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| **Lead Entity:** | Upper Columbia Sal Rec BD LE |
| **Project Number:** | [18‐1824](https://secure.rco.wa.gov/prism/search/ProjectAppReport.aspx?ProjectNumber=18-1824) |
| **Project Name:** | Mill Creek Fish Passage Barrier |
| **Project Sponsor:** | Chelan Co Natural Resource |
| **Grant Manager:** | Duboiski, Marc |

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| --- | --- | --- |
|  | **Date** | **Status18** |
| Post‐Application | 9/26/18 | NMI |
| Final |  |  |

**PROJECT SUMMARY (*for Review Panel reference only*)**

The proposal will be for final design, permitting and construction of a fish passage barrier replacement on Mill Creek, a tributary to Peshastin Creek.

FINAL REVIEW PANEL COMMENTS

**Date: Final Project Status:** Choose an item.

Full Panel Review

1. **If the project is a POC, please identify the SRFB criteria used to determine the status of the project:**
2. **If the project is Conditioned, the following language will be added to the project agreement:**
3. **Other comments:**

POST‐APPLICATION REVIEW PANEL COMMENTS

**Date: 9/26/18 Project Status:** NMI

Full Panel Review

1. **If the project is a POC, identify the SRFB criteria used to determine the status of the project:**
2. **If the project is a POC, identify the changes that would make this a technically sound project:**
3. **If the project is Conditioned, the following language will be added to the project agreement:**
4. **General comments:**

The current proposal is confusing based on the change in budget from the April application and your replies to our comments. Specifically, you have 30% design drawings, but no basis of design report, and you’re willing to evaluate other design options during preliminary design, if funded by SRFB and BAFBRB.

What other alternatives were evaluated prior to selecting a corrugated arch pipe?

*As outlined in the Correction Analysis Form submitted with the final proposal, two options were previously considered in 2012, a Precast bridge (36’ span, shallow abutments) that did not meet Chelan County Public Works requirements and a Girder bridge (45’ span, deep abutments and footings) which was too expensive to move beyond the initial design stages.*

*In re-starting the design effort with Public Works and Natural Systems Design in 2018, a pre-cast concrete reinforced split box culvert was initially considered. This was selected based on past experience with similar*

*projects, current engineering trends, and Chelan County Public Works’ preference for concrete structures. Consultation with the geotechnical engineer that completed the original site investigation led to increased footing depth. The desire to provide a design with a higher resiliency to climate change and debris flow passage led to increased span and rise. Combined, these factors increased the procurement cost of a pre-cast concrete reinforced split box culvert to the point where it was cost prohibitive. A high radius arch structural plate culvert proved to be less expensive ($95,500 savings) than the pre-cast concrete box and provides the same level of scour protection, geotechnical stability, and similar abilities to pass debris flows. See Supplemental Correction Analysis Form.*

Do you have a preferred alternative for this project? If not, then the proposal may need to be changed to an alternatives analysis, with selection of preferred alternative taken to preliminary design.

*Yes. The preferred alternative is the high radius arch structural plate culvert. This meets the approval of Chelan County Public Works standards, meets or exceeds applicable design standards, provides resiliency to climate change, and lowers construction cost compared to previously considered design options.*

**Staff Comments**: While you have elected to make both your SRFB and BAFBRB grant requests under the preliminary design requirement thresholds ($250,000 and $500,000, respectively), this is leading to the lack of certainty of your proposal.

*The proposal is to fund final design, permitting and construction of a corrugated arch pipe culvert to provide for fish passage and meet the requirements of Chelan County Public Works. The project initially scored higher with BAFBRB than with SRFB, so that lead to a larger match request from BAFBRB.*

*Incorporating Climate Change into the Design of Water Crossing Structures (WDFW 2016), recommends incorporating projected changes to bankfull width into culvert design as a standard practice. This document was utilized as a guide for channel design and structure sizing in the preferred alternative, however language left over from the draft BAFBRB/SRFB proposals might have added to the confusion and uncertainty:*

“WDFW’s Stream Simulation design approach was utilized for channel design and initial structure sizing. WDFW’s report Incorporating Climate Change into the Design of Water Crossing Structures will be used to provide guidance on appropriately addressing the risk and uncertainty associated with predicting climate change impacts. Findings from this examination will also play a role in refining selection of an appropriate structure; the risk and uncertainty associated with both debris flow and climate change impacts will ultimately determine the final structure span with the most extreme condition controlling selection.”

*The design included in the final SRFB application did in fact take into account projected changes in bankfull width as well as local information from Chelan County PW experience after the 2013 flood event in Colockum Creek. WDFW’s guidance provided in Incorporating Climate Change into the Design of Water Crossing Structures is general and does not provide specific design criteria or proposed design modifications; as such, general findings from the document were considered and integrated into the design. The uncertainties and difficulties associated with predicting climate change make it difficult to ascribe a universal set of design standards and as such, the responsibility of identifying a fiscally responsible design which addresses these uncertainties and risks falls to the engineer and design team. We feel our current design achieves this balance.*

*Final Geotech analysis, permit agency comments and changes in materials and construction costs could contribute to some changes in the final design of this crossing.*

18CLEAR=Cleared to proceed; CONDITIONED=Cleared to proceed with a condition; NMI=Needs More Information; POC=Project of Concern; NOTEWORTHY=Exemplary Project



SPONSOR RESPONSE INSTRUCTIONS

If your project is not cleared (i.e. has a status of NMI, Conditioned, or POC) you must update your proposal, PRISM questions, or attachments as necessary to address the review panel’s comments. Use track changes when updating your proposal. Fill out the section at the end of your project proposal to document how you responded to comments.

DRAFT APPLICATION / SITE VISIT REVIEW PANEL COMMENTS

*Note that comments provided in this section are preliminary and based on basic information provided in the project pre‐*

*application and site visit. Full Review Panel review will occur after the final application materials are submitted for the project and may identify technical issues not previously discussed or identified.*

Date: 5/9/18 Project Site Visit? X Yes No

Review Panel Member(s): Toth and Tyler

1. **Recommended improvements to make this a technically sound project according to the SRFB’s criteria:**

The proposal references “current 30% design”; please load this to PRISM. Preliminary designs and a basis of design (BOD) report that meet the criteria identified in Manual 18 Appendix D will need to be posted on PRISM before final application. The BOD report should include a discussion of the alternatives considered and the rationale for the preferred selection. If this will not be feasible, the grant should be for design and permits, without construction. The cost estimate shows nice detail on construction costs but should also include match and show the total project cost.

The proposal highlights the potential for debris flows to occur in the basin and the increased span and footing depth for the proposed drainage structure to accommodate sediment deposition and minimize scour impacts. While a nearly 21-foot wide corrugated arch pipe with about 12 feet of clearance may accommodate smaller debris flows, most debris flows contain a fair amount of woody debris that typically will plug even the largest of culverts. Increasing the size and clearance of the arch pipe may in this case just be adding costs to the project without providing meaningful protection from debris flows. The project design should focus on maintaining the stability of the crossing and allowing for maintenance access to clean out the structure in the event of a debris flow. The culvert inlet should also be mitered to increase its capacity and lessen the impact of woody debris piling up.

1. **Review Panel Comments:**

This is a nicely written proposal. The barrier forms in the proposal are appreciated. This barrier was identified in a 2004 inventory and again in a 2017 inventory. Passability was reviewed at the culvert in July 2016 and determined to be 33% passable; however, at the site visit, it appeared to be a complete passage barrier. Fish were last recorded at this location in 1994. WDFW previously surveyed this area during Spring Chinook migration and spawning periods, but did not detect redds, though the habitat appeared suitable. While located on a Tier 4 restoration priority, the sponsor argues for correction of this barrier because Mill Creek offers the best tributary spawning habitat in lower Peshastin Reach, with perennial flows, potential for thermal refuge, and moderate gradient. Peshastin Creek has the highest percentage of wild spawners for any tributary in the Wenatchee basin.

1. **Staff Comments:** As mentioned above, preliminary designs are required for SRFB grant requests of $250,000 or greater. Please provide preliminary designs or change project type to a design proposal.



SPONSOR RESPONSE INSTRUCTIONS

Revise your project proposals using “track changes” and update any relevant PRISM questions and attachments. Fill out the section at the end of your project proposal to document how you responded to comments.