12c. Alder Creek Culvert #1 Evaluation Proposal
In-Stream Passage

Applicants must respond to the following items. The local citizen and technical advisory groups will use the evaluation proposal to evaluate your project. Applicants should contact their lead entity for additional information that may be required.

Up to eight pages may be submitted for each project evaluation proposal.

(SUBMIT INFORMATION VIA PRISM ATTACHMENT PROCESS OR ON PAPER)

For prioritization questions or technical assistance, contact Dave Caudill at Department of Fish and Wildlife (WDFW) at (360) 902-2486 or at caudidsc@dfw.wa.gov. For engineering design questions or technical assistance, contact Pat Klavas at WDFW at (360) 902-2606 or at Klavajpk@dfw.wa.gov

NOTE: This information, along with information provided in Section 12d-WDFW Fish Passage Data Forms will be evaluated by WDFW and comments forwarded to the Review Panel for consideration.

For more details on the Alder Creek Culvert #1 proposal, please review the attached Beaver Creek Passage Program Project Report.

I. BACKGROUND

Describe the fish resources (number of species or unique populations), the current habitat conditions, and other current and historic factors important to understanding this project. Be specific—avoid general statements. When possible, document your sources of information by citing specific studies and reports.

The Upper Wenatchee Passage Program (UWPP) is a collaborative effort between Chelan County, the U.S. Forest Service (USFS) and the Bureau of Reclamation (Reclamation) to acquire funds to replace nine barrier culverts that interrupt adult and juvenile salmonid passage in the Chiwawa and Middle Wenatchee subwatersheds. The biological goal of the UWPP is to increase fish passage into Alder Creek, Clear Creek, Beaver Creek and Skinney Creek. The objectives include replacing 9 barrier culverts with fish-friendly structures to provide over 11 RM of additional spawning and rearing habitat for Upper Columbia steelhead, spring Chinook and bull trout.

Alder Creek is located in the Chiwawa subwatershed of the Wenatchee watershed in North Central Washington. Alder Creek barrier #1, is located at RM 0.5 beneath the double lane Chiwawa Road, a Chelan County easement. There are two additional barriers upstream of this point; Alder Creek Barrier #2, which has already been funded for replacement, and Alder Creek Barrier #3, which is not being considered for replacement based on the Upper Columbia Regional Technical Team (UCRTT) project proposal reviews found a very low biological benefit from rectifying the third upstream barrier.

Upper Columbia River Spring-Run Evolutionarily Significant Unit (ESU) of Wenatchee River run Spring Chinook salmon, *Oncorhynchus tshawytscha*, Upper Columbia River ESU of Wenatchee River Summer steelhead, *Oncorhynchus mykiss*, (endangered) and Columbia River Distinct Population Segment (DPS) bull trout, *Salvelinus confluentus*, (threatened) are present in Alder Creek (Table 4 in Alder Creek #1 Project Report).

This proposal includes replacing one barrier culvert, Alder Creek barrier #1, with a modular steel bridge. Based on the Upper Columbia Regional Technical Team (UCRTT) project proposal reviews correcting Alder Creek #1 would provide a high biological benefit to fish but there may be less expensive alternatives to correcting the barrier. We will complete an analysis with the Bureau of Reclamation (Reclamation) to evaluate the possibility of retrofitting this culvert. If a retrofit alternative is feasible, it will be sent to the funding source for review prior to implementation. If retrofitting is a viable option, the project costs will be substantially less than to replace the culvert with a modular bridge.

Providing access in Alder Creek will directly benefit ESA listed summer steelhead. Steelhead have been found spawning and rearing in sections of Alder Creek (ISEMP 2005, In Press; Harza/BioAnalysts 2000; WDFW 2005). Replacing Alder #1 will provide 0.4 miles of stream habitat and, in combination with Alder #2 replacement, will provide approximately 0.9 linear miles of stream habitat. Six steelhead redds were located below the county Chiwawa road in spring 2005 (USFS 2006 Cameron Thomas, personal communication). There is also a known occurrence of ESA listed threatened bull trout. In the summer of 2005, a juvenile bull trout was captured during night snorkeling downstream of the Chiwawa Road crossing (ISEMP 2005, In Press). Spring Chinook juveniles are known to use the mouth of Alder Creek for rearing (Harza/BioAnalysts 2000, WDFW 2005) (Figure 3).

II. PROBLEM STATEMENT

Concisely describe the passage problem (outfall, velocity, slope, etc). Describe the current barrier (age, material, shape, and condition). Is the structure a complete or partial barrier? Describe the amount and quality of habitat to be opened if the barrier is corrected. When possible, document your sources of information by citing specific studies, reports, or personal communication.

Alder Creek #1 culvert is a 72" by 120" corrugated metal pipe arch and is a barrier due to a high outfall drop and high velocity. There is also no substrate in the pipe. Washington Department of Fish and Wildlife personnel have conducted redd surveys upstream of Alder Culvert #1 and have not found any redds (USFS 2006 Cameron Thomas personal communication). Alder Creek Culvert #1 is a velocity barrier to juveniles especially in the late fall when it rains before it snows (USFS 2006 Cameron Thomas personal communication). This decreases the amount of habitat available to steelhead for rearing and high-water refugia. Based on this information, the culvert is a complete barrier to juveniles and is at least a partial barrier to adult steelhead. Alder Creek Culvert #1 will open up 0.4 miles of habitat, and when Alder Creek Culvert #2 is replaced in 2007, a total of 0.9 miles of habitat will be available. For a complete list of references, please refer to the Alder Creek Culvert #1 Project Report.

III. PROJECT OBJECTIVES

List the project's objectives. Objectives are statements of specific outcomes that typically can be measured or quantified over time. Objectives are more specific than goals (visions of the desired future condition) and less specific than tasks (the specific steps that would be taken to accomplish each of the objectives). For example, the objectives of a barrier removal project might be to provide fish passage, restore natural stream function, and riparian revegetation in the treated area. Explain how achieving the objectives will address and help solve the problem identified in II above.

The overall goal is to replace one fish passage barrier culvert (Alder #1) with a modular steel bridge to provide year-round passage to all species at all life stages. In addition to the correction of barrier, the riparian area will be planted to restore and enhance habitat.

Alder Creek Culvert barrier #2 at RM 0.9 has been funded for replacement with a fish friendly structure. It is scheduled for completion in September 2007. The biological benefits of completing this project will not be fully realized until Alder Creek Barrier #1 is replaced.

Removing these barriers to provide unobstructed passage is an important step toward restoring ESA listed fish populations in this area. Activities undertaken in this project will increase available tributary habitat primarily for ESA listed summer steelhead, but may also benefit coho, endangered spring Chinook and threatened bull trout. Removing barriers to fish passage and enhancing habitat in the Chiwawa drainage is directly outlined in the strategies and recommendations of the major salmon recovery documents guiding restoration efforts within the Wenatchee subbasin.

IV. PROJECT APPROACH

- ω Has the project received a Priority Index (PI) Number? If yes, provide the PI number and indicate the method used: Physical Survey, Reduced Sample Full Survey, Expanded Threshold Determination, or WDFW Generated PI (list source, such as a study or inventory).

Harza/ BioAnalysts completed a habitat survey in the reach directly upstream of the 2nd Alder Creek barrier culvert. Two hundred meters of stream habitat was measured in terms of pool and riffle habitat dimensions, riparian and instream cover conditions, dominant substrate, and qualitative rating of spawning and rearing potential. Channel conditions for reaches further upstream were taken from USGS topographic maps and included drainage area and channel gradient. These data were analyzed using the WDFW (1998) Priority Index. Results from this analysis show spring Chinook with a Priority Index (PI) of 5.8, steelhead with a PI of 3.1, cutthroat trout with a PI of 5.4, rainbow with a PI of 2.8, and bull trout with a PI of 2.3 for a total Priority Index for Alder Creek at 19.3. This was the second highest PI of the creeks that were surveyed for potential habitat above a barrier.

- ω Identify if there are additional fish passage barriers downstream or upstream of this project.

There are no fish passage barriers downstream of Alder Creek Culvert #1. There are two additional barriers upstream of this project. Alder #2 is scheduled for replacement in September 2007. We are not requesting funding for Alder #3 at this time.

- ω Briefly describe the location of the project within the context of the watershed (estuary, main stem, tributary, etc) and the life cycle stage(s) affected.

Alder Creek is located in the Chiwawa subwatershed of the Wenatchee watershed in North Central Washington. Alder Creek is a 2nd order stream that flows into the Chiwawa on the downstream left at RM 6.9 and drains about 7 square miles (Harza/BioAnalysts 2000). This tributary and the Alder Creek Passage Program is approximately 6 miles upstream from the town of Plain and are located within Sec. 13 T27N, R17E. Alder Creek barrier #1, is located at RM 0.5 beneath the double lane Chiwawa Road, a Chelan County easement.

Alder creek contains Chinook, steelhead, and bull trout rearing area as well as spawning grounds for steelhead.

- ω List the individuals and methods used to identify the project and its location.

Both Chelan County and the Forest Service have completed fish barrier inventories within the Wenatchee and Stemilt/Squilchuck watersheds to identify priority barriers for correction. The barriers identified in these inventories along with other indicators described below were used to prioritize passage barriers that, if corrected, have a high likelihood of providing benefits to salmonids. Chelan County contracted Harza/BioAnalysts to produce the "Chelan County Fish Barrier Inventory" in 2000.

In 2000 and 2001, the Forest Service completed a culvert survey on fish bearing streams in the Wenatchee Watershed on National Forest Lands. Results from this survey identified a total of 104 culvert crossings that blocked passage for at least one fish life stage. An additional 15 culverts were identified as potentially blocking at least one fish life stage. Since that survey, 7 culverts on National Forest lands in the Wenatchee watershed have been replaced by the Forest Service to meet Washington State standards for fish passage. Two more culverts were re-surveyed and found not to require fish passage. Another 2 culverts were replaced by a Forest Service Cost-share partner.

Prioritization of limiting factors is occurring within the State Salmon Recovery and local 2514 Watershed Planning processes for the Wenatchee River. The barrier prioritization was determined using multiple indicators as described below and was based heavily on priorities set in the Subbasin Plan and the presence of ESA-listed species within a sub-watershed and priorities set in the Subbasin Plan. Indicators used to prioritize barriers included:

1. Chelan County and Forest Service Fish Barrier Inventories
2. Subbasin and regional plans
3. Location in high priority Category 1 watersheds
4. Major and minor spawning areas
5. WDFW Priority Index Score
6. County or USFS road maintenance schedules
7. "Small stream prioritization index" which considers; a) the number of listed species affected; b) life history stage affected; c) spread of exotic species (e.g. brook trout; d) the linear distance of potential stream above the culvert (metric goals); and e) condition of habitat upstream of the barrier
8. Upper Columbia Regional Technical Team Barrier Prioritization Draft Report (UCRTT 2006)

Of the USFS and County culvert barriers analyzed, 9 culverts in two Category I watersheds (Middle Wenatchee and Chiwawa) were identified to be replaced for this program. Culverts were selected in groups or complexes to be replaced concurrently in order to increase the potential increment of habitat gain with each barrier correction. The 4 complexes are termed the Alder Creek, Beaver Creek, Clear Creek and Skinney Creek Complexes.

This proposal will replace Alder Creek Culvert #1 on Alder Creek in the Chiwawa subwatershed to increase habitat quantity. Alder Creek Culvert #2 has been funded with Tributary Funds and is scheduled to be replaced in September 2007. The Draft Salmon Recovery Plan (UCSRB 2005) describes the Chiwawa watershed as a Category 1 watershed based on the Upper Columbia Regional Technical Team's Biological Strategy (UCRTT 2003). All three listed species are found in the Chiwawa watershed. Habitat quantity is identified in the Draft Salmon Recovery Plan as the primary limiting factor (UCSRB 2005), with residential development listed as the primary causal factor and threat. The Alder Creek culverts are also included in the Implementation Schedule (UCSRB 2006).

Harza/ BioAnalysts completed a habitat survey in the reach directly upstream of the 2nd Alder Creek barrier culvert. Two hundred meters of stream habitat was measured in terms of pool and riffle habitat dimensions, riparian and instream cover conditions, dominant substrate, and qualitative rating of spawning and rearing potential. Channel conditions for reaches further upstream were taken from USGS topographic maps and included drainage area and channel gradient. These data were analyzed using the WDFW (1998) Priority Index. Results from this analysis show spring Chinook with a Priority Index (PI) of 5.8, steelhead with a PI of 3.1, cutthroat trout with a PI of 5.4, rainbow with a PI of 2.8, and bull trout with a PI of 2.3 for a total Priority Index for Alder Creek at 19.3. This was the second highest PI of the creeks that were surveyed for potential habitat above a barrier.

- Describe the project design and how it will be implemented.

The Alder Creek Culvert #1 is a cooperative effort between the Chelan County Natural Resource Department (CCNRD), U.S. Forest Service (USFS) and the Bureau of Reclamation (Reclamation). Construction staking and inspection will be provided by CCNRD. CCNRD and the USFS will apply for all necessary permits. The construction, planting, and monitoring work will be accomplished through the combined efforts of the USFS, CCNRD and private contractors.

The Washington Dept. of Fish and Wildlife "Design of Road Culverts for Fish Passage Manual" will be applied in designing the replacement structures. Engineering designs will reflect the most current research regarding replacement of barrier culverts and will be designed for the 100 year flow event. The proposed design concept for the Wenatchee Passage Program is to utilize modular steel bridge super structures set in place on pre-cast concrete abutments (see Figure 7a and b photos below). This choice was based on discussions with Washington State Department of Fish and Wildlife personnel and WAC 220-110-070 which states in part "***In fish bearing waters, bridges are preferred as water crossing structures by the department in order to ensure free and unimpeded fish passage for adult and juvenile fishes and preserve spawning and rearing habitat."*** Manufacturers claim low initial cost, prompt delivery, and fast easy installation. Furthermore, load ratings and normal maintenance practices are preserved.

It appears during initial cost estimating that stream crossing structures consisting of modular steel bridge components manufactured in pre-selected span lengths offer the most affordable natural tributary stream conditions at accepted road crossings. The Alder Creek Culvert #1 design concept contains commonly accepted designs with required materials and qualified construction contractors locally available. After requirements for all permitting and contracting documents have been secured, typical construction would proceed in accordance with the contract plans.

The Wenatchee Passage Program contains commonly accepted designs**,** materials and qualified construction contractors that are available locally. Typical construction after requirements for all permitting and contracting documents have been secured would proceed in accordance with the contract plans. Use of heavy construction equipment such as a track hoe, small dozer, road grader and dump truck can be assumed. Road closures of no more than three (3) days are expected. Construction staking and inspection would be provided by the Chelan County Natural Resources Department. Chelan County Natural Resources Department and the Forest Service will apply for all necessary permits.

Bridge abutments and steel superstructure are delivered by truck to the project site and are set in the dry. All components are off loaded and set in place with a track hoe, then are bolted together as per the manufacturer's instructions. The guardrail is included. New stream channel will be constructed in accordance with the approved Bureau of Reclamation design. Construction activities will be accomplished during low flow periods to reduce the potential impacts to juvenile fish. On-site sediment

mitigation measures could include silt fencing where necessary, isolating and/or diverting the stream around the work site and using pre-cast footings. Native riparian vegetation will be planted in the disturbed sites to restore and enhance riparian habitat as well as minimize erosion and noxious weed establishment.

ω Explain how the project's cost estimates were determined.

Alan Schmidt with the Chelan County Natural Resources Department developed the project's cost estimates. He listened to different options provided by agency personnel (USFS, WDFW, USFWS) and the Upper Columbia Regional Technical Team. Then he called several suppliers to obtain cost estimates. These estimates are included in the Alder Creek Culvert #1 Barrier Form.

ω Describe other approaches and opportunities that were considered to achieve the project's objectives.

Alternatives for Alder Creek Culvert #1 are listed in the Alder Creek Culvert #1 Barrier Form. They include:

1. Replace the existing culvert with a modular steel bridge (preferred alternative)
2. Replace the existing culvert with a Super-Cor box culvert.
3. Retro-fit the existing culvert. At the request of the Upper Columbia Regional Technical Team, this third option will be re-evaluated by the Bureau of Reclamation to determine if it will meet fish passage criteria.

- List project partners. When appropriate, include a letter from each participating partner briefly outlining its role and contribution to the project. (See Section 15 for a sample format.)

The Alder Creek Culvert #1 is a cooperative effort between the Chelan County Natural Resource Department (CCNRD), U.S. Forest Service (USFS) and the Bureau of Reclamation (Reclamation).

- List all landowner names. Include a signed form from each landowner acknowledging their property is proposed for SRFB funding consideration. (See Section 16 for a sample format.)

Chelan County has an easement for Alder Creek Culvert #1.

ω Describe your approach to the long-term stewardship of the facility.

The new bridge will be included in routine maintenance activities conducted by Chelan County Public Works.

ω When known, identify the staff, consultants, and subcontractors that will be designing and implementing the project, including their names, qualifications, roles and responsibilities. If not yet known, describe the selection process.

Chelan County will be responsible for the administration of the project. Design, permitting, implementation and monitoring will be done in coordination with the Bureau of Reclamation. Chelan County Natural Resources director will obtain permits and put construction contracts out to bid. Bureau of Reclamation Engineers have provided designs for the modular steel bridge. The Habitat Project Manager will be coordinating and implementing all aspects of the project while our Natural Resource Specialist will be involved in fish removal and habitat restoration. A

bidding process will be used to select a qualified contractor. See the “Staff Descriptions” in the Alder Creek Culvert #1 proposal Project Report for more details on the staff and their experience with managing this type of project.

V. TASKS AND TIME SCHEDULE

List and describe the major tasks and time schedule you will use to complete the project. Describe your experience with managing this type of project.

See the “Staff Descriptions” in the Alder Creek Culvert #1 proposal Project Report for more details on the staff and their experience with managing this type of project.

PROJECT TIMELINE		
Item/Milestone	**Outcome**	**Target Date (Month/Year)**
Quarterly Reports		Quarterly
Surveys completed		7/2006 to 10/2006
Draft Project Design	~60% project design	10/2006 to 1/2007
Reclamation and USFS Meetings	Coordination and design input	2/2007
Landowner Access Agreements		4/2007 to 6/2007
Construction Access Agreements		4/2007 to 6/2007
Final Project Design	~75% project design will be submitted with permit (expect it will change during permitting process)	4/2007 to 7/2007
Permits submitted and obtained	HPA and other permits obtained	4/2007 to 7/2007
Pre-Construction Implementation Monitoring	Photograph and document barrier culvert	7/2007
Pre-Construction Effectiveness Monitoring	Determine baseline biological information using monitoring protocol developed by Hillman (2005)	7/2007
Develop bid package and award to contractor		8/2007
Remove culvert and install bridge	Fish-friendly structure installed	8/2007 to 9/2007
Riparian planting	Replant disturbed area around culvert to minimize erosion and eventually provide bank stability and shade	9/2007
Final Checklist		9/2007
Completion Report		9/2007
Turnover Agreement		10/2007
Post-Construction Implementation Monitoring	Ensure that work was completed	10/2007
Post-Construction Effectiveness Monitoring	Determine biological impacts of culvert replacement using monitoring protocol developed by Hillman (2005)	10/2007, then once a year for 5 years

VI. CONSTRAINTS AND UNCERTAINTIES

State any known constraints or uncertainties that may hinder successful completion of the project. Identify any possible problems, delays, or unanticipated expenses associated with project implementation. Explain how you will address these constraints.

The road serves as access to Forest Service lands and we will need to ensure there are no scheduling conflicts. Also, the road is under the authority of the Chelan County Public Works. Engineering plans and construction will need their approval. No additional costs should be incurred with this coordination.

Please find all references cited in this document in the Alde Creek Passage Program Project Report