
PROJECT: 14-1739 PLN, UPPER PESHASTIN BARRIER CONCEPTUAL DESIGN

Sponsor: Chelan Co Natural Resource Program: Salmon State Projects Status: Active

Project Start Date: 12/04/2014 Agreement End Date: 03/31/2017

Final Report Status: Accepted 05/22/2017

Description

PROJECT AGREEMENT DESCRIPTION

The project will assess the existing geologic conditions of the Ruby Slide, existing fish passage conditions to determine what is the limiting factor(s) for passage past this reach, develop conceptual designs for project alternatives, and to coordinate with stakeholders (USFS, WSDOT and WDFW) to evaluate and select a preferred alternative conceptual design.

Currently, a 1000' reach of Peshastin Creek, (RM 10.4-10.6) is believed to be limiting access to spawning habitat upstream. Spawning distribution and timing data, as well as field observations, suggest that a landslide above the Ruby Creek confluence may be acting as a barrier at low flows, thus inhibiting access to high quality spawning areas and delaying the spawn timing of fish that eventually access habitat above the slide by over 40 days. The upper Peshastin Creek and tributaries above this reach provide diverse habitat types and substantial low gradient spawning habitat. Road building alteration to the channel has been exacerbated in this reach by the failure of the slope above the reach (The Ruby Slide), and WSDOT repairs to this stretch of US 97. The resulting channel is severely constricted between vertical gabion baskets and the toe of a 16 acre slide path. Spawning surveys conducted by WDFW throughout the Wenatchee basin from 2004 - 2010 demonstrate steelhead spawning in Peshastin Creek contributes significantly to the basin as a whole. In 2010, Peshastin Creek had 12.2% of the steelhead redds in the Wenatchee subbasin. The majority of the spawning is distributed in the lower Peshastin between RM 3 to 6.5. In the upper Peshastin steelhead show a pattern of concentrated spawning between Ingalls and Ruby Creek with dispersed spawning beyond the project site and in Tronsen Creek.

FINAL PROJECT DESCRIPTION

This is Phase One of a proposed three phase project. Phase 2 will be the development of preliminary and final designs and Phase 3 construction. At this point we are on hold from executing Phase 2, citing a lack of landowner willingness to identify any of the alternatives that would result in a feasible path forward for Phases 2 & 3. That said, it is of the opinion of CCNRD and its agents, as well as WDFW staff working collaboratively on this project that as more fish data is collected through State efforts, the landowner opposition of Phases 2 & 3 will subside and the overall project will move forward. As of this writing, WDFW has installed additional detection infrastructure around this site (not captured here due to timing constraints) and has undertaken more field efforts to document fish use of this and upper reaches of Peshastin Creek.

The goal of the overall project is to improve steelhead access to the upper reaches of Peshastin Creek. Project objectives for Phase One included, identifying species of fish, size range and migration timing, collecting data including: topographical survey, water surface elevations, geomorphic conditions and velocities. Deliverables within this report include hydraulic models with velocities and depths, calculated fish passability, conceptual designs and cost estimates based on the passage assessment and geomorphic assessment. As part of the deliverables which phases 2 & 3 rely upon stakeholder input and their selected preferred alternatives are included as well.

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Narrative

The lower nine miles of Peshastin Creek is generally wide and unconfined, but at RM 9.2 the creek enters a narrow floodplain defined by canyon walls and State Route 97. At RM 10.4 (just upstream of Ruby Creek) there is a large slide on the left canyon wall (Figure 7). A detailed geologic report of the site history and current conditions is provided in Appendix B of the attached report. The report documents that the landslide has been active for the last 95 years, and a series of highway relocation and channelization projects have occurred. The most recent work was in 1996. Since that time the overall landslide has been stable but slope and toe erosion has occurred.

Two topographic surveys were conducted. The horizontal and vertical datum was assumed. The first survey was done on November 2, 2015 at a flow of 60 cfs. Some of the deep pools were difficult to reach and the intent was to return in summer 2016 to complete detailed low flow portions of the survey. On November 17, 2015 and December 9, 2015 the site experienced floods at approximately the 15 year peak flood event. Based on observations from a March 2, 2016 field trip comparing photos it became apparent the bed has shifted as much as 4 feet vertically in some areas. Several major boulders used as reference points had moved and the drop/turbulence in some areas was very different. At this point it was very apparent that the baseline bed conditions as surveyed at low water during 2015 were no longer valid as the flood event had drastically altered many points of bed geometry within the 1000' reach. RCO Grant Manager was alerted to this shift and a request was made to push out the final deliverables to allow for the collection of another survey to re-capture bed conditions. The extension was granted, but with a caveat that the report would need to be finished with preferred alternatives determined by necessary stakeholders before the next Salmon Recovery Board proposal deadline. A second survey was completed on July 15, 2016. The flow was only 15 cfs. The focus of the survey was to redo the changed portions and extend the survey further downstream.

A one-dimensional hydraulic model was developed for the site using HEC RAS Version 5.0.3. The reach length modeled was 600 feet. Flows were modeled from 30 to 1367 cfs. The model was calibrated at measured site flows and water surface elevations of 250 and 920 cfs. A Manning's n of 0.2 was used to match the measured water surface elevations. Detailed output is provided in Appendix D of the attached report.

Fish passage through natural and disturbed channels should be based on an assessment of the stream and watershed condition, comparing drop, velocity and turbulence to fish jumping and swimming abilities and local knowledge and actual documentation of fish passage from redd counts and tagging studies. For this site, since redds have been counted upstream and fish have been detected moving upstream, the intent of the passage assessment is not to look at whether the site is a barrier, but more a degree of difficulty rating based on site conditions. From the hydrology section it was determined to assess fish passage at flows of 30, 100 and 210 cfs.

Developing conceptual design options for this reach of Peshastin Creek is very challenging due to the slope stability issues, confined channel and the gradient. The overall geomorphic and anthropogenic processes creating the passage problem can be boiled down to two items, 1) channel aggradation from the frequent input of sediment/large boulders from the active slide area due to the confinement between the riprap revetment constructed to protect the highway, and 2) the bedrock knob downstream which has confined the channel vertically and horizontally and reduces the potential for regrade. These two items create increased slope downstream, resulting in decreased pool depth at low flow and increased turbulence at higher flows. The channel cannot create scour/pools due to the size and number of boulders in the channel which have accumulated over time.

In the end, 6 alternative conceptual designs were developed, ranging from no action to extensive restoration of the entire reach including toe stabilization of the Ruby Slide slope. The design engineer worked with WDFW to develop a low-cost design, citing possible resistance to some of the more heavy handed and expensive designs. This became option 1 and was WDFW's preferred option. WSDOT did not submit a preferred option, but expressed their interest in ensuring Highway 97 roadway prism as well as follow up questions. WSDOT representatives indicated a neutral stance on eventual projects as long as the highway was not impacted, and had positive inputs on how to tackle construction access to the site. The USFS chose to only support alternative 0, which is no work on Peshastin Creek, citing risk and project longevity in relation to cost. Please see Appendix C of the attached reports to review stakeholder preferred alternative narratives.

It is of the opinion of Chelan County Natural Resources, its agents, as well as cooperative partners within WDFW that a viable restoration exists in this reach of Peshastin Creek to improve salmonid passage and open up high quality spawning and rearing habitat upstream for annual use. From the initial stakeholder coordination WSDOT expressed that they are not the primary landowner and would be deferring final Landowner Agreements to the USFS (even as Highway 97 right-of-way extends into Peshastin Creek) but was at least willing to provide helpful inputs and did not consider any proposed actions as fatal flaws. Coordinating with USFS became increasingly difficult as the local district faces many internal staffing issues, and additionally the staff available were not overly supportive of the project. USFS did express appreciation for the geo-technical analysis completed on the hill side, but in the end was not willing to change their position that any construction project was too expensive and risky in this location. While CCNRD staff does not agree with the basis of USFS decision to weigh in on construction estimate costs or viability, it does respect that USFS is the primary landowner and needs to be on board to move into Phases 2 & 3. WDFW has committed to accumulating additional fish use data of Peshastin Creek, and specifically this reach with the collective hope that we may be able to change the minds of USFS with additional evidence supporting the intent of Phases 2 & 3.

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Worksites

Worksite #1: Peshastin Creek RM 10.4-10.6

Worksite Address (Optional)

Street Address SR 97
City Peshastin
State, Zip WA 98847

Worksite Details

Worksite #1: Peshastin Creek RM 10.4-10.6

Worksite Name Peshastin Creek RM 10.4-10.6

WORKSITE DESCRIPTION

Peshastin Creek RM 10.4-10.6 below the Ruby Slide. Assessing fish passage.

Geographic Coordinates

From mapped point:	Latitude	47.448556	Longitude	-120.656296
For Directions:	Latitude	47.448150	Longitude	-120.656702

SITE ACCESS DIRECTIONS

From intersection of SR 2 and US 97 proceed south on US 97 to Ruby Creek (USFS Road #7204). Turn onto Ruby Creek Road and park. Cross highway on foot to access Peshastin Creek.

✓ **The above information is correct and complete**

Properties

The selected project has no properties

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Planning Metrics

Worksite: Peshastin Creek RM 10.4-10.6 (#1)

Targeted salmonid ESU/DPS (A.23)

The salmon ESU (Evolutionarily Significant Unit) or steelhead DPS (Distinct Population Segment) name that the project is targeting. For species where ESU/DPS name is not known or determined, use the species name with unidentified ESU (e.g., Chinook salmon - unidentified ESU).

Current Agreement

Final

No Salmon ESU or Steelhead DPS
Chinook Salmon-Upper Columbia River Spring-run ESU
Chinook Salmon-Upper Columbia River summer/fall-run ESU
Chinook Salmon-unidentified ESU
✓ Steelhead-Upper Columbia River DPS
Steelhead/Trout-unidentified DPS

No Salmon ESU or Steelhead DPS
Chinook Salmon-Upper Columbia River Spring-run ESU
Chinook Salmon-Upper Columbia River summer/fall-run ESU
Chinook Salmon-unidentified ESU
✓ Steelhead-Upper Columbia River DPS
Steelhead/Trout-unidentified DPS

Area Encompassed (acres) (B.0.b.1)

Acres of land area affected by the planning and assessment activities (to nearest 0.1 acre).

1.0

1.0

Targeted species (non-ESU species)

Select one or more of the fish species that this project will benefit.

None
Unknown
Brook Trout
Brown Trout
✓ Bull Trout
Cutthroat
Kokanee
✓ Rainbow
Searun Cutthroat

None
Unknown
Brook Trout
Brown Trout
✓ Bull Trout
Cutthroat
Kokanee
✓ Rainbow
Searun Cutthroat

Miles of Stream Affected (B.0.b.2)

The miles of stream affected (to the nearest 0.01 mile).

0.20

0.20

Design for Salmon restoration

Projects include complete engineering or preliminary design.

Preliminary design

Preliminary engineering/design work for restoration projects.

Total cost for Preliminary design

Enter the cost (to the nearest dollar) of this work type, as close as you can reasonably get it.

\$74,500

Not Collected at Closure

Note: 74500

Name of the Plan

Name of the Plan, Watershed Assessment or Recovery Plan that identifies the need or justification for conducting this project. (Author, date, title, source, source address. Endnote citation format). If project was not identified in a Plan, enter "None".

Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan
Authors, August 2007, <https://www.yakama.gov/Assets/Documents/Library/Plans/UCSR/UCSR-2007.pdf>
Note: Yakama Nation Assets/Document Library/Plans/UCSR/UCSR-2007.pdf
Note: The plan evaluates aquatic biotic resources in the Upper Columbia River and Peshastin Tributary and Reach Assessment. Prepared by Interfluvier for Yakama Nation.

Description of the Plan

Description of the Plan, Watershed Assessment or Recovery Plan including extent, purpose and application of the plan (limited to 1500 characters). If no Plan, enter "None".

The Upper Columbia Salmon Recovery Plan from August 2007 is for spring Chinook and steelhead in the Upper Columbia River and Peshastin Creek. The Upper Columbia Salmon Recovery Board, a regional non-profit organization, implements the plan to restore

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Overall Metrics

	Current Agreement	Final
Completion Date		
Projected date of completion	1/31/2017	03/31/2017
Estimated date the scope of work will be completed.		Note: Extension was granted through RCO grant manager Marc Duboiski to accommodate need for additional data collection following the high flow events during winter 2015/2016 which fundamentally changed bed conditions on the site as surveyed in summer 2015.
Project Goals		
Goals, purpose, and expected benefits (A.17)	To identify whether a passage restoration project is geologically feasible before advancing the design process. If yes, then	To identify whether a passage restoration project was geologically feasible, then develop conceptual designs and identify
Short description of the goals and purpose of the project and how it is expected to benefit salmonids or salmonid habitat.		

Planning Costs

	Proposed	Final
Worksite: Peshastin Creek RM 10.4-10.6 (#1)		
SPLIT OUT FINAL TOTAL BELOW	\$74,500.00	\$79,019.68
Design for Salmon restoration Costs	\$74,500	\$79,020
Difference		\$0

Billed Summary

Final amounts include a pending billing Date of Last Released Billing 01/20/2017					
Category	Project Agreement		Totals To Date		
	RCO	Total	Expended	Non Reimbursable	Total Billed
Non-Capital					
Non-Capital Costs			58,156.61	20,863.07	79,019.68
Equipment					
Non-Capital Total	62,500.00	74,500.00	58,156.61	20,863.07	79,019.68
Total	62,500.00	74,500.00	58,156.61	20,863.07	79,019.68

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Sponsor Match

	Proposed	Final
Project Funding		
PCSRF Federal Funds (A.10)		
State Funds (A.11)	\$62,500.00	\$42,874.73
Pending Billing - RCO Share Approved		\$13,375.27
Retainage - RCO amount retained		\$1,906.61
Sponsor Match: Monetary Funding		
Amount of other monetary funding (A.12)	\$12,000	\$780
Source of other monetary funding (A.12.a)	Chelan County	CCNRD supported under BOR field monitoring grant field assistance and monitoring support to Project Design Engineer
Sponsor Match: Donated Un-paid Labor (volunteers)		
Value of Donated Unpaid Labor (Volunteers) (A.13.a.2)	\$0	\$0
Source of Donated Un-paid labor contributions (A.13.a.4)	N/A	N/A
Number of hours volunteers contributed to the project (A.13.a.1)	Collected at Closure	0
Describe how the value of the volunteers was determined (A.13.a.3)	Collected at Closure	N/A
Sponsor Match: Donated Paid Labor		
Value of Donated Paid Labor (A.13.b.1)	\$0	\$0
Source of Donated Paid Contributions (A.13.b.2)	N/A	N/A
Sponsor Match: Other In-kind Contributions		
Value of Other In-Kind Contributions (A.13.c.1)	\$0	\$20,083
Source of Other In-Kind Contributions (A.13.c.3)	N/A	WDFW Array equipment and install of array equipment in close proximity to project site to further develop fish usage and passage data
Description of other In-Kind contributions (A.13.c.2)	N/A	N/A
Amount Total	\$74,500	\$79,020
Total Billed		\$79,020
Difference		\$0

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Attachments

PHOTOS (JPG, GIF)



272777 Primary



272779 Secondary



272778 Secondary



272776 Secondary



272775 Secondary

FILES AND PHOTOS

File Type	Attach Date	Attachment Type	Title	Person	File Name, Number Associations	Shared
	04/19/2017	Environmental Site Assessment Report	Peshastin Creek Geologic Report.pdf	PeteC	Peshastin Creek Geologic Report.pdf, 303200 Final Report, 05/22/2017, Accepted	✓
	04/19/2017	Design document	Upper Peshastin Design Report - Final With Appendices.pdf	PeteC	Upper Peshastin Design Report - Final 033117 - With Appendices.pdf , 303199 Final Report, 05/22/2017, Accepted	✓

SPONSOR CLARIFICATION

Geologic Report of slide was conducted in 2015 as pre-cursor to the subsequent passage analysis and Design Report conducted 2015-2017

✓ **The above information is correct and complete**

Certify & Submit

Status History

Report Status	Date	User	Note
Accepted	05/22/2017	Marc Duboiski	Thank you.
Submitted	05/19/2017	Sofia Bjorklund	
Draft	04/19/2017	Pete Cruickshank	