for

			inverted flume operation and to reduce damage from high water.
		d	Install a trash guard at pipe entrnce. Install one manhole at flume entrance to facilitate cleanout and maintenance.
		e	Install headgate and measuring device upstream of flume to allow legal diversion from Beech Creek as determined by Oregon Water Resources Department.
		f	Use the exising hydraulically powered fish whell to screen fish from the ditch
		g	Stablize the east and west banks of the stream as necessary with riprap rock to protect the installation.
		h	Shape existing spoils on the banks and plant grasses and hardwoods to promote rapid riparian vegetative recovery in disturbed areas.
6	Crown Ranch Diversion: Demonstrate actions to improve water quality and fish habitat and elminiate passage barriers for anadromous and resident fish in the John Day River.	a	Install a permanent concrete and rock diversion structure with fish passage facilities at the site of the existing annually installed structure.
		b	Construct a concrete turnout box and spillway; construct trash screen to protect turnout box; and construct headgate in turnout box.
		c	Incorporate layflat stanchions for installation of flash boards to regulate water level in spillway.
		d	Place approximately 200 cubic yards of 36” minus riprap in conjunction with sheet steelh piling in bed of river on grade relative to the point of diversion to endure flow over the fishway under all normally occurring water conditions.
		e	Incorporate the existing water measuring device and hydraulically

			powered fish shwll to screen fish from the ditch.
		f	Stabilize the banks of the stream adjacent to the structure as necessary with riprap to protect the installation.t
		f	Shape existing spoils on the bank and plant grasses and hardwoods to promote rapid riparian vegetation recovery.
		g	Rebuild existing riparian corridor fence.
7	Holmes Diversion: Demonstrate actions to improve water quality and fish habitat and eliminate passage barriers for anadromous and resident fish in the John Day River.	a	Install a permanent concrete and rock diversion structure with fish passage facilities at the site of the existing annually installed structure.
		b	Construct a concrete turnout box and spillway; construct trash screen to protect turnout box; and construct headgate in turnout box.
		c	Incorporate layflat stanchions for installation of flash boards to regulate water level in spillway.
		d	Place approximately 120 cubic yards of 36” minus riprap in conjunction with sheet steel piling in bed of river on grade relative to the point of diversion to endure flow over the fishway under all normally occurring water conditions.
		e	Incorporate the existing water measuring device and hydraulically powered fish shwll to screen fish from the ditch.
		f	Stabilize the banks of the stream adjacent to the structure as necessary with riprap to protect the installation.t
		g	Stabilize the banks of the stream adjacent to the structure as necessary with riprap to protect the installation.t

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	7/1997	9/1998	16.00%
2	7/1997	9/1998	7.00%
3	7/1997	9/1998	16.00%
4	7/1997	9/1998	15.00%
5	7/1997	9/1998	28.00%
6	7/1997	9/1998	9.00%
7	7/1997	9/1998	9.00%
			TOTAL 100.00%

Schedule constraints.
Constraints may include the in-water work window of July 15 - August 15/31, depending on project location (ODFW), the timeframe for obtaining removal/fill permits (3-4 months, and Point of Diversion Changes may take several years for approval.

Completion date.
1998

Section 5. Budget

FY99 budget by line item

Item	Note	FY98
Personnel		$ 0
Fringe benefits		$ 0
Supplies, materials, non-expendable property		$121,978
Operations & maintenance		
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		$2,500
PIT tags	# of tags:	
Travel		
Indirect costs		$50,498
Subcontracts		$32,440
Other		$21,981
TOTAL		$229,397

Outyear costs

Outyear costs	FY99	FY00	FY01	FY02
Total budget				
O&M as % of total				

Section 6. Abstract

The project objectives are intended to increase in-season river flows through a combination of irrigation efficiency measures, reduce bank instability, sedimentation, and bedload movement thereby improving water quality, reducing or eliminating migratory delays from passage impediments, improve riparian condition and implement an annual monitoring program. Forty-seven percent of costs will come from sources other than BPA.

This project responds to and is consistent with goals and objectives within the regions plans and programs. Previous projects of this type have demonstrated success in addressing limiting factors identified for aquatic resource production in the basin. They follow a comprehensive assessment of the watershed and a detailed stream restoration plan. The benefits are to an entirely wild stock and habitat.

The projects utilize standard design criteria, and were selected using an interagency evaluation and prioritization process. The effects of project implementation scenarios on river flows and stream temperatures were analyzed through studies of the basin hydrology. Hydrologic and temperature models were prepared for the mainstem to assist in the evaluation. The effects of individual projects were also assessed for impacts on stream flow, temperature, sediment, and other resources.

Some objectives (passage impediments) will be met immediately following implementation. Channel and riparian restoration will be dependent upon seasonal conditions, although previous evaluations have shown that recovery is apparent within 2-3 years

These projects will be incorporated into the annual monitoring plan and follow standard methods for the examination of water and water quality. Channel and riparian surveys will follow standard methods of assessment.

Section 7. Project description

a. Technical and/or scientific background.

The problems and needs of the John Day basin have been extensively studied over a long period and are detailed in numerous reports, management plans, and other documents. The Tribes, Oregon Department of Fish and Wildlife (ODFW) Oregon Water Resources

Department (OWRD), Northwest Power Planning Council (NPPC), Bonneville Power Administration (BPA), Bureau of Reclamation (BOR), universities, and others have all conducted assessments and research, prepared management plans, or implemented restoration activities in response to identified problems. The Tribes, in Volume II of the Spirit of the Salmon plan, summarize the following problems in the basin:

> Riparian habitat degradation is the most serious habitat problem in the John Day River Basin with approximately 660 degraded stream miles identified. Degraded fish habitat in the [basin] is result of low winter water temperature, high spring flows, depressed beaver populations, accelerated streambank erosion, excessive stream sedimentation and reduced instream cover. The basin's ability to naturally repair itself from riparian habitat degradation and other impacts is slow in the John Day's semiarid environment and some areas are adversely affected by activities which ceased long ago. In other cases, poor management practices continue and problems are escalating. As soil erosion increases, flooding occurs and streambanks erode away, degrading habitat quality. In many tributary streams, excessive water volumes are deepening channels, thus lowering water tables in the immediate proximity [citation omitted]. Such loss of habitat quantity and quality, managers believe improved irrigation systems along with restoration of the uplands and riparian systems would provide the greatest long-term natural benefits for fish and improve late season stream flow as well.

Other research and assessments, such as the ODFW spring chinook study and an Oregon State University multi-year research project, identify similar problems. The Integrated System Plan summarizes spring chinook salmon production issues as follows (Anonymous, 1991):

> Limiting factors in the John Day include a number of habitat oriented problems. Passage and spawning is limited during low water years due to natural flow condition, but further aggravated by water withdrawals. This invokes high temperatures in certain areas that further restrict spawning. In addition, logging, road building, mining, and channelization have resulted in habitat degradation. A habitat improvement program in under way.

In response to identified issues and needs, many agencies have developed and implemented both active and passive restoration programs. These efforts have focused on instream and riparian habitat, water quality and quantity and fish production. Most management plans rely on and draw from other plans, with integration occurring in comprehensive, programmatic management documents. Project efforts rely and build adaptatively upon previous and ongoing activities.

In 1988, the John Day Basin Council enlisted assistance from the Bureau of Reclamation (BOR) to provide technical assistance in preparing a watershed improvement plan. The goal was to create a list, using scientifically creditable assessment methods of "do-able" projects, with positive effects on water quality and quantity and aquatic habitat. In 1990,

the planning efforts of Tribes, agencies, and publics culminated in the Upper John River Basin Master Water Plan Working Paper. The Working Paper identified critical gaps between agency ongoing programs and promoted projects that addressed these gaps. In subsequent years, individual stream restoration plans were prepared for the major watersheds in the upper and middle subbasin. These documents detail a comprehensive restoration program involving multiple agencies which targets all components of the watershed. The implementation strategy involves numerous measures, which used in combination, will result in beneficial impacts to the watershed.

Project implementation activities, under the master watershed plan, began in **19__** with the Luce-Long, Cathedral Rock, Holliday Flow Cooling, and Crown Ranch Return Flow projects. These were projects implemented to demonstrate positive achievements in riparian, instream habitat, and water conservation. All projects had multiple parties involved in a cost-sharing arrangement. Preliminary results of the demonstration projects were extremely positive. The Luce-Long project eliminated a "pushup" diversion, previously identified as a migration impediment, replacing it with a permanent, concrete and sheet steel device. The project benefits instream habitat through elimination of potential fish passage barriers (passage is assured at all river levels), ensures appropriation of water to rate and duty, and reduces sedimentation and bank erosion. The Cathedral Rock project actually abandoned a fish passage impediment and increased irrigation efficiency through conversion of an open ditch to a closed-pipe conveyance. The Holliday and Crown Ranch Return Flow projects converted surface irrigation drains to below-ground returns systems. Monitoring on the Holliday project has shown a remarkable decrease in return flow temperatures to the river. Prior to implementing the project, only 27.5% of return flows were less than 64 degrees (the State water quality standard), while over 83% of post-project return flows were below the standard (Robertson and Delano 1997).

In 1996, the CTWSROand GSWCD signed an agreement to implement additional projects under the "Early Action Watershed Projects" program of the BPA. In 1996, the Holliday Diversion, Kight and Ediger Irrigation, and Lemons Infiltration Gallery projects were completed. The Holliday Diversion project converted a push-up diversion to a permanent structure, eliminating a fish passage impediment. The Kight and Ediger Irrigation and Lemon's Infiltration Gallery projects involved reorganization of the flood irrigation system to an efficient sprinkler operation. These projects reduce diverted amounts and result in additional flows remaining in the river for a longer period of time (from moving the point of diversion downstream). The Lemon's project consisted of replacing a permanent diversion with an infiltration gallery and converting a portion of open ditch system with a below-ground conveyance operation. This results in much less water being diverted (from a reduced need to divert more water for head and to make up for conveyance losses) and eliminates entirely a fish passage impediment. All projects consisted of cost-sharing with multiple parties, which effectively **reduced BPA's contribution to the projects to less than 50 percent.**

In 1997, the CTWSROand GSWCD implemented additional projects under the same

agreement from 1996. The Field's Irrigation and Infiltration Gallery, and Page and Clausen Irrigation Conversions were implemented in the 1997 field season. Although monitoring of these projects will not begin until next year, early anticipation of project results appears promising. The Fields project eliminated a fish passage barrier, reduced irrigation needs (by reusing warm tailwaters for irrigation), and improved irrigation and conveyance efficiencies. By reusing warm tailwater for irrigation, forage production is increased and river diversion needs are reduced. The Page and Clausen projects reduce irrigation needs by improving efficiency. The anticipated results of these projects is additional higher quality water is left in the river for a longer period of time, stream temperatures are reduced, and more water overall remains in the river. The overall effect is to increase streamflow, identified as a critical need in the John Day. BPA's total cost-share obligation for these projects was **less than 25 percent**.

b. Proposal objectives.

a) Increase in-season river flows through a combination of irrigation efficiency measures:

I) Irrigation systems were constructed historically without regard to water efficiency. In many cases, water must travel many miles within the ditch before being applied to the target field. Transport losses due to evaporation, seepage, and spill can be significant. Irrigators may divert more than the legal rate and duty in order to move their entitlement down the ditch.

ii) The 1978-1985 spring chinook study and other watershed assessments identified irrigation withdrawals, which reduce flows and increase temperatures, as a possible limiting factor for spring chinook salmon in the mainstem (Lindsay et al 1985).

iii) The interagency watershed assessment and stream restoration plans identify efficiency measures as having the potential for significant, positive effects on flows throughout the irrigation season.

iv) The Morris and Lee Irrigation Conversion projects will accomplish this objective by reorganizing the irrigation system and converting to an efficient conveyance and distribution system. The Beech Creek--Panama Ditch project will improve steam flows by reducing transportation losses and mixing of ditch and river water prior to field application.

b) Reduce bank instability, sedimentation, and bedload movement thereby improving water quality:

i) Annual construction, and reconstruction on an as-needed basis, of push-up diversions require scavenging of river banks and beds to secure materials for the

diversion dam. River banks and beds, up- and downstream of the dam are continuously unstable leading to acute and chronic sediment inputs.

ii) Installation of permanent structures on the Enterprise, Clausen, Page, Rudishauser, Morris, Lee, Crown Ranch, and Holmes project will eliminate the need for annual construction and in-season reconstruction of push-up diversions. The Beech Creek-Panama Ditch project will eliminate annual instream construction/reconstruction activities by providing a permanent ditch crossing over Beech Creek.

c) Reduce or eliminate migratory delays from passage impediments:

i) Anadromous fish entering the upper John Day system have already traveled over 200 miles to access spawning areas. Research that the CTWS-John Day Basin Office has funded in the upper basin shows that adult holding areas closely tied to thermal refugia (Torgersen 1996). Most of the refugia areas are in the upper mainstem above Prairie City and the upper Middle Fork, above the Camp Creek confluence.

ii) Passage impediments delay migration to spawning areas and may lower spawning success. The proposed projects address passage impediments in the migratory corridor downstream of the identified refugia and spawning areas.

iii) The Enterprise, Rudishauser, Morris, Beech Creek/Panama Ditch, Crown Ranch, and Holme Diversion projects all eliminate passage impediments.

d) Improve riparian condition and extent:

i) Annual construction of push-up diversions require scavenging of river banks to secure materials for the diversion dam. In addition to removing riparian vegetation, this leads to chronically unstable river banks both up and downstream of the diversion dam. Increased velocity over the diversion dam scours downstream banks.

ii) The diversion projects will eliminate the need for scavenging materials from adjacent river banks and reduce bank scouring below the structure. This, in combination with revegetation following project construction, will result in stable, well vegetation riparian areas surrounding the project structure.

iii). Irrigation and agriculture operational efficiencies which improve forage production and quality reduce the pressures to graze riparian areas.

e). Implement annual monitoring program:

i) The benefits of project implementation are generally outlined from a

comprehensive watershed assessment, stream restoration plans, and other agency documents. The specific benefits are being identified under project-level monitoring efforts. However, these efforts have been conducted only when monitoring funds have been secured.

ii) The CTWS--John Day Basin Office, is currently preparing a comprehensive monitoring program that will evaluate the specific benefits of the proposed and previous projects. The program will utilize the previous and ongoing efforts, such as the OSU thermal videography projects, temperature and flow monitoring, and other activities.

c. Rationale and significance to Regional Programs.

a) This project responds to many goals and objectives within the region's plans and programs. Although all of these goals cannot be responded to in this form key passages are listed blow. Other Objectives met to some extent, with these projects include the Programs's doubling goal (4.1) principles of salmon and steelhead rebuilding (4.1A) wild and naturally spawning population policy (7.1D), habitat goals and policies (7.X), coordinated habitat planning (7.6C) habitat objectives (7.6D), cooperative habitat protection and improvement with private landowners (7.7 10.2B) implementation of state, federal and tribal habitat improvements (7.X) water conservation (7.8H), passage and protective screens on tributaries (7.10), resident fish goals (10.1) and diversion screening and passage (10.2C).

b) All projects are described in the comprehensive watershed assessment and stream restoration plans referenced above. They were identified and prioritized using an interdisciplinary team of specialists from numerous agencies familiar with basin resources and needs.

c) From the Spirit of the Salmon plan, recommended habitat enhancement actions for the John Day subbasin, instream flow and passage: "Implement more efficient irrigation methods and water conservation practices benefiting landowners and instream flows."

d) The CTWSRO currently have a signed agreement with the GSWCD and ODFW for coordination of the previous projects and agreements with OSU and the GSWCD for monitoring. These agreements are anticipated to be updated for proposed projects. In addition, issues and opportunities in the basin are coordinated through a multi-agency team of professionals. Although this team is not formal coordination through an interagency agreement, the restoration projects are the demonstrated success of project collaboration.

e) The 1978-1985 spring chinook study (Lindsey et al 1985) identified habitat limitations in the mainstem. The watershed assessment and other plans/evaluations have identified additional issues and opportunities. Areas of suitable habitat, but currently unoccupied

due to affects from water withdrawals, were identified. Instream habitat improvements have been completed in the project area and other restoration activities have been completed and are ongoing. For example, some of the proposed projects are within the project areas for prior instream habitat improvements, riparian corridor fences, and other on-farm enhancements.

f) Irrigation screening began in the late 1950's and continues under the BPA fish screening and passage improvement program. The proposed projects reduce the need for fish screens by providing alternative measures (see 10.2C of the Program, in some cases, by converting flood diversion to a pumping station. In other situations, the effectiveness of the screening device is enhanced through reconfiguration of the diversion structure.

g) 5.4D. 8 "Evaluate the potential for water conservation, water efficiency or other measures in [BOR] programs with the most potential to benefit anadromous fish and with the least impact on third parties. BOR sponsored and assisted in the preparation of the water optimization stream restoration plans. Prior demonstration projects were implemented and monitoring has identified the positive benefits of these actions. The proposed projects are the logical extension of completing the demonstration projects and broaden the application of developed technology

h) 7.0A1: in identifying actions, use Table 1, Table 2 and Appendix A of the Columbia Basin Tribal Restoration Plan submitted to the Council on August 15, 1994, the Integrated System Plan and other appropriate information. As described above these projects are incorporated and described in the Tribal restoration plan. In addition, the Tribes were a cooperator on the water optimization and stream restoration plans.

i) The BPA Integrated System Plan identifies the following goals & policies:

> i) Area above Bonneville Dam is accorded priority: The John day drainage is in the region above Bonneville Dam.
>
> ii) Genetic risks must be assessed: The John Day supports one of the largest remaining, completely wild/natural populations of anadromous fish in the Columbia River basin. The projects are intended to increase productivity of wild stocks.
>
> iii) Harvest management must support rebuilding: No sport fishing for spring chinook salmon has been permitted in the basin since 1978 (Anonymous 1991) and subsistence fishing has been estimated at between approximately 2% and 20% and do not appear to impact John Day River stocks (Lindsey et al 1985). Although sport fishing for summer steelhead is currently allowed, a "no-kill" regulation is effect. Catch and release morality of summer steelhead is assumed to be negligible.
>
> iv) System integration will be necessary to assure consistency: All projects have

been integrated in the watershed assessments and stream restoration plans. Additional planning and implementation collaboration occurs in the field during project construction. Monitoring has been coordinated through county committees, formally through agreements among the agencies, and informally through regular agency contact.

v) Adaptive management should guide action and improve knowledge: Proposed actions build upon previous project activities and monitoring information gathered from these projects. These projects are a result of identified gaps in previous agency programs and respond to critiques of past actions (Beschta 1991).

j) The Integrated System Plan also identifies the following recommended actions for the John Day: Enhance stream flows through improvement of irrigation efficiency, water conversation, enforcement of established minimum stream flows, instream water rights, and watershed improvement, riparian storage, and beaver management.

k) 22.A: Support Native Species in Native Habitat. The Program preference is to support and rebuild native species in native habitats, especially weak stocks. John Day spring chinook are classified as wild stock that is depressed but stable, with enhancement through a natural production strategy. All John Day summer steelhead are wild and classified as healthy and increasing (although current trend is downward), with increase natural production as a restoration strategy is recommended.

l) 22C.1: Share Costs: The Council expects that costs will be shared among parties to implement measures in the Program, in particular for projects the effects of non-hydropower caused problems. Six of seven proposed projects have a total cost share by BPA of less than 50%. The total costs share of BPA's contribution is approximately 53%.

d. Project history

See above at Technical Background.

e. Methods.

a) The Grant Soil and Water Conservation District utilized project design criteria based on the Natural Resource Conservation Service's standard engineering guidelines as outlined in their National Cooperative Agreement.

b) Projects are selected using an interagency evaluation and prioritization process. Anticipated outcomes are weighted against costs to determine cost -benefit ratios for the proposed projects and alternatives.

c) Conceptual projects were analyzed in the Water Optimization Study. The effects of the project implementation scenarios on river flows and stream temperatures were analyzed through simulation studies of the basin hydrology. Hydrologic and temperature models were prepared for the main stem to assist in the evaluation. The effects of individual (project) implementation was also assessed for impacts on stream flow, temperature, sediment, fish and other resources (e.g., crop production).

d) Tasks associated specifically with objectives are described above at Section 4 and Section 7(b).

e) The methodology for these projects is being designed, dynamically modified and applied at the local level. However, it draws upon research conducted in the field of hydrology and engineering. Some of these resources are described in the paper "The Design and Construction of infiltration Galleries (Bennett, 1997) and other geotechnical manuals.

f) Monitoring methods follow standard procedures developed and outlined in the water optimization study stem restoration plans, the Council's Program, Methods for Assessing Water Quality, the County's Water Quality Monitoring Committee and other sources. Project proponents have completed an assessment of data-logger launching protocol for seasonal monitoring programs. Monitoring efforts are described in the annual monitoring plan (1998 *in prep*) and results are compiled in the annual monitoring report (1997 *in draft*).

g) Instream construction follows guidelines established by the ODFW for timing considerations to protect migrating, spawning, and emerging fish. Standard methods of construction for protection of instream resources are followed to ensure minimization of acute effects to aquatic and terrestrial resources in the area of impacts. Compliance with the National Environmental Policy Act through preparation of project level documents provides additional assurances of and attention to biological protection requirements.

h) Risks to species from short term acute construction impacts have been weighted against the long term risks implementing the projects have been significantly higher to resources than the negligible effects of project activities.

f. Facilities and equipment.

Construction equipment to be used varies depending upon site characteristics, materials to be installed, and site objectives. For example, the diversion projects use a track hoe and loader to place rip-rap rock and a pump to dry the site for placement of concrete. Sites with additional excavation requirements will utilize a bulldozer as well. Equipment is readily available within the project area.

Project design utilizes various engineering computer-aided design packages. Project monitoring will include application of microchip data-loggers and computer analysis programs. The equipment is already present in the project offices.

g. References.

Anonymous. 1991. Integrated system plan for salmon and steelhead production in the Columbia River Basin. Prepared by the Agencies and Indian Tribes of the Columbia Basin Fish and Wildlife Authority. Columbia Basin Fish and Wildlife Authority and Northwest Power Planning Council.

Anonymous. 1996. Wy-Kan-Ush-Mi-Wa-Kish-Wit. The Columbia River anadromous f ish plan of the Nez Perce, Umatilla, Warm Springs and Yakama Tribes. Vol. I and II.

Beschta R.L., W.S Platts, and B. Kaufmann. 1991. Field review of fish habitat improvement projects in the Grande Ronde and John Day River basins in Eastern Oregon. October 1991. Pp. 52.

Lindsay R.B., W.J. Knox, M.W. Flesher, B.J. Smith, .E.A. Olsen, and L.S. Lutz. 1985. Study of wild spring chinook salmon in the John Day River system. U.S. Dept.of Energy, Bonneville Power Administration, Division of Fish and Wildlife. DOE/BP-39796-1.

Robertson S.W. and K Delano. 1997. Holliday Ranch return flow cooling project, 1995-1996 monitoring report. Confederated Tribes of the Warm Springs Reservation of Oregon, John Day Basin Office. *In Prep*.

Torgersen, C.E. 1996. Multiscale assessment of thermal patterns on and the distribution of chinook salmon in the John Day River basin, Oregon. M.S. Thesis. Oregon State Univ. pp 99.

Section 8. Relationships to other projects

These projects are incorporated into the overall watershed restoration program of the agencies. Many proposed projects are within the project areas of previously implemented projects (e.g. instream habitat of riparian corridor project).

As explained in Schedule Constraints, above, these projects require permitting by other agencies. Since planning has already been completed, funding will allow submission of permit applications in sufficient time to perform instream construction activities during the 1998 instream construction window.

Section 9. Key personnel

Project contact:

Patty O'Toole
Duties include project administration, planning, design, implementation, coordination and monitoring and evaluation.
B.S. Zoology, Oregon State University, area of emphasis: Organismal Biology, 1989
Employed by the Confederated Tribes of the Warm Springs Reservation of Oregon. Eight years in fisheries management, project planning and implementation (production, management and habitat). Lead preparer for the Hood River Production Project Master Plan, Master Agreement and Environmental Impact Statement. Contributor to IRMP I and II.

Other project personnel will be assigned/hired/contracted when contract is established with BPA.

Section 10. Information/technology transfer

The Tribes anticipated obtaining assistance from a Bureau of Reclamation engineer in 1998. This engineer will be dedicated to planning and designing projects in the Middle and North Forks of the John Day River using technology developed on the upper mainstem John Day River. This engineer will "apprentice" with the GSWCD engineer to learn the techniques developed under this and other previous projects. The anticipation is that following the 1998 field season, the engineer will be able to return to BOR and use the projects completed during the field season to develop similar projects in other states.

In addition, other engineers and biologists from other basins have reviewed the projects completed in previous years. Their interest has been in taking this technology to their basins (e.g. Rogue River). We anticipated continuing this technology transfer in 1998.

Numerous tours of completed projects were conducted in 1997, involving landowners, watershed councils, and agency staff. A project information sheet entitled "Partners in Water Conservation" is prepared following completion of each project. These are then distributed to interested individuals and groups throughout the basin. These educational efforts have resulted in cooperative projects in other areas. The tour conducted with the North Fork Watershed Council has generated sufficient interest in the subbasin to warrant requesting additional technical assistance to plan projects in their area.