Butte Creek/Hampton Bridge Crossing

Project Completion Report

BPA Project # 1992-026-01

Contract # 26828

November 30, 2006

Written by R. Coby Menton

Grande Ronde Model Watershed

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Abstract

Pre-Project Condition: A perched ford stream crossing, located just upstream of Highway 350 (Imnaha Highway) on Butte Creek at the Pocket Ranch entrance, is a fish passage barrier (juvenile steelhead), contributes sediment, causes siltation, and has disrupted bedload transport. The conversion from ford to bridge will ameliorate these in-stream problems.

The road is a draw bottom road, starts at Highway 350, and follows the creek to its headwaters. The removal or replacement of the road is not practical for the landowner as it is a main access for the property and replacement would require full bench construction in steep rugged country. Traffic on the road is typically light and includes both light (ATV & 4x4 pickup) and heavy equipment for management and the moving of livestock. Spring runoff, overland flow, and road drainage contribute sediment from the road to the creek at the ford. Livestock enter and exit the property on this road.

Butte Creek is not fenced so livestock have access to the stream. Livestock numbers have been reduced from previous ownership, ample upland/off stream water exists, a grazing management plan written with the assistance of NRCS through the grassland reserve program has been implemented, better livestock distribution and grass utilization is being realized.

Project Objectives:

1. Provide juvenile fish passage and access to rearing habitat above current perched ford in Butte Creek a steelhead and resident rainbow fish bearing stream.
2. Reduce sediment and siltation caused by vehicular and livestock traffic crossing at the ford site.
3. Reduce sediment and siltation from overland flow, spring runoff, and road drainage at ford site.
4. Improve bedload transport at the lower end of Butte Creek.
5. Enhance adult passage for both steelhead and resident rainbow trout.

Proposed Specific Actions:

1. Preliminary engineering to establish grade, elevation and position of pre-engineered railroad car bridge. This task will be completed in winter 2006.
2. Fill and removal permitting, ESA consultation, and cultural resources consultation to be completed in spring 2006 and includes:
    a. Oregon DSL fill/removal permit.
    b. Army Core of Engineers 404 permit including Oregon DEQ water quality certification.
    c. Contract writing of a biological assessment suitable for BPA to submit to both US Fish and Wildlife Service and National Marine Fisheries Service.
    d. Contract writing of cultural resources documentation suitable for BPA to submit to Oregon State Historic Preservation Office.
4. Obtain all permits by late spring of 2006.
5. Solicit and obtain contractor to install bridge according to preliminary engineered grade, elevation, and position and to pre-engineered bridge standards.

6. Install bridge during in stream work window (July 15th –August 15th) for Butte Creek.

The ford was removed, the bridge was installed, and the road on each side of the bridge was filled, graded, and appropriate drainage was incorporated. The above objectives are being met through the implementation of this project.

Introduction

The Pocket Ranch, 5817 acres in size with an elevation range of 2600 to 5500 feet, is owned and operated by Bruce Hampton and is managed for cattle, grasslands, timber, water and wildlife. Butte and Trail Creeks, both perennial, course through the property and numerous ponds and springs exist providing benefit to both wildlife and cattle. Ponderosa pine, Douglas fir, aspen and cottonwood are typical with Idaho fescue and bluebunch wheatgrass characterizing the grassland communities. In 2005 approximately 200 cow/calf pairs grazed the property. This project located near the mouth of Butte Creek, a tributary to Little Sheep Creek in the Imnaha subbasin, will replace an existing perched ford road crossing with a pre-engineered, 53 foot railroad car bridge. Anticipated project benefits include:

1. Restore juvenile passage opening approximately ¾ mile of habitat at the lower end of Butte Creek above the ford.
2. Reduced sediment and siltation on lowest ½ mile of Butte Creek.
3. Restored bedload transport on lowest ½ mile of Butte Creek.
4. Improved adult passage above the ford.

Methods & Materials

Methods and materials for this project are typical of most instream projects where ESA listed species exist and work is occurring below ordinary high water marks. The following actions were accomplished through the project:

1. Construction design was completed by Wallowa Mountain Engineering of Enterprise, Oregon and consisted of site survey, bridge placement and orientation, bridge installation instruction, road fill and grade detail, & site reclamation requirements. Wallowa Mountain Engineering also provided engineering inspection services.
2. GRMW contracted the writing of a biological assessment (BA) addressing all species of concern in the area. This BA was then forwarded to BPA for the formal ESA consultation process. Letters of concurrence and biological opinions were obtained from both USFWS and NMFS.
3. GRMW submitted fill and removal permit applications to both Army Corps of Engineers and Oregon DSL. Army Corps of Engineers exempted the project from permitting and Oregon DSL issued a minimal disturbance general authorization.
4. BPA issued a no effect determination regarding cultural resource disturbance in the project area due to the installation occurring in prior disturbed ground.

5. GRMW contracted a local construction company to complete the project. Typical heavy equipment including tracked excavator, dump truck, and dozer were used. All concrete was formed and poured in place. A crane was used to place the bridge on its foundation and between abutments. Construction materials included 13.5 yard of concrete, 120 yards of course granular road base, & 30 yards of ¾ minus road gravel.
6. GRMW staff directed construction contractor to disturb as little ground and vegetation as possible. The landowner re-seeded disturbed ground with an ODFW approved seed mix and is responsible for all weed control.

Project Description

The Butte Creek/Hampton Bridge Crossing project was accomplished mostly as originally proposed. The perched ford was removed, a bridge was installed, and the road was filled and shaped to meet the bridge.

Perched Ford: The ford was held in place in Butte Creek by a three foot tall nearly vertical rock crib wall. The crib wall maintained road elevation through the creek and was consequently a barrier to juvenile fish and disrupted bedload transport processes. To remove the crib wall less than two cubic yards of material were removed. All of the substrate above the crib wall has been left in place and is expected to mobilize in coming high flow events. The accumulated substrate is expected to move downstream and fill interstitial spaces between boulders improving passage conditions.

Photo 1: Photo taken September 8, 2005 looking upstream at perched ford and road crossing.

Photo 2: Photo taken November 8, 2006 looking upstream. Perched ford has been removed, ford is no longer used to cross Butte Creek, bridge has been installed, and fish passage through the area has been accomplished.

Bridge: The original proposal called for the installation of a 53 foot railroad car bridge. During the post application planning phase we found a 60 foot pre-built bridge in Enterprise, Oregon. Wallowa Mountain Engineering inspected and deemed the bridge appropriate for project application. A site plan was then developed and construction engineering completed. The bridge in Enterprise was purchased, hauled and installed with a crane for 1/3 the estimated cost of the railroad car bridge.

The concrete foundation and abutment walls for the bridge were installed between July 31, 2006 and August 10, 2006. Concrete was formed and poured in two phases; phase I being form, pour, and form stripping of the foundation and phase II being the same for the abutment walls. The abutment closest to HWY 350 was poured directly from the concrete truck while the up road abutment concrete was transferred across the creek to the forms with an excavator bucket. This allowed the concrete work to be done in two instead of three phases and kept the concrete truck out of Butte Creek. Abutment backfill and rock placement was completed on August 11, 2006. All concrete was formed and poured in place at the request of the contractor. Initially we intended to pre-cast all concrete off-site, haul, and install on pre-excavated pads. Through discussion with the engineer and contractor it was decided pouring in place would be the most economical and practical way to accomplish the concrete work. The bridge was craned into place on August 19, 2006.

Photo 3: Photo taken on September 8, 2005 looking up the road at ford crossing and bridge installation site. This photo demonstrates how during wet or runoff conditions sediment enters Butte Creek particularly from the up-road side of the creek.

Photo 4: Photo taken on August 14, 2006 looking at the completed and backfilled down road abutment. Some clean up and shaping is yet to be done before bridge can be set in place.

Photo 5: Photo taken on August 14, 2006 looking at completed and backfilled up road abutment. Butte Creek is free flowing through the site as the crib wall has been removed.

Photo 6: Photo taken on August 31, 2006 from same location as photo # 3. Bridge has been set eliminating the need for the ford, reducing direct sediment input to the stream, & restoring passage.

Road: After the bridge was installed the road grade needed to be raised to meet bridge deck elevation. Before any bridge or instream work was done several truck loads of road base material was hauled across the ford to the up road side of the job. This action allowed the road to be rough graded after bridge installation providing roadbed for the dump trucks to haul subsequent loads. The down road side of the bridge was directly accessed from HWY 350. A rolling rock drainage dip was installed 40 meters above the bridge to route water from the road to an upland area between the road and creek. Course granular road base and one-inch minus crushed top dressing material was hauled, graded, and shaped during the week of August 28, 2006 and the construction portion of the project was completed on August 31, 2006.

Photo 7: Photo taken August 3rd, 2006 looking down the road through bridge installation site. Course road base material has been hauled before bridge work .

Photo 8: Photo taken on August 14th, 2006 looking down the road. Rolling rock dip has been installed and course road base material has been graded to bridge abutment.

Photo 9: Photo taken November 8th, 2006 looking up road and across bridge. All road base material has been graded and shaped with 1" minus material graded on top of the road.

Photo 10: Photo taken on November 8th, 2006 looking down on completed project. Fish passage, vehicle access, road work, and proper drainage have all bee accomplished.

Project Participants

Participant	Role and Responsibility
Bruce Hampton	Landowner, cost share, seeding, & weed control
Grande Ronde Model Watershed	Project management, removal/fill permitting, fiscal management
Bonneville Power Administration	Funding agency, environmental compliance, cultural resources
Wallowa Mountain Engineering	Survey, construction engineering, construction inspection (contractor)
Ken Bronec	Biological services (contractor)
Jones Excavating	Construction contractor

Results & Discussion

The Butte Creek/Hampton Bridge Crossing project has the following objectives:

1. Provide juvenile fish passage and access to rearing habitat above current perched ford in Butte Creek a steelhead and resident rainbow fish bearing stream.
2. Reduce sediment and siltation caused by vehicular and livestock traffic crossing at the ford site.

3. Reduce sediment and siltation from overland flow, spring runoff, and road drainage at ford site.
4. Improve bedload transport at the lower end of Butte Creek.
5. Enhance adult passage for both steelhead and resident rainbow trout.

Objectives #1 & #5 to provide juvenile fish passage and enhance adult passage above current perched ford has been accomplished through removal of the ford and crib-wall holding it in place. Butte Creek below the project footprint is steep and characterized by medium sized boulders and step pools. The accumulated bedload at the ford site is expected to mobilize in coming high flow events and fill interstitial spaces between the boulders enhancing passage. Adult fish passage has been enhanced and juvenile passage has been restored to ¾ of a mile of Butte Creek above the bridge site.

Objectives #2 & #3 to reduce sediment and siltation has clearly been met through the implementation of the project. With proper road drainage and elimination of the ford sediment will no longer deposit in the creek from the road. The rolling rock drainage dip in the road above the bridge will route most water from the road to an upland setting where sediment will settle before entering Butte Creek. Vehicle traffic has been eliminated from the creek and a reduction in suspended sediment will result from this action. Creek disturbance caused by livestock at the site is expected to be reduced. Cattle will likely cross the creek on the bridge due to steep stream banks and course channel substrate.

Objective #4 to improve bedload transport has been accomplished. In removing the crib wall at the ford crossing bedload is now free to move through the site. The restoration of bedload transport processes, as stated above, will likely further enhance passage.

Summary & Conclusion

The Butte Creek/Hampton Bridge Crossing project can be divided into three parts through project completion; those phases being 1) planning & design, 2) permitting & consultation, and 3) construction. The fourth phase monitoring, evaluation, and adaptive management is yet to come with adaptive management actions determined over the coming year.

Project planning began in the spring of 2005 when Bruce Hampton, Pocket Ranch owner, approached the GRMW about this project. Following GRMW staff approval for the project concept a proposal for funding was written, reviewed by the GRMW technical committee, and approved for funding by the GRMW Board of Directors. Initially construction design and inspection was to be accomplished by Bureau of Reclamation but due to scheduling difficulties and project time constraints engineering services were contracted to Wallowa Mountain Engineering of Enterprise, Oregon.

With construction design in hand ESA consultation, removal/fill permitting, and cultural resources documentation was easily accomplished. ESA consultation was completed through private contract, GRMW staff completed removal/fill permitting, and BPA with

background information from GRMW completed cultural resources. With the exception of initially expecting BOR to provide engineering services all parts of phases one & two went very well and were completed on time.

Phase three, project construction, started on July 31, 2006 and ended on August 31, 2006. While work on the project was not continuous during that time instream work was completed during the instream work window and all work was completed by the end of the 2006 fiscal year. With a competent contractor all construction work passed engineering inspection and was completed on time. Minimal vegetation was disturbed, less than two yards of material was moved below ordinary high water mark, and site cleanup was minimal.

From funding acquisition to project completion this project took nine months to complete. These nine months were preceded by several months of project planning and funding proposal writing. We feel that the project will or has met all stated objectives and both resident and anadromous fish will benefit from the project actions.

Summary of Expenditures

Butte Creek/Hampton Bridge Crossing Final Budget - Project 1992-026-01

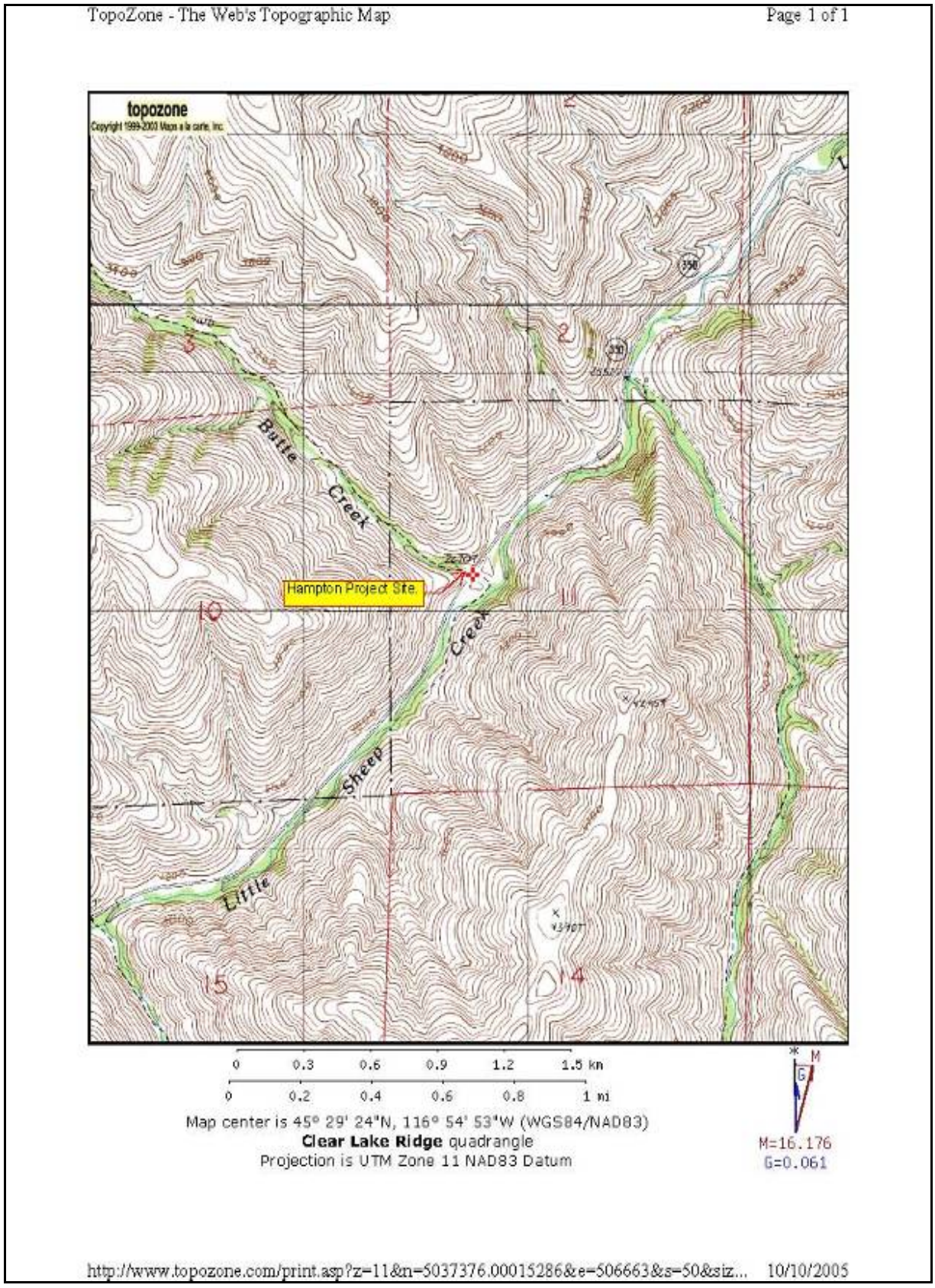
	Unit Number (i.e. hours, feet)	Unit Cost estimate	In-Kind Match-Original	In-Kind Match-Revised	Cash Match Funds-Original	Cash Match Funds-Revised	BPA Funds - Original	BPA Funds - Revised	Difference	Rationale
PRE-IMPLEMENTATION COSTS (Design, permits, engineering, baseline monitoring, etc.)										
Biological Assessment	Bid	$2,500					$2,500	$2,000	($500)	Biological assessment contracted for $2,000
ACOE 404 permit	Fee	$500	$500	$500					$0	No change
DEQ water quality certification permit	Fee	$1,000					$1,000	$0	($1,000)	Not necessary
Oregon DSL fill/removal permit	Fee	$500					$500	$168	($332)	$168 application fee
Cultural resources documentation	Bid	$3,000					$3,000	$0	($3,000)	No effect call by BPA
Preliminary Engineering	30 hours	$100	$3,000	$0					($3,000)	Not necessary
PERSONNEL										
Project manager (benefits included)	40 hours	$25	$1,000	$1,000					$0	No change
TRAVEL										
60 miles round trip from Enterprise 5 times.	300 miles	$0.49	$146	$146					$0	No change
CONTRACTED SERVICES										
Engineering Inspection	15 hours	$100					$1,500	$1,370	($130)	Overestimated
Final Design	40 hours	$100					$4,000	$4,002	$2	Insignificant
Remove Ford	Bid						$0	$500	$500	Omitted in original estimate
Bridge Installation:										
Mobilization	8 hours	$125					$1,000	$1,500	$500	Underestimated in original
Excavation (excavator)	10 hours	$100					$1,000	$1,500	$500	Underestimated in original
Backfill (excavator)	10 hours	$100					$1,000	$1,500	$500	Underestimated in original

Grading (dozer)	10 hours	$125					$1,250	$3,500	$2,250	Final design increased the amount of required road work
Davis Bacon Wages	Bid						$0	$2,254	$2,254	Omitted in original estimate
Crane Service (Vemco):										
Bridge delivery	Bid	$1,500			$1,500	$2,000			$500	Underestimated
Mobilization	Bid	$900			$900	$900			$0	No change
Bridge placement	Bid	$1,100			$1,100	$1,600			$500	Underestimated
SUPPLIES/MATERIALS										
Railroad car bridge package (abutments and decking included)	Bid	$6,500			$6,500	$7,500			$1,000	Landowner installed new planking ($1,000)
Bridge sills	2	$1,000			$1,000	$0	$0	$4,500	$3,500	ESA consultation required concrete instead of treated timber. Added to BPA
Headwalls	2						$0	$4,500	$4,500	Not in original estimate
Miscellaneous Parts	Estimate						$0	$750	$750	Not in original estimate
Seed & cleanup					$0	$150			$150	Not in original estimate
Fence/gate repair					$0	$400			$400	Not in original estimate
Fill Material	100 yards						$0	$4,290	$4,290	Final design increased amount of road work
Sub-Totals			$4,646	$1,646	$11,000	$12,550	$16,750	$32,334	$14,134	
FISCAL ADMINISTRATION										
GRMW (5%)							$838	$1,617	$779	
Totals			$4,646	$1,646	$11,000	$12,550	$17,588	$33,951	$14,913	

Expenditure by Source detail

Source	Estimated	Final	Difference
GRMW In-Kind	$4,646	$1,646	($3,000)
Landowner Cash Match	$11,000	$12,550	$1,550
BPA	$17,588	$33,951	$16,363
Total	$33,234	$48,147	$14,913

Site Map


TopoZone - The Web's Topographic Map
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topozone
Hampton Project Site
Butte Creek
Sheep Creek
Little
0 0.3 0.6 0.9 1.2 1.5 km
0 0.2 0.4 0.6 0.8 1 mi
Map center is 45° 29' 24"N, 116° 54' 53"W (WGS84/NAD83)
Clear Lake Ridge quadrangle
Projection is UTM Zone 11 NAD83 Datum
M=16.176
G=0.061
http://www.topozone.com/print.asp?z=11&n=5037376.00015286&e=506663&s=50&siz... 10/10/2005