PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Mitigate Effects Of Runoff & Erosion On Salmonid Habitat In Pine Hollow

BPA project number: 9901000
Contract renewal date (mm/yyyy): 12/1999 ☒ **Multiple actions?**

Business name of agency, institution or organization requesting funding
Pine Hollow Watershed Council, c/o Sherman Soil and Water Conservation District

Business acronym (if appropriate) Sherman SWCD

Proposal contact person or principal investigator:

Name	Jeff Clark
Mailing Address	PO Box 405
City, ST Zip	Moro, OR 97039
Phone	(541) 565-3216
Fax	(541) 565-3430
Email address	scswcd@transport.com

NPPC Program Measure Number(s) which this project addresses
2.2A, 3.3D, 4.1A, 7.0B.1, 7.1A.1, 7.1B, 7.1C.2-3, 7.1D, 7.6, 7.6A, 7.6B.1, 7.6B.3, 7.6B.4, 7.6B.6, 7.6C, 7.6D, 7.7, 7.8A, 7.8B, 7.8D, 7.8H, 7.8J, 10.2B, 11.1, 11.2D, 11.2E

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references
Wy-Kan-Ush-Mi Wa-Kish-Wit, Volume II, Page 40 calls for improved upland management, and improved stream shading in the John Day River Basin. Note section III, Watershed Management, A, B, and C.
Pine Hollow Watershed Action Plan-DRAFT 1998.
Columbia Basin System Planning, Salmon and Steelhead Production Plan, John Day River Subbasin, September 1, 1990. In particular, see pages 36 and 40-42.

Short description
Will implement practices to reduce erosion and flooding, allowing natural recovery of riparian vegetation and channel type. Phase 2 will focus on replanting or protecting critical areas within the stream corridor.

Target species
Steelhead, Redband trout, Elk, Mule Deer, Antelope

Section 2. Sorting and evaluation

Subbasin
Lower Middle Columbia, John Day Subbasin

Evaluation Process Sort

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

Section 3. Relationships to other Bonneville projects

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

Project #	Project title/description
20522	Multi-Year John Day Anadromous Fish Plan

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
	None	

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1997	Demonstration Phase implementation	addressed sources of sediment and runoff
1998	Begin upland practices	addresses sources of sediment and runoff
1998	Assess stream condition	detailed description of stream condition
1999	Continue installation of upland practices	addresses sources of sediment and runoff
1995	Begin temperature monitoring	documents temperature of stream. Over long term, will show trend
1996	Begin steelhead spawning surveys	documents use of system by steelhead

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Assess Condition	a	Range Assessment-COMPLETE
		b	Riparian/Channel Assessment-COMPLETE
2	Mitigate Peak Flow Events	a	Develop Range Management Plans
		b	Install cross-fencing for better livestock distribution/utilization
		c	Install spring developments for better livestock distribution/utilization
		d	Reseed critical areas - areas in poor/fair condition
		e	Install field terracing and water and sediment control basins for control of runoff/erosion from grain fields
3	Enhance summer flows	a	Slow water runoff through measures described above and improve water-holding capacity of riparian area.
4	Encourage riparian and stream channel recovery	a	Establish riparian pasture systems
		b	Provide sources of water in the uplands
		c	Establish cross-fences to allow more even livestock distribution
		d	Establish ungrazed buffer strips

			through conservation reserve program
		e	Actively plant woody riparian species in critical areas.
5	Reduce summer temperatures	a	To be achieved through measures described above.
6	Improve upland wildlife habitat	a	Establish upland water sources - springs and "guzzlers"
		b	Establish tree plantings in natural or artificial wet areas in uplands
		c	Grass/legume seedings
		d	Other projects described above
7	Monitor	a	Track steelhead spawning activity through redd counts - ONGOING
		b	Photopoints at all project sites, and photo monitoring of range condition at individual ranches.
		c	Monitor temperature throughout summer
		d	Reevaluate stream condition after five years using Proper Functioning Condition

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1996	8/1998		X	0.00%
2	10/1996	12/2001	see obj 4	X	40.00%
3	10/1996	12/2001	see obj 4		0.00%
4	12/1998	12/2004	allow development of proper functioning condition in mainstem and major tributaries	X	20.00%
5	10/1996	12/2004	statistically significant reduction in maximum stream temperatures		0.00%
6	8/1998	12/2004	maintain or increase current herd sizes and bird populations	X	5.00%
7	3/1996	12/2010		X	35.00%
				Total	100.00%

Schedule constraints

Engineering assistance from NRCS is limited.
Riparian work will not be started until upland work is completed. The main constraint to riparian recovery is excessive peak flows. Completion of upland runoff control work may be considered a milestone.

Completion date
2004

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	3 people, ~3/4 FTE, total value ~$18,900. BPA share: 50%, Other Sources: GWEB, ODA, Counties,	%28	9,450
Fringe benefits	Total value, $3,150, Other info as above	%7	$2,362
Supplies, materials, non-expendable property		%0	
Operations & maintenance	100% provided by landowners	%0	
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Photocopy machine, 15% local match	%9	$3,000
NEPA costs		%0	
Construction-related support		%0	
PIT tags	# of tags:	%0	
Travel		%0	
Indirect costs		%0	
Subcontractor	Total value: $47,100. BPA: 40%, landowners : 10%, other sources: 50%	%56	19,125
Other		%0	
TOTAL BPA FY2000 BUDGET REQUEST			$33,937

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
GWEB	$68,000 over two years (2000-2001)	%47	34,000
PG&E Gas Transmission NW	$8,000 over five years (1996-2001)	%2	1,600
		%0	
Wasco SWCD	ATV, 24 hours per year @ $20/hour	%1	480
US Fish & Wildlife	$15,000 over five years (1997-2002)	%4	3,000
Total project cost (including BPA portion)			$73,017

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	$30,000	$20,000	$20,000	$15,000

Section 6. References

Watershed?	Reference
☒	Pine Hollow Watershed Council, 1998. DRAFT-Pine Hollow Watershed Action Plan, Sherman Soil and Water Conservation District, Moro OR.
☐	Oregon Department of Fish and Wildlife, Confederated Tribes of Umatilla Reservation, Confederated Tribes of Warm Springs Reservation, 1990. Columbia Basin System Planning, Salmon and Steelhead Production Plan, John Day River Subbasin, ODFW, Portland OR.
☐	Columbia Basin Fish and Wildlife Authority, 1999. Draft Annual Implementation Work Plan, John Day Basin, CBFWA, Portland OR
☐	Tribes of Nez Perce, Umatilla, Yakama and Warm Springs, DATE. Wy-Kan-Ush-Mi Wa-Kish-Wit.

PART II - NARRATIVE

Section 7. Abstract

Pine Hollow Watershed provides twenty miles of potential steelhead habitat which has been degraded by high peak flows, low summer water levels, and high peak temperatures. Riparian soil and vegetation have been removed in certain places by flood events and by maintenance activities on a natural gas pipeline through the lower six miles of the canyon. The goal of this project is to encourage the recovery of the stream by slowing runoff during the peak flow events, allowing the slow, safe release of water during the

summer and allowing recovery of riparian vegetation. Where deemed necessary, the project would actively plant woody riparian species in critical areas. These actions would improve spawning and rearing habitat by increasing flow during critical months, reducing damage to riparian vegetation, reducing summer water temperatures, and allowing recovery of channel morphology. Deer, elk, and upland birds would also benefit by enhanced water sources in the uplands. Specific projects include development of grazing management plans, riparian pastures, exclosures, cross fencing, water/sediment control structures, and native grass and tree plantings. The method emphasizes the top-down approach to watershed recovery – begin at the ridge top, and work toward the stream. This method has repeatedly been shown to be the most cost effective. Upland work will be mostly completed by 2001, and active riparian plantings completed by 2004. Monitoring would consist of extensive photopoints, spawning surveys, continuous temperature readings, and physical stream surveys. This would continue for ten years past the end of the last upland phase.

Section 8. Project description

a. Technical and/or scientific background

Pine Hollow runs into the west side of the John Day River at RM 85. Land use is nearly 90% range and 10% cropland. The ability of the Pine Hollow Watershed to function properly has been seriously impaired by historic management and human activity in the watershed and by natural catastrophic events. Poor water distribution, large pasture size, and poor forage condition in some of the uplands create uneven grazing patterns and areas of degraded range conditions. The riparian and bottom areas have been areas of livestock concentration, as well as ground disturbance by PG&E Gas Transmission NW (GT-NW) for gas pipeline installation and maintenance. These activities, combined with catastrophic flood events (1964, 1978, 1995, and 1996), have left sections of the bottom of Pine Hollow and some of its tributaries dry and stripped of vegetation.

In April 1996, the BLM, SWCD, landowners and ODFW collaborated on a steelhead habitat survey. This survey found that the main channel of Pine Hollow consisted of 80% dry channel, with the most degraded and dry channel occurring in the lower reach, from RM 0 to RM 5.5. In June 1998, Proper Functioning Condition assessments were completed by SWCD, BLM, ODFW and landowners. Results were generalized throughout the watershed by examining aerial video data, and are now under review by technical personnel. If review indicates a need, additional sites may be visisted to allow more detailed assessment.

Pine Hollow contains summer steelhead and inland redband trout. Historically, Pine Hollow provided about twenty miles of spawning habitat. Spawning and rearing habitat is currently limited by low summer flows and high water temperatures.

High peak flows during winter and subsurface flow in summer interfere both with rearing and with migration success. Nevertheless, steelhead and redband trout were found in all reaches of the main channel, and in some side canyons. In 1996, one redd (egg cluster) was found in two miles of stream. In 1997, five redds were found in 3.3 miles, and in 1998, seven redds were found in 3.3 miles.

The GT-NW pipeline was installed in 1961. In December 1964, a flood caused sections of pipe up to 1000 feet long to be exposed and floated due to scouring. GT-NW requires the use of heavy equipment in the lower 6.8 miles of Pine Hollow to maintain its access road and the protective covering of soil and rock on the pipeline. With improved riparian vegetation and channel stability, the need for mechanical disturbance of the riparian area should be considerably reduced.

If the current problems in the Pine Hollow Watershed are not addressed the area will continue to experience accelerated surface runoff, leading to erosion, flooding, and siltation of spawning beds which could eliminate fish habitat.

TABLE: Measures in the Northwest Power Planning Council's Fish and Wildlife Program satisfied by funding this program:

Section.sub	Comments
2.2A	Native habitat exists and is utilized in Pine Hollow, but is degraded.
3.3D	We propose to begin gathering data to document changes in habitat and populations. The chance to gather baseline data is passing.
4.1A	Project will rebuild a native steelhead run consistent with the principles listed in this section.
7.0B.1	Project will help implement an acknowledged local watershed plan.
7.1B	Project will save a genetically distinct, wild steelhead run.
7.1C.2-3	Project will gather data on a genetically distinct, wild steelhead run.
7.1D	Project will gather data including redd counts, habitat range, and habitat information, such as temperature and flow rate.
7.6	Project aimed at improving habitat based on integrated watershed approach.
7.6A	Project coordinates human activities on a watershed scale; improves productivity of steelhead habitat critical to recovery of a weak stock.
7.6B.1, 3, 4	Project aimed at improvement of poor condition habitat for a weak run; project integrated into a broader watershed effort promoting cooperative agreements with private landowners and several state and federal agencies; project follows a model (Buck Hollow) which achieves high level of results per dollar of funding.
7.6C	Project coordinates assessment, planning and monitoring efforts of BLM, ODFW, SWCD, landowners and others.
7.6D	Project objectives are consistent with objectives expressed in 7.6D - specifically, sediment, bank stability, water quality, quantity & timing, pools, riparian vegetation, stream morphology, grazing, and roads.
7.7	Project emphasizes integration of volunteer planning and implementation with state, federal and local government technical assistance and planning.
7.8A	Project implements some habitat restoration on BLM land, and integrates their efforts on cooperating private lands; project involves NRCS implementing soil erosion control in uplands.
7.8B	Project will implement BMP's for soil and stream/riparian protection; project will establish data on success of these measures in restoring steelhead run.
7.8D	Project will replant degraded streambanks, and includes use of a greenhouse at S. Sherman Elementary school for propagation and education.
7.8H	Project emphasizes water conservation through sediment basins, terraces and spring development.
7.8J	Project will emphasize increased in-stream flows through slow release from water/sediment basins, improved vegetative cover, enhanced riparian vegetation; project will document changes in in-stream flow.
10.2B	Pine Hollow contains redband trout; project will improve degraded habitat for redband trout, as well as other resident fish species through comprehensive watershed plan.
11.1	Project will provide riparian and upland habitat for wildlife species impacted by hydroelectric dams.
11.2D	Project uses least cost approaches, has measurable objectives, protects high-quality native habitat, both riparian and upland.
11.2E	Project improves habitat for bald eagle, peregrine falcon, black-capped chickadee, sharp-tailed grouse, sage grouse, elk, antelope and mule deer, as well as others.

Sherman Soil and Water Conservation Districts began watershed planning efforts in 1990 with the Buck Hollow Project. This watershed straddles the boundary between Wasco and Sherman Soil and Water Conservation Districts, and the two districts partnered to start an intense, landowner-driven watershed enhancement project in that watershed. Fiscal partners in that watershed included individual landowners, USDA Natural Resources Conservation Service (NRCS), BPA, Oregon Department of Fish and Wildlife (ODFW), Governor's Watershed Enhancement Board (GWEB), Northwest Steelheaders,

and other private sources. Technical partners included NRCS, ODFW, and Bureau of Land Management.

After that project began showing early successes, landowners in Pine Hollow, many of whom had also taken part in the Buck Hollow Project, approached the conservation districts about starting a similar project with nearly identical goals in Pine Hollow. By 1996, the landowners had formed a Watershed Council to set direction and policy for the project. All watershed restoration activities in Pine Hollow are planned and coordinated by the Watershed Council. The Bureau of Land Management and Oregon Department of Fish and Wildlife have assisted the District and the Council in assessment and monitoring efforts. NRCS has provided technical assistance in construction of structures and fences. PG&E Gas Transmission NW has been an active partner in planning, funding and activities. Warm Springs Department of Natural Resources has been consulted and found our plans to be consistent with their own goals in the John Day Basin. BPA funds were first used in FY1999. Pine Hollow is located in both Sherman and Wasco Counties. Sherman County has recognized and funded the watershed council. Wasco SWCD has provided a certain amount of initial funding, but has agreed to leave most of the coordination and fiscal responsibilities to Sherman SWCD.

b. Rationale and significance to Regional Programs

The major pollution factor limiting the quality of salmonid habitat in the interior Northwest is changes in the hydrologic cycle. Changes in vegetative cover due to historic landuse have accentuated the extreme high flows in the winter and extremely low baseflows in the summer. High flows in the winter are the major cause of streambank erosion and removal of riparian vegetation. Grazing pressure on riparian pastures due to historic management practices is also a contributing factor. Low base flows and lack of riparian vegetation are responsible for lethally high summer water temperatures. This project proposes to treat the causes of habitat degradation, rather than the symptoms. By altering management practices, the causes of degradation are removed, and the stream can recover. This approach is the most cost-effective because it de-emphasizes in-stream structures which are expensive to build and subject to damage from high flows. Risk is minimized, because hazards arising from upstream sources are reduced before downstream measures are considered. Furthermore, operation and maintenance costs are left to the individual ranch operators, who agree in writing to accept these costs for ten years as part of their ranch expenses in return for the more productive ranch they expect to have due to improved range condition. Furthermore, the watershed approach also benefits other species of wildlife, as called for in section 11 of the Columbia River Basin Fish and Wildlife Program.

The Columbia Basin System Planning Salmon and Steelhead Production Plan for the John day Subbasin (page 37) calls for reducing livestock pressure by implementation of limited grazing periods, reduced stocking rates, stream corridort fencing and management of riparian pasture fences. Wy-Kan-Ush-Mi Wa-Kish-Wit, Volume II (Page 40) calls for improved upland management, and improved stream shading in the John Day River Basin. Note section III, Watershed Management, A, B, and C. Participants in this project will implement grazing management plans that involve these measures.

c. Relationships to other projects

The Columbia Basin System Planning Salmon and Steelhead Production Plan for the John day Subbasin (page 37) calls for reducing livestock pressure by implementation of limited grazing periods, reduced stocking rates, stream corridort fencing and management of riparian pasture fences. Wy-Kan-Ush-Mi Wa-Kish-Wit, Volume II (Page 40) calls for improved upland management, and improved stream shading in the John Day River Basin. Note section III, Watershed Management, A, B, and C. This project is entirely compatible with these goals and presents the least-cost method of implementing these plans in Pine Hollow Watershed.

d. Project history (for ongoing projects)

This project has has been active using other funding sources since 1996. BPA funds were first utilized in 1999 for upland runoff and erosion control practices.

Ranch planning efforts began in 1996. To date, four plans are in progress, two new plans and two updates. These plans will call for smaller pasture size, quicker rotation, and reduced grazing pressure on riparian areas.

On-the-ground projects began in 1996 and continue through to the present. Demonstration projects were funded by a grant from Oregon Department of Agriculture for $19,328, with a 10% contribution on the part of the landowners, and approximately $9000 in cost-share provided by USDA Farm Services Agency. They included three cross-fences, one of which creates a riparian pasture, three water and sediment control basins (WASCOBs), 5000 feet of field terracing, one spring development, two critical area grass seedings, and one grass stand enhancement.

The Governor's Watershed Enhancement Board (GWEB) awarded $103,000 for the 1998/99 biennium (July 1997-June 1999). Intitial stream condition assessment was completed using the Proper Functioning Condition method (PFC) and is described above. On-the-ground implementation includes two miles of cross fence, 230 acres of critical area range seedings, four WASCOBs, three spring developments, and 1.5 miles of field terracing. Photopoints will be taken at every site of on-the-ground work for five years.

USDI Fish and Wildlife Service contributed $15,000 for habitat improvements on private lands.

Three landowners are planning to put every stream bottom on their ranch into the Conservation Reserve Enhancement Program (CREP). As part of CREP, the landowners will plant native or locally adapted trees in every stream reach with suitable soil. It is imperative to reduce peak flows originating in upland areas in order to protect these plantings.

e. Proposal objectives

1) Assess Condition: The overall condition of the watershed has been assessed during watershed council sessions through conversations between private landowners, Pacific Gas Transmission Company representatives, and technical personnel from the NRCS, BLM, ODFW, and SWCD. Conclusions from these sessions have formed the basis for

early actions in the watershed. A range conservationist contracted by the SWCD has reviewed condition of range belonging to participating landowners, in the process of completing their range management plans. In June 1998, the SWCD, BLM, ODFW and participating landowners took part in a stream survey using the Proper Functioning Condition (PFC) method developed by BLM. Completion of PFC assessment in the watershed by personnel from ODFW, BLM, the SWCD and individual landowners resulted in a map of stream reaches showing areas of functioning stream, nonfunctioning stream and at-risk areas. This document is currently under review by technical partners. The final document will be used to plan for objective 4, described below.

2) Mitigate Peak Flows: One of the major causes of damage to fish habitat in Pine Hollow is the peak flow events which occur either during rain on frozen ground or snow events in the winter. These events are partially responsible for removing riparian vegetation and altering stream morphology either through downcutting or stream widening. Furthermore, the frequency of these events prevents recovery of the stream channel and riparian corridor. It follows that this detrimental effect must be overcome before any other fish habitat objectives can be met.

A TR-20 watershed runoff analysis performed in Spears Canyon in 1992 provides some guidance on what kind of results can be achieved by this sort of project. Spears Canyon is a tributary to neighboring Buck Hollow. The TR-20 is a model developed by NRCS to estimate runoff levels in various watersheds, given various soils, vegetative cover, and land use practices. In Spears Canyon, it was shown that under existing land use practices and vegetation, the installation of Water and Sediment Control Basins (WASCOBs) would reduce peak runoff levels by 26%, and increase summer flows a similar percentage. This analysis did not include the effects of improved range conditions due to quicker rotations, smaller pasture sizes and critical area seedings. However, when these practices are modeled, they have an even greater (and longer lasting) impact on runoff than WASCOBs. Thus, it is conservative to project a 50% reduction in peak flows and a comparable increase in summer flows through a combination of WASCOBs and range management improvements resulting in healthier vegetative cover throughout the watershed.

3) Enhance Summer Base Flows: This objective goes hand-in-hand with the one described above. Water which is stored in healthy grassland soils, riparian areas, or structures is eventually released from springs during the summer months. Since treatment, Spears Canyon runs water year-round, whereas before, it was dry through the late summer. Thus, whenever peak flows can be stored in soil or structures, base flows will simultaneously be raised. The objective of this project is to return Pine Hollow's 20 miles of potential fish habitat to above-ground flow.

4) Encourage Riparian and Stream Channel Recovery: Besides the measures involved with meeting objectives 2 and 3, recovery of the stream corridor will require careful management of riparian grazing. Grazing management plans to improve upland range conditions will also make provisions for the separate, careful management of grazing in riparian areas. The objective is to observe an improving trend in stream/riparian function over the next ten years.

5) Reduce Summer Water Temperatures: Increased summer base flows and increased stream shading will result in lowered summer water temperatures. To improve steelhead

survival rates, summer water temperature must not exceed 64^{o}F in the summer months. This objective should be approached once significant regrowth has occurred in riparian vegetation, and stream channels have narrowed and deepened due to channel recovery.

6) Improve Wildlife Habitat: Improved grassland health, increased upland water sources, and a healthy riparian corridor should result in greater carrying capacity for wildlife.

7) Monitor: The results of this project will be tracked in order to serve as a model for future efforts to maximize ecological benefits in Eastern Oregon. Monitoring data from photopoints, spawning surveys, Proper Functioning Condition assessments and temperature monitors will be collected, stored and reported by Sherman Soil and Water Conservation District and will be available to cooperators.

f. Methods

Phase 1 of the Pine Hollow Watershed project consists of cropland conservation measures, range management plans and associated capital improvements. Range management plans are the most cost-effective improvement that can be made to a range-dominated watershed. By managing cattle to even out grazing pressure throughout the watershed, grazing pressure can be reduced near streams, springs and lowlands. Hand-in-hand with these plans come the capital improvements necessary to implement them. First among these is fencing. In some cases, very large upland pastures must be broken down into smaller units to allow more even livestock distribution and forage utilization. In other cases, riparian areas are split off from upland pastures. Where this is accomplished, cattle can be excluded from riparian areas during the growing season, and in some cases, are excluded altogether. Some participants are planning to put their riparian areas into the Conservation Reserve Enhancement Program, which requires exclusion of livestock and planting of locally-adapted trees. Upland springs must be developed as water sources for upland pastures, which are otherwise underutilized due to lack of water.

Stabilizing runoff and erosion from the upland regions is another aspect of Phase 1. Improved range condition is the long term solution to this. In the short term, however, quicker results (years versus decades) are achieved by installing water and sediment control basins (WASCOBs). These basins are installed near the upland sources of tributary canyons. They collect a portion of runoff water before it reaches the riparian area and slowly release it through subterranean flow over a period of approximately seventy days (USDA NRCS Field Office Technical Guide), thus moderating peak flows and recharging aquifers in the uplands. Many times, a strip of riparian vegetaition will develop downstream from a WASCOB, where there had previously been only a dry channel. This reduces damage to riparian areas and stream channels from peak flows and also contributes to enhanced summer flow as groundwater is released into the stream system by springs downhill from the WASCOBs.

Phase 2 consists of actively enhancing critical riparian areas. This phase will begin once the danger of damaging flood events has been reduced by Phase 1 activities. Where soil suitable for tree planting exists, native or locally adapted species will be planted to speed the natural recovery of riparian vegetation where it has been damaged. Plantings will consist of woody species because the course sediment (sand/gravel/cobble) in Pine Hollow is more suited to woody riparian vegetation than to reeds and rushes. The

Conservation Reserve Enhancement Program will be utilized for a significant part of this work.

For the most part, the existing channel morphology will not be actively manipulated. It has been demonstrated by BLM (TR 1737-9 1993) that management changes such as have been outlined here will, over time, lead to a recovery of correct channel morphology. On the other hand, in-stream structures are expensive and prone to destruction during high flow events.

Monitoring will consist of four main activities: photopoints, spawning surveys, temperature monitoring, and Proper Functioning Condition assessments (PFC).

Photopoints will be established prior to installation of each new capital improvement, and will be updated annually for at least five years. Photopoints will also be established in the mainstem and updated during each spawning survey. We expect to see an improvement in range condition, as well as some riparian growth downstream from WASCOBs.

Spawning surveys will be conducted annually along three miles of stream in mainstem Pine Hollow and Bath Canyon (a.k.a. Long Hollow), one of the largest tributaries. These surveys will be conducted by teams consisting of personnel from Oregon Department of Fish and Wildlife (John Day Office), Bureau of Land Management (Prineville Office), Watershed Council members, landowners and SWCD employees. Surveys have been conducted since 1996. The number of redds has risen since 1996 from one to seven redds in a 3.3 mile survey area. We would expect spawning activity to rise over the next ten years as stream habitat conditions improve.

Temperature is monitored by HoboTemp continuous data loggers at two sites – one in the mainstem, and one in Bath Canyon. Two more are available for installation in 1999. These will be installed during each spawning survey by SWCD personnel, and removed in the fall. Our expectation is that the maximum seven day average temperature for the year will fall as baseflows increase and riparian vegetation recovers.

PFC is a technique used and taught by USDI BLM, U.S. Forest Service, USDA NRCS, and Oregon Cattlemen's Association. The technique is a survey of stream physical and vegetative condition. With photopoints, it can provide a good comparative record of changes in stream condition, as well as a method of conducting triage. PFC surveys were conducted in 1998, and will be repeated in 2004 or 2005. PFC teams consisted of personnel from the SWCD, ODFW, BLM and individual landowners. We would expect to find more of the stream evaluated as "Properly Functioning" or "Functioning at risk -- with an upward trend" as riparian vegetation increases and stream channel morphology returns to a deeper, narrower form with desired floodplain characteristics.

g. Facilities and equipment

Equipment used in this project can be broken into two categories: office equipment and field equipment.
Office equipment is used by SWCD personnel in the administration and coordination of the project. The SWCD has three personal computers, three printers, a copy machine, and a fax.

The fax is relatively new, while the copy machine is relatively old. Copy quality is unacceptable after six copies are run, and the machine must be allowed to cool. The equipment should be updated.
Of the three office computers, two are relatively new with Pentium equivalent chips and 32MB RAM, the other is a 486/60, with 8M RAM. The latter computer has neither the necessary RAM or hard drive to run Office 97 applications. This computer will be upgraded in 1999.
Field equipment is necessary for monitoring. Assessment and monitoring is performed by teams consisting of SWCD personnel, watershed council volunteers, and agency personnel from BLM, ODFW or other agencies. The SWCD has computer hardware required to download the continuous temperature monitors installed in two locations in the stream. All-terrain vehicles (ATVs) are necessary for access to the canyon. So far, these have been loaned for specific purposes by landowners and by BLM. The SWCD does not own an ATV.

h. Budget

The budget request can be broken down into three categories: personnel, equipment and implementation. The SWCD is asking BPA for a 40% cost-share on implementation of on-the-ground practices, a 50% cost-share on personnel, and 85% of the cost to buy a new photocopy machine.
Implementation will, for the most part, continue to consist of upland runoff and erosion control practices, including ranch planning and intensive management. Landowners will provide 10% of the cost of installing practices, and will then be required to maintain these practices, without cost-share for 10 years. The SWCD will apply to the Governor's Watershed Enhancement Board (GWEB) for the remainder of the funds. At the present time, $47,100 worth of projects are planned for FY2000. If landowners agree to more practices before March 1999, the SWCD will request more funds from GWEB, thus decreasing the proportion of funds paid by BPA.
Productivity of the SWCD is limited by funding for personnel. At the present time, the State provides $7000 and Sherman County provides $6000 for SWCD administrative personnel. In addition, one technician and one watershed coordinator are funded by specific grants. Sherman SWCD contracts with a range conservationist to produce ranch plans, monitor project sites and inspect completed projects. BPA is asked to provide 50% funding for time spent in Pine Hollow by the District Coordinator, watershed coordinator and range conservationist.
The SWCD's ability to produce outreach materials and manage watershed council meetings is hampered by the nonfunctional photocopy machine. Purchase of a new machine would be a one-time expense, which would allow the production of fliers, mailings and newsletters for outreach to landowners and to produce materials used in meetings of the watershed council.

Section 9. Key personnel

Resumes are submitted below for the four individuals who put in the most hours to the Pine Hollow Project. In addition to these individuals, several other individuals contribute specialized knowledge to the project:

Tim Unterwegner, Fish Biologist, ODFW, John Day, OR
Mike Grey, Fish Biologist, ODFW, John Day, OR
Darren Brumbach, Fish Biologist, USDI BLM, Prineville, OR
Mary D'Aversa, Hydrologist, USDI BLM, Prineville, OR (Note: Mary is transferring and will be replaced by another hydrologist.)
Craig Obermiller, Rangeland Management Specialist, Prineville, OR

Linnea Holmes
Pine Hollow Project Planner and Range Management Specialist
Approximately 25 hours per month devoted to Pine Hollow

Current Responsibilities:

Contracted by Sherman SWCD in June 1996 to develop range plans with private landowners in the Pine Hollow Watershed. Duties include rangeland assessment for the Pine Hollow Watershed Enhancement Project, determining range condition for individual ranch management plans, and working with ranchers to develop management plans for their property, including alternatives for management changes and projects to enhance the watershed. Special training includes "Proper Functioning Condition" workshop for stream assessment (June 1997).

Recent Positions and Prior Experience in Range Management

Soil Conservationist, Natural Resources Conservation Service, Moro, Oregon. 1993-1996. Duties included implementing the Food Security Act rules and regulations, working with private landowners to develop conservation plans for their farms or ranches, and working with the local SWCD board to address their concerns. Other duties included serving as a member of the "Prescribed Fire Cadre" for the State of Oregon. Special training included a workshop on the Grazing Lands Application software for developing range management plans.

Ranch Operations. 1991-1993. Assisted in the operation of a dryland wheat and cattle ranch.

Range Technician, U.S. Forest Service, Bear Valley Ranger District, John Day, Oregon. 1989-1991. Duties included monitoring livestock distribution and utilization to achieve proper forage use, analyzing range resource condition and trend on Forest range allotments, and working with livestock permittees to develop workable Allotment Management Plans.

Education

Bachelor of Science, Agricultural Business Management and Rangeland Resource Management, Oregon State University in conjunction with Eastern Oregon State College. 1989.
Proper Functioning Condition. June 1997.
Grazing Lands Application Software. 1994.

Jeffrey Clark
Watershed Coordinator, Sherman and Wasco Soil and Water Conservation District
Approximately 25 hours per month devoted to Pine Hollow Watershed

Current Responsibilities:
Began working for Sherman and Wasco Soil and Water Conservation Districts in February 1997. Coordinate meetings and activities for six watershed councils in Sherman and Wasco Counties: Pine Hollow WC, Bakeoven WC, Fifteenmile WC, Gerking Canyon WC, Fulton and Gordon Canyons WC, and Grass Valley WC. Write agendas, minutes, grant proposals and reports, research projects, coordinate monitoring activities.

Recent Positions
Field Supervisor at Mt Hood Organic Farm, Mt Hood OR. 1996 Field Season. In charge of four to seven person field crew performing various orchard tasks throughout growing season.
Teaching Assistant, Department of Horticulture and Landscape Architecture, Washington State University. Fall 1994 to Fall 1995. Responsible for organizing laboratory classes, testing students, grading lab reports and tests.
Research Assistant, Department of Horticulture and Landscape Architecture, Washington State University. Fall, 1993 to Spring 1994. Responsible for proposing, organizing and reporting on research projects in composting and biological pest management.

Prior Experience in Community Development and Environmental Management:
Peace Corps/Honduras 1991-1993. Coordinated soil conservation project that taught subsistence-level farmers techniques to conserve soil, improve water quality and increase incomes. Coordinated public sanitation project, which helped small community to build latrines from concrete and rebar, for the purposes of improving water quality and reducing disease. Both projects involved applying for and managing funds from the US Agency for International Development (AID), as well as coordinating the efforts of several Honduran government agencies and community organizations.

Education and Training:
Bachelor of Arts, Environmental Studies, Pitzer College, 1991. Emphasis consisted of ecology and water policy.
Master of Science, Horticulture, Washington State University, 1995. Thesis compared alternative agriculture techniques to conventional for effects on growth and yield.
Peace Corps. Extensive training in community development and land management planning.

Krista Coelsch
District Coordinator, Sherman Soil and Water Conservation District
Approximately 15 hours per month devoted to Pine Hollow

Current Responsibilities:
Began working for Sherman County SWCD in September 1993. Responsible for filing, payroll, tax reporting and record keeping for all Sherman County SWCD funds, including Pine Hollow funds from various sources. Member of budget committee. Supervises subordinates, including watershed coordinator. Maintains a knowledge of local, state and federal programs and laws affecting SWCDs, as well as the political structure in which

the SWCD operates. Maintains a clear understanding of personal and professional relationships within Sherman County and the Lower Deschutes Subbasin.

Recent Positions and Experience in Fiscal Management and Natural Resources

Prior to February 1997, wrote grant applications, agendas and minutes for watershed councils, in addition to current duties.

Sherman County Weed Survey Crew Supervisor. 1993, '94, '95 seasons. Supervised crew of four to six, surveyed river corridors and other critical areas of county for noxious plant species.

Clerk/Secretary. Horizon Restoration, Inc. October 1990 to June 1991 .Maintained purchase orders and timekeeping records for an ecological restoration firm.

Education and Training:

Columbia Gorge Community College. 1989-90. Course work in Business Math and Computers.

Proper Functioning Condition Training. August 1997. Oregon Cattlemen's Association, Antelope OR.

"Microsoft Office" Training. February 1996.

Filing and Archiving Training. October 1995.

Total Quality Management Training. April 1994.

Stream Assessment Training. September 1995. Oregon Department of Fish and Wildlife and Wasco Soil and Water Conservation District, Dufur, OR.

Robert L. Martin
Soil Conservation Technician, NRCS
Approximately 30 hours per month dedicated to Pine Hollow

Current Responsibilities and Qualifications:

Began working for NRCS in March 1990. Responsibilities include layout, design, and construction inspection on terraces, sediment basins, flood-retarding structures, spring developments, fences, reseedings, etc. One of two NRCS employees in the state who is certified to run nuclear soil moisture testing equipment for compaction and moisture in dam construction. Has participated in the Buck Hollow 2000 Project since inception. Has helped design, layout and check at least 40 flood control structures in the Buck Hollow 2000 Watershed Project. Has laid out approximately 60,000 feet of level and gradient terraces in Buck Hollow Project Area. Oversees planning and completion of projects throughout Sherman County.

Section 10. Information/technology transfer

Use in other Watershed Councils

Watershed Councils in both Sherman and Wasco Counties operate in close association with Soil and Water Conservation Districts. Many of the individuals listed in section 9 also work with other SWCDs. Skills and experiences gained in Pine Hollow already improve projects in other watersheds around the two counties. In addition, these two SWCDs communicate ideas with other districts in the Deschutes Basin, which are working on watershed improvement projects in their own regions.

Newsletter
Both Sherman and Wasco SWCDs publish newsletters describing conservation projects in the two counties. Wasco SWCD publishes six newsletters per year, and distributes to over 1100 individuals. Sherman SWCD publishes four newsletters per year, and distributes to 287 individuals. Updates on the Pine Hollow project are regularly published in both of these newsletters.

Proper Functioning Condition Method and Data
Landowners and project personnel have received training and field experience in the Proper Functioning Condition method of riparian and stream assessment. These skills can be applied in surrounding areas, making conservation work in other watersheds more efficient.

Congratulations!