UPPER JOSEPH CREEK RESTORATION PROJECT
BPA Contract #00022523
BPA Project #1992-026-01

Completion Report
September 2006

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Abstract
The Upper Joseph Creek Restoration Project was successfully completed from July 1 – September 30, 2005. Thirty-nine instream structures were modified using an excavator along a 2.5-mile section of Chesnimnus Creek to allow for complete juvenile fish passage. Seventeen trees were also either pushed or placed into the stream along that same stretch of Chesnimnus, usually in conjunction with the modified structures, for improved habitat diversity. The Devils Run Bridge abutments were also pulled back using an excavator to match the contour of the canyon on both sides of Devils Run at that point. The exposed ground at the Devils Run site was covered with slash during construction then seeded with a native mixture after deconstruction.

Introduction
Numerous passive and active restoration projects have been implemented in the Upper Joseph Creek Watershed to improve riparian vegetation, channel morphology and complexity, water quality and fisheries habitat. While many of these projects have produced their intended results, some have generated unintended consequences. An example of this includes the instream structures installed in Chesnimnus Creek in the mid-1980s. The intent was to provide scour holes for fish rearing habitat and increase the amount of large woody debris in the creek system. However, most structures were exhibiting excessive bank scour on the downstream side of the structures and were barriers to juvenile fish passage. Reconfiguring these structures is allowing for juvenile fish passage and stream narrowing, while increasing fish habitat complexity with the addition of whole trees to Chesnimnus Creek.

The 4625-550 rd had a bridge that spanned Devils Run Creek. The bridge platform had been decommissioned, but the wood abutments were left in place and were rotting and crumbling into Devils Run. The sediment backfilled behind these abutments had started to slough into the creek. A moderately high flow event had the potential to release a very large plug of sediment into, potentially even damming, this stream which provides spawning and rearing habitat for threatened Steelhead.

This project was designed to improve water quality, instream habitat, and riparian areas for threatened steelhead and a variety of other wildlife species in Devils Run and Chesnimnus Creeks in the Upper Joseph Creek Watershed. This was to be accomplished through modification of 36 in-stream structures and removal of a sediment hazard next to Devils Run Creek in accordance with the recommendations developed through the Upper Joseph Creek Watershed Assessment. Specific project objectives are: improve streambank stability; improve habitat for fish and other wildlife

species; improve stream width to depth ratios; decrease sediment input to streams; and improve juvenile fish passage.

Methods and Materials

Methods and materials for each project component are described below (Table 1).

Table 1. Methods and Materials for Upper Joseph Creek Restoration Project, 2005.

Project Component	Materials Description	Accomplished by:
Instream Structure Modification	Map, GPS, wire, fence pliers, fence stretcher, and thumbed excavator	Contractor and FS employee
Bridge Abutment Removal	Excavator, shovel and Pulaski	Contractor and FS employee

Project Description

A comparison of the 2005 original BPA contract tasks and the final accomplishments are listed below in Table 2 and displayed in Figures 1 and 2.

Table 2. Summary of work performed in Upper Joseph Creek, 2004.

Tasks	Location	Date	Final Accomplishments	Original Contract	Difference
Instream Structure Modification	T03N, R46E, S11, 12, 13, 14, 22, 23 T03N, R47E, S7	07/05 – 08/05	39 structures	36 structures	+3 structures
Bridge Abutment Removal	T04N, R47E, S32	07/05	2 abutments removed	2 abutments removed	none

Figure 1. Map of modified instream structures in Chesnimnus Creek, 2005.

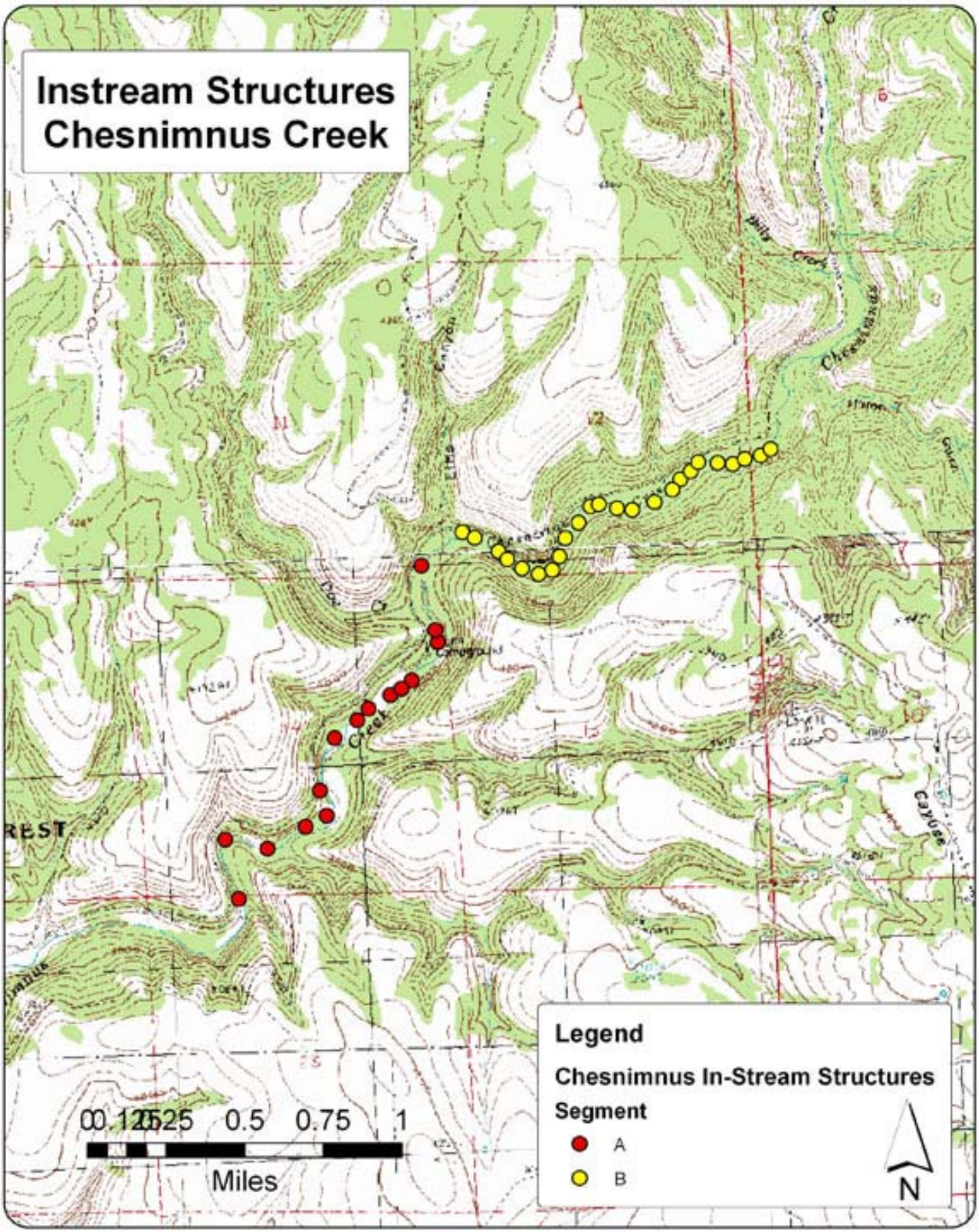
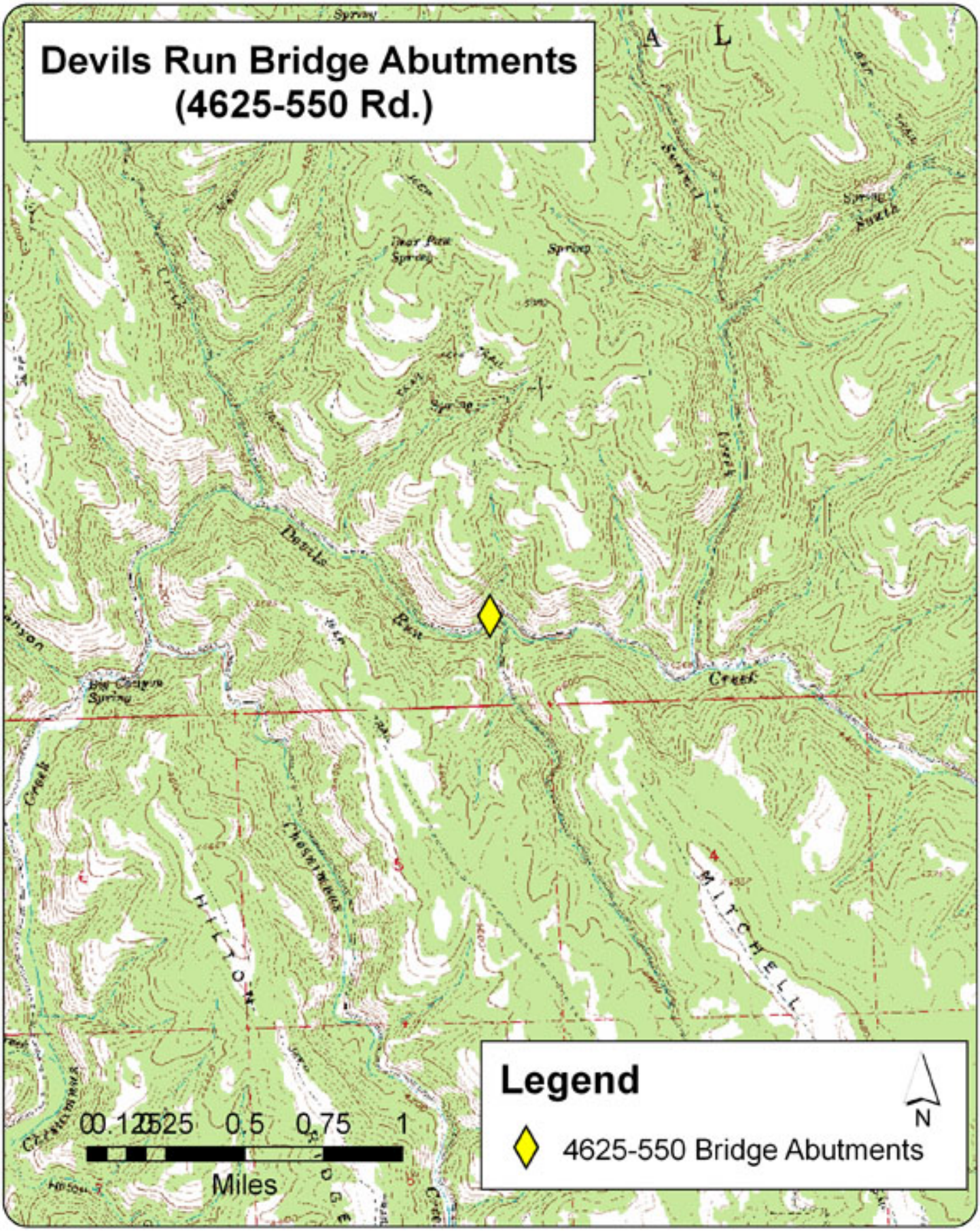


Figure 2. Map of Devils Run bridge abutment location, modified 2005.



Project Participants

Table 3. Summary of Swamp Creek project participants, responsibilities and fiscal contributions, 2004.

Participant	Responsibilities	Fiscal Contribution
Wallowa Resources	Developed RFPs & contracts with USFS; managed contracts; wrote reports	$11,162
USFS	Developed DSL permits, assisted in developing RFPs & contracts with WR; provided oversight and inspection for contract work; wrote reports	$7,798
Bonneville Power Administration	Fiscal contributor	$10,230
Grande Ronde Model Watershed	Assisted in project quality control	

Description of Project Area

This project is located in Chesnimnus and Devils Run creeks, T03N, R46E and R47E, in the Upper Joseph Creek Watershed, Wallowa County, Oregon. See Figures 1 and 2 in Project Description section above.

Results and Discussion

Instream Structure Modification Thirty-nine instream structures were modified along 2.5 miles of Chesnimnus Creek in July 2005. Nine log boles were left in place when they did not promote bank-edge scour downstream, were in an abandoned channel, were not a juvenile fish passage barrier, or had shifted or blown out since installation. Seven boles were removed and reburied in the bank at an upstream angle. Eight boles were removed and placed on the bank angling down into the stream at an upstream or downstream angle. Fifteen boles were removed and reburied in the bank or placed on the bank and had a tree or 2 placed on top of them to create a foundation for miniature log jam development.

Every structure modification involved removing the gabion baskets (with the exception of a basket or two that were hard to get and were completely covered with vegetation) and as much geo-textile material and wire mesh that could be recovered. Some geo-textile was left buried in a few banks when the removal of the material was deemed secondary to preserving the integrity of the bank. Much of the wire mesh was rusty and broke apart easily, thus making it difficult to remove. High turbidity at each site during modification prevented visual identification of lost pieces of wire or fabric. Because of this, some geo-textile material and wire mesh pieces were undoubtedly missed at each site and will be left there to decompose or rust.

Bridge Abutment Removal Road fill was pulled back from behind both bridge abutments to match the contour of the canyon on both sides of Devils Run at that point. A small floodplain was created on both sides of Devils Run Creek as well. Fill was piled on old roadbeds on both sides of Devils Run and contoured to match local topography. The rotting abutment logs were removed and strewn about adjacent hill slopes and floodplain. Protruding metal spikes in some logs were cut flush with the log and the metal trash removed from the site. The bottom-most log on either side of the creek was left to help protect the new banks from scour. Disturbed ground was seeded following deconstruction.

Summary and Conclusions

All Chesnimnus Creek instream structures were modified as planned, creating unimpeded juvenile fish passage for 2.5 miles upstream of the Forest Service boundary and the ability for the stream to narrow, as well as removing over 800 pounds of wire and geotextile material from the creek. The

modifications took less time than anticipated, approximately 70 hours not including mobilization or demobilization of equipment, which was a pleasant surprise. This meant that the cost per structure was significantly less than the $400/structure originally estimated. In addition, three more structures were found and modified in the upper most part of Segment B. Seventeen trees were added to the modified structures increasing fish habitat complexity and creating the foundation for miniature log jam development. We would highly recommend the excavator size used, a Cat 312C, for this type of work. It was small enough to move with minimal ground disturbance and large enough to move boles and trees.

The Devils Run bridge abutments were removed as planned, greatly reducing the risk of a large sediment plug falling into the creek from steep failing fill slopes. The extent that the road fill was supposed to be pulled back from Devils Run Creek was staked prior to receiving contractor bids. After the work had been completed to contract specifications, it came to the project hydrologist's attention that the fill should be pulled back further to reduce risk of hillslope failure and sediment entering the creek. However, she did not feel comfortable changing the terms of the contract on site. One week later, after consultation with the GRMW Monitoring Coordinator Coby Menton, it was decided to have the road fill on the west side pulled further back to decrease the slope angle and better match the canyon contours. The contractor mobilized a second time to the site and completed the job to the adjusted specifications.

Summary of Expenditures

Table 4. Summary of expenditures for the Upper Joseph Creek Restoration Project, 2005.

Item	BPA	USFS	Wallowa Resources[1]	Total
Modification of In-stream Structures				
Improving fish passage (in 39 old log weirs @ $154 ea)	$3,007		$3,008	$6,015
Subtotal	**$3,007**		**$3,008**	**$6,015**
Bridge Abutment Removal				
Relocate road fill and abutments ($750 initial mobilization; $500 second mobilization; 62 hours @ $106.23/hr)	$2,983		$4,904	$7,887
Native seeding of exposed bare soil (10 hours @ $20; native seed 1 acre x 20lbs/acre x $20/lb)		$600		$600
Subtotal	**$2,983**	**$600**	**$4,904**	**$8,487**
WR Project Manager	$2,240		$2,250	**$4,490**
WR Indirect Expenses	$2,000		$1,000	**$3,000**
USFS Personnel		$6,020		**$6,020**
USFS Indirect Expenses		$1,178		**$1,178**
Total	**$10,230**	**$7,798**	**$11,162**	**$29,190**
Original Contract	$15,150	$11,300[2]	$11,950	$38,400
Percent of Expenditure	**35%**	**27%**	**38%**	**100%**

[1] Funding sources: Wildhorse Foundation, National Forest Foundation and The Nature Conservancy
[2] Original USFS contribution included an over-estimate of indirect expenses.

Photo Monitoring – Chesnimnus Instream Structure Modification

PP#1: Chesnimnus segment A, structure #8, pre-work; 2005.

PP#1: Chesnimnus segment A, structure #8, post-work; 2005.

Ches: excavator carrying trash between structures; 2005.

Ches: excavator placing whole tree with rootwad in creek; 2005.

Photo Monitoring – Chesnimnus Instream Structure Modification

PP#2: Chesnimnus, segment B, structure #8 pre-work, 2005.

PP#2: Chesnimnus, segment B, structure #8 post-work, 2005.

PP#3: Chesnimnus, segment B, structure #6 pre-work, 2005.

PP#3: Chesnimnus, segment B, structure #6 post-work, 2005.

Photo Monitoring – Devils Run Bridge Abutment

PP#1: Devils Run, pre-work view upstream; 2005.

PP#1: Devils Run, post-work view upstream; 2005.

PP#2: Devils Run right abutment, pre-work; 2005.

PP#2: Devils Run right abutment, post-work; 2005.

Photo Monitoring – Devils Run Bridge Abutment

PP#3: Devils Run, pre-work view downstream at R bank; 2005.

PP#3: Devils Run, post-work view downstream at R bank; 2005.

PP#4: Devils Run left abutment, pre-work; 2005.

PP#4: Devils Run left abutment, post-work; 2005.