Upper Peshastin Migration Barrier Design

June 24, 2014

Chelan County Natural Resource Department

316 Washington street, Suite 401

Mike Kane

Prism # 14-1739

Anticipated Request-SRFB	$62,500
Anticipated Request-Trib Comm.	$12,000
Anticipated Request for Proposal	$74,500

Upper Peshastin Migration Barrier Design Pre-Proposal Checklist		
✓	**Checklist Items**	**Content**
	UC Region Application Section	Title page, final proposal checklist (customized), UC Region Supplemental Application (4 pages)
	Salmon Project Proposal: Planning (Design) Project including project cost estimate	Pages 1-10
	Maps: Figure 1 Project vicinity and steelhead spawning	Attached (7 pages)
	Project Photographs: Photos 1 and 2	
	Landowner acknowledgement form	
	Other Materials: Technical memo from WDFW (4 pages)	

Upper Columbia Region Supplemental Application

For the Upper Peshastin Migration Barrier Design

✓	Questions	Answers	RCO Application Location
All Projects (Mandatory) Fill in below			
1	What Upper Columbia subbasin is the project in?	Wenatchee	Section 3A
2	What project category is your project?	Design Only	Page 1
3	What Assessment Unit is the project in?	Peshastin Creek	Section 3C
4	What restoration and/or protection priority is the assessment unit the project is located in?	Peshastin Creek is the 4th priority restoration sub-basin in the Wenatchee watershed	Section 3C
5	What is the primary species the project will target?	Steelhead	Section 3B
6	What secondary species will the project will target?	Bull trout	Section 3B
7	What PCSRF Metrics will be implemented with this project?	*Fish Passage Improvement – 6.2 miles in Peshastin Creek, 2.5 miles Tronsen Creek, and).5 miles Scotty Creek. In total,this project will design fish passage to access >9 miles of steelhead spawning habitat.*	Section 2B
8	What Primary Ecological Concern does the Project Address	Channel Structure and Form (structural complexity) and Habitat Quantity (Anthropogenic barrier)	Section 3C
9	What other Ecological Concerns does the Project Address	Channel Structure and Form (structural complexity) and Habitat Quantity (Anthropogenic barrier)	Section 3C
10	What is the priority of the primary ecological concern this project addresses in the assessment unit it occurs (not required for protection projects)	Channel Structure and Form (structural complexity) = #2 Priority Habitat Quantity (Anthropogenic barrier) = #5 priority	Section 3C

Regional Technical Team Scoring Criteria Summary Information Upper Peshastin Migration Barrier Design			
1	What are the overarching objectives (goal) of the project?	The goal of this phase of the project is to identify passage issues, geomorphic site constraints and alternatives to address passage for steelhead and bull trout. A preferred conceptual design will be selected from the alternatives identified. The goal of the overall project is to improve steelhead access to the upper reaches of Peshastin Creek.	Section 2A
2	Location of the Restoration Project	The project, which is located from RM 10.2-10.6 in Peshastin Creek, aims to address fish passage in Upper Peshastin Creek. The majority of the spawning is distributed in the lower Peshastin between RM 3 to 6.5. In the upper Peshastin watershed, steelhead show a pattern of concentrated spawning between Ingalls and Ruby Creek with dispersed spawning beyond the project site and in Tronsen Creek. This project seeks to improve access from RM 10.4 to 16.6 on Peshastin Creek, 0.5 on Scotty Creek and river mile 2.5 on Tronsen Creek.	Sections 1, 2, and 3A
3	Methodology, Location, and Scale of the Restoration Project	The final proposal will describe how this project is appropriately scaled and scoped in terms of the objectives described above.	Project Description 4-A
4	Temporal effects of the proposed project	This project will design fish passage that is appropriate for the fluvial-geomorphology of the stream in this location. Project design will need to account for the instability of banks adjacent to the stream and evaluate short and long term solutions. Improving steelhead access to the upper Peshastin watershed will be important if future climate changes result in hydrologic alterations to flows and/or temperatures in the middle Peshastin watershed which currently supports the majority of steelhead spawning in this sub-basin.	
5	Benefits to Freshwater Survival or Capacity	This project proposes to increase capacity for steelhead by improving access to spawning areas in the upper watershed	

Project Number	14-1739
Project Name	Upper Peshastin Migration Barrier Design
Sponsor	Chelan County Natural Resource Department
Planning Type	Conceptual Design

2014 Project Proposal for Planning Projects

1. Problem Statement

Provide an overview of fish resources, current habitat conditions, site or reach conditions, gaps in knowledge, and other key salmon recovery problem(s) in the watershed that this project is intended to address.

Responses to coments from RTT and SRP review of draft proposal are included in the Final Proposal to the degree the sponsor is able to respond. Additional in-depth responses will be submitted to Salmon Recovery Funding Board in August as per SRFB Process.

Currently, a 1000' section of Peshastin Creek, (RM 10.4-10.6) is believed to be limiting access to steelhead spawning habitat in the upper basin (see figure 1). "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." (Jeremy Cram, WDFW unpublished data, March 2014). Upper Peshastin Creek and the tributaries above this reach provide diverse habitat types and substantial low gradient spawning habitat.

Road building, in particular the construction of US 97 in 1956 has altered the river corridor through channel straightening, levee construction, bank armoring, vegetation clearing and large wood removal. Road construction throughout the watershed has contributed to a 70% potential increase in drainage network resulting in increased peak flows and reduced summer low flows (Peshastin Watershed Assessment, 1999). These problems have been exacerbated in this reach by the failure of the slope above the reach on USFS road 7312 (The Ruby Slide), and Washington State Department of Transportation 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 (see figure 2 and 3). According to conversations with WSDOT and USFS personnel, no formalized study of the slide has been completed thus far.

Spawning surveys conducted by WDFW throughout the Wenatchee basin from 2004 - 2010 showed that Peshastin Creek contributes significantly to the Wenatchee steelhead population as a whole. For example, in 2010 Peshastin Creek had 12.2% of all the steelhead redds located in the Wenatchee subbasin (Hillman et al. 2011). The majority of the spawning is distributed in the lower Peshastin between RM 3 to 6.5. In upper Peshastin Creek above Etienne Creek

(above project site) steelhead redds have ranged from highs of 27, 33 and 41 to lows of 4, 8 and 10.

2. Project Purpose

A. State the project goal(s).

The goal of this phase of the project is to identify passage issues, geomorphic site constraints and alternatives to address passage for steelhead and bull trout. A preferred conceptual design will be selected from the alternatives identified.

The goal of the overall project is to improve steelhead and potentially bull trout access to the upper reaches of Peshastin Creek.

B. List the project's objectives.

The objective of this project phase is to:

- Identify species of fish, size range and migration timing
- Collect data including, topographical survey, water surface elevations, geomorphic conditions and velocities
- Develop a hydraulic model which can provide velocities and depths
- Calculate fish passability based on species, low flow calculations and hydraulic model
- Develop conceptual designs and cost estimates based on passage assessment, geomorphic assessment and stakeholder input
- Select a preferred alternative.

The objective of the overall project is to improve access to an additional 6 miles of spawning and rearing habitat in Peshastin Creek, 2.5 miles on Tronsen Creek and 0.5 miles on Scotty Creek.

3. Project Context

A. Describe the location of the project in the watershed

The project is located within the Wenatchee River Watershed (WRIA 45) on Peshastin Creek in Central Washington. This proposal focuses on addressing passage from RM 10.4-10.6 on Peshastin Creek. This project seeks to improve access from RM 10.4 to 16.6 on Peshastin Creek, 0.5 on Scotty Creek and river mile 2.5 on Tronsen Creek.

B. List the fish resources present at the site and targeted by this project.

Upper Peshastin Creek is utilized by a number of resident and anadromous fish species including: spring Chinook, steelhead trout, rainbow trout, bull trout, west slope cutthroat trout, brook trout, sculpin and dace species (NPPC 2004 and Andonaegui 2001). Three of these species are currently listed under the Endangered Species Act: spring Chinook (*Oncorhynchus tshawytscha*), summer steelhead (*Oncorhynchus mykiss*), and bull trout (*Salvelinus confluentus*); however, most of the spring Chinook in Peshastin Creek are presumed to belong to a non-ESA listed stock reintroduced from the Leavenworth National Fish Hatchery and use above Ingalls Creek is likely minimal.

WDFW crews have observed concentrations of spawning steelhead below the barrier during low flow periods. See attached figures showing juvenile densities in Peshastin Creek from ISEMP monitoring.

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The following ESA listed species are present in Peshastin Creek:

Species	Life History Present (egg, juvenile, adult)	Current Population Trend (decline, stable, rising)	ESA Coverage (Y/N)	Life History Target (egg, juvenile, adult)
Steelhead	egg, juvenile, adult	stable	Y	egg, juvenile
Bull trout	juvenile, adult	stable	Y	egg, juvenile, adult
Spring Chinook	juvenile, adult	declining	N	juvenile

Peshastin Creek has been identified as a major spawning area for summer steelhead (UCRTT 2008); however, current abundance and distribution of steelhead in Peshastin Creek is reduced compared to historical conditions (Andonaegui 2001). Steelhead use the mainstem Peshastin Creek for spawning, rearing, and as a migration corridor to access the upper basin spawning grounds.

Peshastin Creek was once host to a notable run of bull trout as they migrated to their upstream spawning ground in late summer (Andonaegui 2001). Two tributaries, Ingalls Creek and Ettienne Creek, are known to support bull trout spawning and rearing (USFWS 2002), and currently there is believed to be a small population of stream-resident bull trout in these two creeks. High stream temperatures above Ettienne Creek are thought to be a barrier to further upstream migration. Bull trout likely move into and take advantage of multiple creeks throughout the Peshastin Creek basin depending on the

temperature and time of year. Adult bull trout use these creeks for holding and overwintering and juvenile bull trout utilize the habitat for rearing.

C. Discuss how this project fits within your regional recovery plan and local lead entity's strategy to restore or protect salmonid habitat in the watershed

Restoration of Peshastin Creek tributary habitat is identified as one of the priorities in the Upper Columbia Salmon Recovery Plan (UCSRB 2007). According to Table E1 in Appendix E of the Revised Biological Strategy, Peshastin Creek is listed as the 4th Assessment Unit in priority order, and has a Priority Area Designation of 2 (UCRTT 2013). Channel Structure and Form (Complexity) is the 2nd priority for action types in Peshastin Creek.

Comments in Table E1 of the Revised Biological Strategy for Peshastin Creek includes: "Develop a restoration plan that includes restoration of natural processes where possible, normative flow levels, **migration corridors** and holding and rearing habitat in lower Peshastin Creek."

Improving fish passage throughout the Peshastin Creek watershed is part of a larger, watershed wide restoration strategy that includes habitat restoration and flow augmentation projects.

D. **Explain why it is important to do this project now instead of at a later date**.

In some years there is a barrier to steelhead accessing over 9 miles of spawning and subsequently, rearing habitat in Peshastin Creek. Developing a plan to improve access to half of the potential habitat in Peshastin Creek should not be delayed.

CCNRD completed the Peshastin Fishway passage project near RM 2.5 (built in 2005 with improvements in 2012) and is planning to implement the Mill Creek fish passage project in 2014. CCNRD is also working on restoring normative flows in Peshastin Creek through implementation of the PID canal upgrades (completed in 2010 and 2011) and the Peshastin pump-exchange project (feasibility study and alternatives analysis 2012). Other habitat improvement projects have been implemented in the drainage and are in the planning and design phase. In addition, the Upper Peshastin Watershed Restoration Plan is a high priority for the Okanogan-Wenatchee National Forest and the goal of that plan is to improve or maintain aquatic physical and biological condition with a combination of road improvements, decommissioning and culvert replacements as well as fuels reduction and large woody debris projects.

The consequences for not implementing this particular project would be to maintain existing conditions and limited habitats, which will continue to limit productivity of listed steelhead within the Peshastin Creek watershed.

E. If any part or phase of this project has previously been reviewed or funded by the SRFB, please fill in the table below.

N/A

4. Project Description

A. Provide a detailed description of the proposed project and how it will address the problem described above.

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

Passage Assessment

The sponsor will contract with a consulting engineer and geomorphologist with local experience assessing passage and hydrologic/geologic conditions in this area to complete an assessment of fish passage in this reach. The study design approach to this project will be similar to that used on Icicle Creek by Waterfall Engineering:

Step 1: Identify species of fish, size range and migration timing (work with WDFW).

Step 2: During high flows in May, 2015 project benchmarks will be established along the project reach. Water surface elevations and velocities will be measured where access can be gained to the site. The target flow will be around 1000 cfs.

Step 3: During low flows in September (~30 cfs), complete a topographic survey of the site to a level which will allow the development of a hydraulic model to assess fish passage at high flow. Also, make a low flow passage assessment based on individual falls, drop height, plunge pool depth and turbulence. At this same time a geomorphic assessment will be made of the reach and a geologic assessment of the Ruby Slide. The geologic assessment of the Slide will include an overview of site history, existing geologic mapping, and potential for future events.

Step 4: Develop a hydraulic model which can provide velocities and depth within identified fish passage corridors. The type and extent of hydraulic model is not known at this time but will likely be HEC RAS or River 2D.

Step 5: Return to the site at a medium flow (100 to 200 cfs) to verify and complete model calibration. The USGS gage site will be used to target this flow range. Water surface elevations and velocities will be measured.

Step 6: Using the fish species identified, low flow measurements and data from the hydraulic model make calculations for fish passability and compare to observed data of fish in the area upstream and downstream.

Step 7: Results from the passage assessment, geomorphic assessment and stakeholder input will then be used to develop conceptual designs and cost estimates to improve fish passage through the reach.

Step 8: The sponsor will work with the stakeholders and design engineer to develop a preferred alternative conceptual design for this site. Due to the site constraints, the preferred alternative discussions will include issues associated with long-term maintenance at this site and WSDOT role in final design and construction phases. In addition to WSDOT having a role in developing final designs and implementation, USFS will also have a role in concepts related to stabilization of the Slide if applicable. A range of stabilization techniques have been employed on landslides, including bioengineering techniques developed by Chris Hoag (the sponsor has used extensive bioengineering techniques to stabilize landslides in West Seattle in 2001 and other sites as well). The sponsor would be happy to hire Mr. Hoag do design a stabilization plan if stakeholders agree it is warranted and if funding is available.

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B. **Clearly list and describe all products that will be produced (i.e., project deliverables)..**

- Topographical survey of the site
- Hydraulic model
- Geomorphic Reach Assessment
- Conceptual Design Alternatives
- Preferred Conceptual Design

C. **If the project will occur in phases or is part of a larger recovery strategy, describe the goal of the overall strategy, explain individual sequencing steps and which steps are included in this application.**

Restoration at this site is part of an ongoing overall recovery strategy that includes passage, habitat and instream flow improvements in Peshastin Creek with a goal of achieving VSP parameters necessary for recovery of listed species.

This proposal is Phase One of a project to address a barrier to upstream migration. Some preliminary work has been done by WDFW to identify that a passage barrier exists. This proposal will complete the assessment and conceptual design phase of the project.

Phase Two will include the development of Preliminary and Final Designs and specifications for the project and permitting (assuming feasibility).

Phase Three will include contracting and construction of the project.

D. If your proposal includes an assessment or inventory (NOTE: project may extend across a wide area and cover multiple properties):

i. Describe any previous or ongoing assessment or inventory work in your project's geographic area and how this project will build upon rather than duplicate completed work.

A reach assessment was completed of the lower 9 miles by the Yakama Nation Fisheries Program, Lower Peshastin Creek Tributary and Reach Assessment 2010. This proposal will be focused on an area not covered by that assessment.

ii. Describe how the assessment or inventory addresses the stages and elements in Guidance on Watershed Assessment for Salmon (Joint Natural Resources Cabinet, May 2001, www.digitalarchives.wa.gov/governorlocke/gsro/watershed/watershed.pdf).

E. If your proposal includes developing a design:

i. **Will the project design be developed by a licensed professional engineer?**

Yes

ii. For final design projects, if you do not intend to apply for permits as part of this project's scope of work, please explain why and when permit applications will be submitted.

iii. Has Washington Department of Natural Resources confirmed that your project is or is not on state-owned aquatic lands?

No

F. If your proposal includes a fish passage or screening design:

i. Has the project received a Priority Index (PI) or Screening Priority Index (SPI) number? If so, provide the PI or SPI number and describe how it was generated:

No. The sponsor will provide this information to SRP for August review.

ii. For fish passage design projects:

1. If a culvert or arch is proposed, will it employ a stream simulation, no slope, hydraulic, or other design? N/A

2. Describe the amount and quality of habitat made accessible if the barrier is corrected.

9 miles of spawning and rearing habitat for steelhead.

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

None downstream. Upstream barrier on Scotty Creek is planned for replacement.

G. Describe other approaches and design alternatives that were considered to achieve the project's objectives and why the proposed alternative was selected.

This proposal is to assess existing conditions and select a preferred alternative. The assessment phase of the project is necessary at this time to understand the extent of the problem, causal factors and site constraints in order to arrive at a preffered solution.

H. Describe your experience managing this type of project.

CCNRD has managed 32 fish passage projects including one in the Peshastin watershed: the Peshastin Fishway passage project near RM 2.5 (built in 2005 with improvements in 2012) and has managed five different habitat improvement projects in WSDOT right of way.

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

Item	Cost/unit
Peshastin Barrier Design	
Review data/stakeholder meetings	11,000
Survey and hydraulic model	17,600
Geomorphic reach assessment	6,000
Identify alternatives	6000
Final report	6400
Preferred alternative conceptual design	6,000
Meetings, Presentations, Response to Comments	3500
CCNRD Administration	18000
TOTAL	$74,500

J. **List Project Partners and their role and contribution to the project.**

WDFW is the originator of the project concept and their role is to provide run timing and spawning distribution data and technical oversight for fish use of this area. They provide extensive local knowledge of the site and overall watershed. They will play a key role in evaluating assessment methodology and alternatives.

WSDOT is the owner of the right of way and at this time has agreed to provide information on site specific work and to participate in design review.

K. **List all landowner names**.

The road falls within the SR 97 WSDOT ROW; see attached landowner acknowledgement form. Adjacent landowners include the United States Forest Service, Wenatchee River Ranger District.

L. Contingency Planning: State any constraints, uncertainties, possible problems, delays, or additional expenses that may hinder completion of the project. Explain how you will address these issues as they arise and their likely impact on the project.

The site has two major constraints to developing feasible conceptual designs: SR 97 and the Ruby Slide.

M. List and describe the major tasks and schedule you will use to complete the project. (Planning projects should typically be completed within two years of funding approval).

Kickoff Meeting	March 2015
Record High Flow Water Levels	May 2015
Topo Survey/Base Map/Velocity/Depth Measurements	September 2015
Hydraulic Model Development	October 2015
Fish Passage Assessment	Nov-Dec 2015
Alternatives	Jan-Feb 2016
Conceptual Design and Cost	Mar-Apr 2016
Draft Report	May 2016
Final Report	June 2016

References:

Andonaegui, C. 2001. Salmon, Steelhead, and Bull Trout Habitat Limiting Factors, For the Wenatchee Subbasin (Water Resource Inventory Area 45) and Portions of WRIA 40 within Chelan County (Squilchuck, Stemilt and Colockum drainages). Final Report, November 2001. Olympia, WA.

Jones & Stokes. 2005. Gagnon Property Off-Channel Habitat Project Design

Hillman, T. M. Miller, T. Miller, M. Tonseth, M. Hughes, A. Murdoch, J. Miller, and B. Keesee. 2011. Monitoring and evaluation of the Chelan County PUD hatchery programs. 2010 Annual report.

Cooper, M. and S. Mallas. 2004. Peshastin Creek Smolt Monitoring Program. Annual Report 2004. US Fish and Wildlife Services Mid-Columbia River Fishery Resource Office, Leavenworth, WA.

Yakama Nation. 2010. Lower Peshastin Creek Tributary and Reach Assessment. Prepared by Interfluve for Yakama Nation. Available online at http://hwsconnect.ekosystem.us/Project/290/10748

UCRTT. 2013. A Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region.

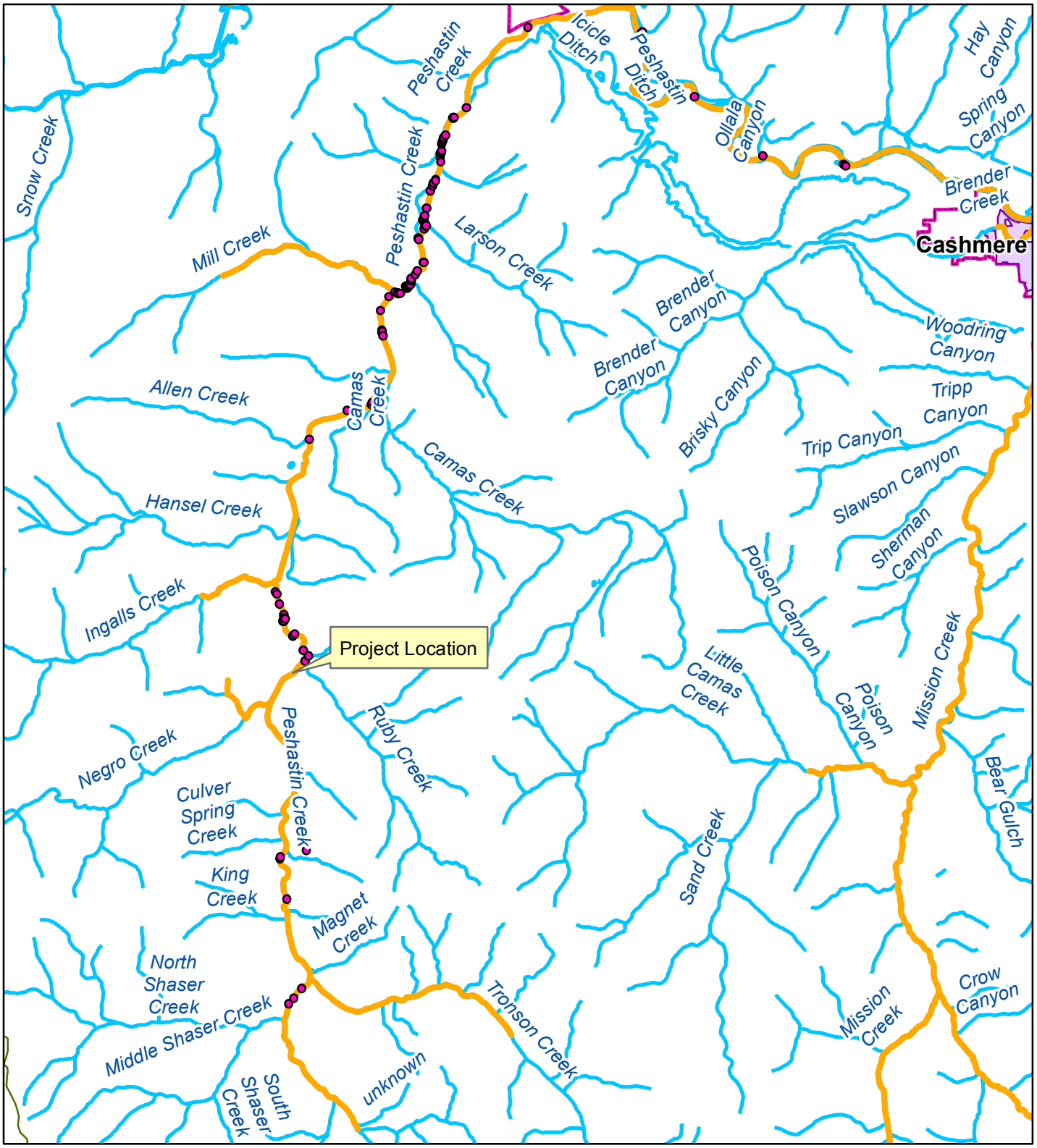


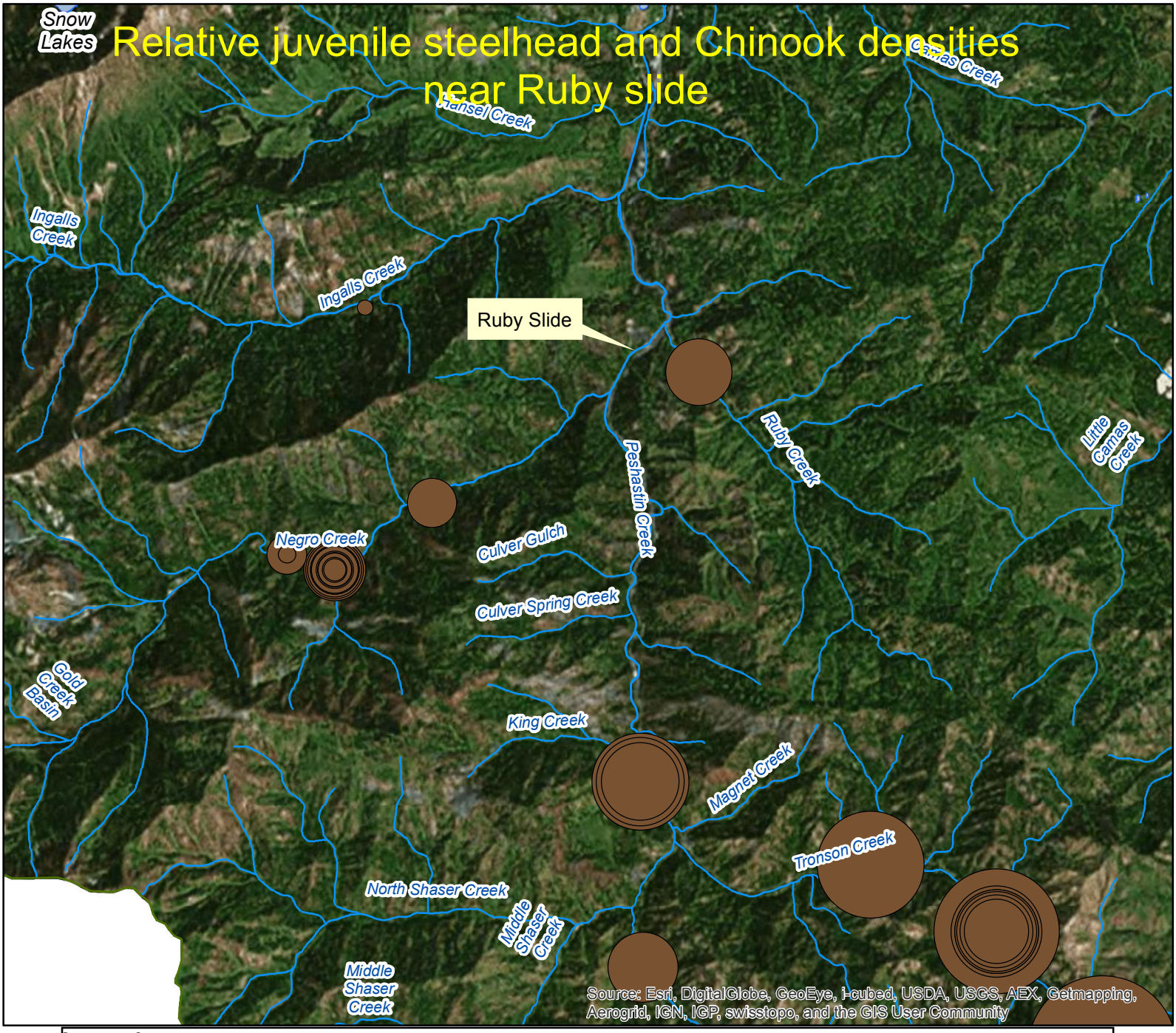
Figure 1: Steelhead Distribution and Spawning Redds (2005-2012)

Legend

- Steelhead Redds
- Steelhead Distribution

N

0 6,500 13,000 26,000 Feet



Legend

20130403_-_ISEMP_Wenatchee_Chinook_Density

FishDensit

- 0.0001
- 0.001
- 0.005
- 0.01
- 0.1

20130403_-_ISEMP_Wenatchee_Steelhead_Density

Density

- 0.0001
- 0.001
- 0.01
- 0.1
- 1

0 0.75 1.5 3 Miles

N

(Figure 2) Peshastin Creek above Ruby Cr. confluence US 97 on R bank Ruby Slide on L bank.

(Figure 3) Peshastin Creek above Ruby Cr. confluence on January 8, 2009.

Appendix F: Landowner Acknowledgement Form

Landowner Information

Name of Landowner: WSDOT North Central Region

Landowner Contact Information:

☒ Mr. ☐ Ms. Title: Assistant Regional Planning Engineer

First Name: William Last Name: Gould

Contact Mailing Address: 1551 N. Wenatchee Ave. Wenatchee, WA 98801

Contact E-Mail Address: gouldw@wsdot.wa.gov

Property Address or Location: **Project is located in SR-97 ROW adjacent to Ruby Slide in the vicinity of Mile Post 176.00** vic

1. WSDOT is the owner of ROW where project is proposed.
2. I am aware that the project is being proposed on WSDOT ROW.
3. If the grant is successfully awarded, I will be contacted and asked to engage in negotiations.
4. My signature does not represent authorization of project implementation.
5. If I am affiliated with the project sponsor, I will recuse myself from decisions made by the project sponsor to work on or purchase my property.

William Gould 5/2/14

Landowner Signature Date

Project Sponsor Information

Project Name: Chelan County Natural Resource Department

Project Applicant Contact Information:

☒ Mr. ☐ Ms. Title Natural Resource Specialist

First Name: Mike Last Name: Kane

Mailing Address: 316 Washington St., Suite 401, Wenatchee, WA 98801

E-Mail Address: mike.kane@co.chelan.wa.us

Memo

To: Mike Kane, CCNRD

From: Jeremy Cram, WDFW

Date: March 2014

Re: Peshastin Fish Passage Barrier RM 10.4 to 10.6

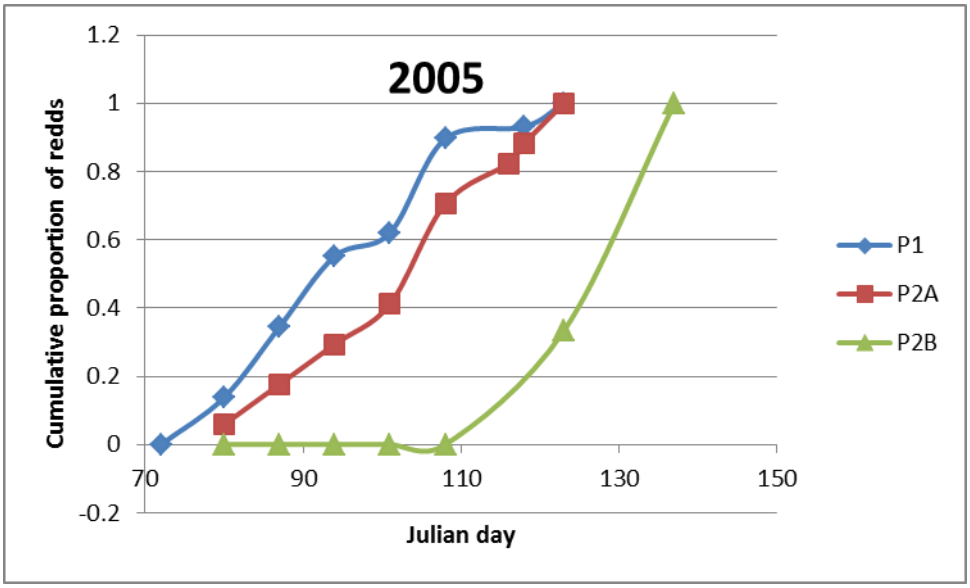
Peshastin Creek is divided into 3 survey reaches for evaluating spawning distribution:

- P1 – Mouth to Ingalls Creek
- P2A – Ingalls Creek to Etienne Creek
- P2B – Etienne Creek to Scotty Creek, including Tronsen

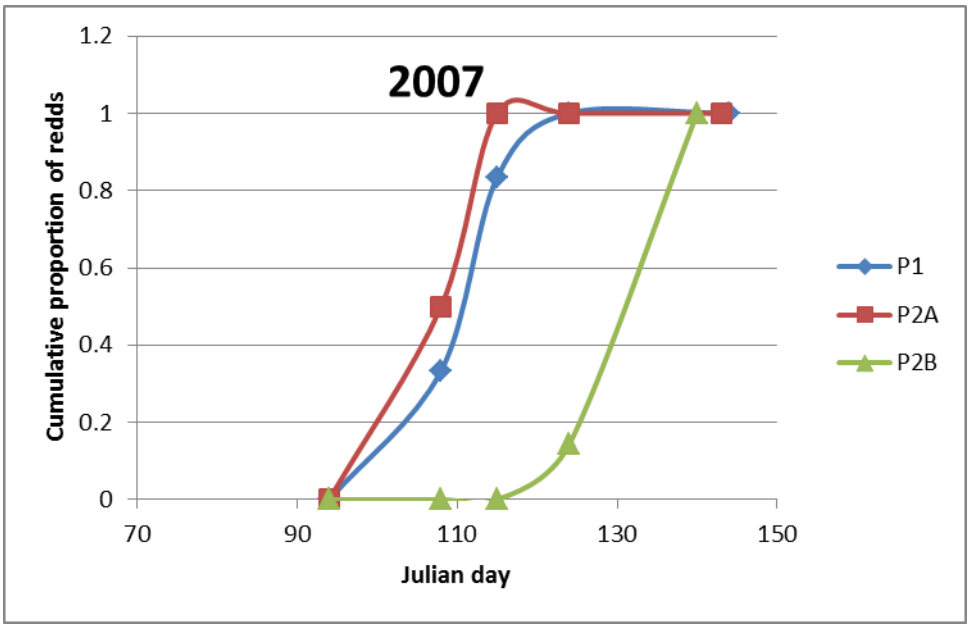
Access to reach P2B may be limited by a slide near the upstream end of P2A. Spawning distribution and timing data, as well as field observations, suggest that a landslide above the Ruby Creek confluence may be acting as a barrier at low flows, thus inhibiting access to high quality spawning areas and delaying the spawn timing of fish that eventually access habitat above the slide by over 40 days.

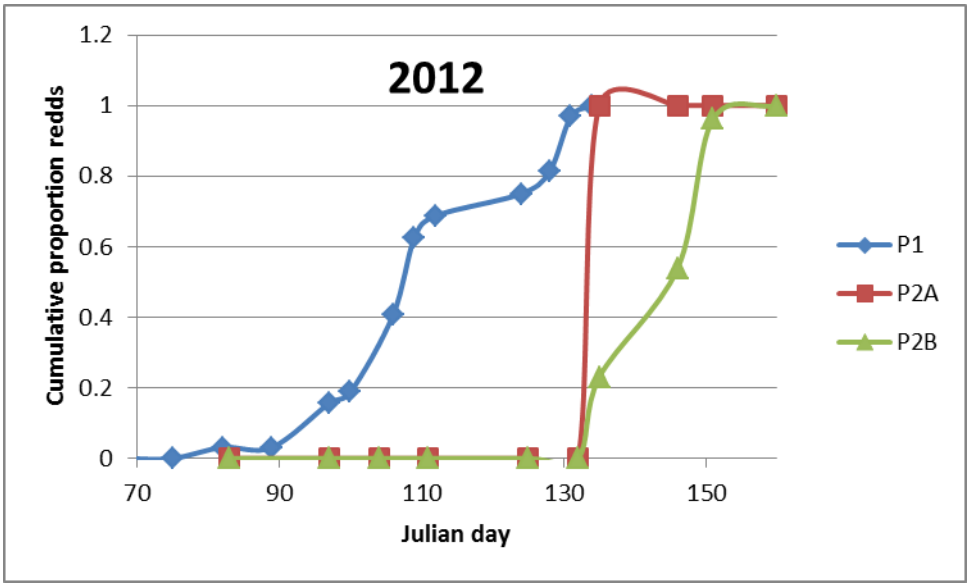
P2B and upper Peshastin Creek tributaries offer the most diverse habitat types within upper Peshastin Creek and its tributaries, including low gradient spawning habitat. P2A offers very limited spawning habitat and in years with more than a few redds in that reach high levels of superimposition are documented.

2005 was a drought year for WA and the pattern was quite strong:



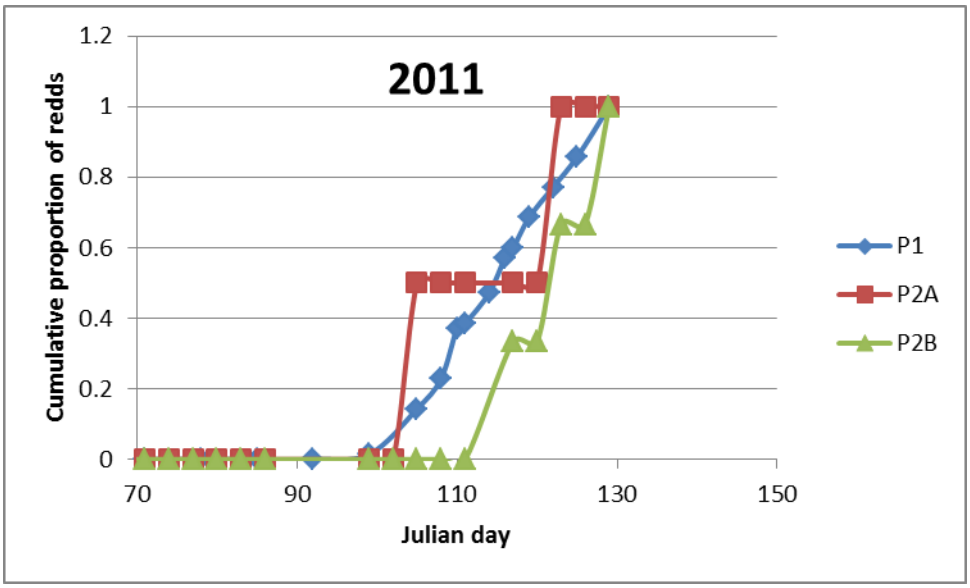
A similar pattern was seen in 2007 and 2012:



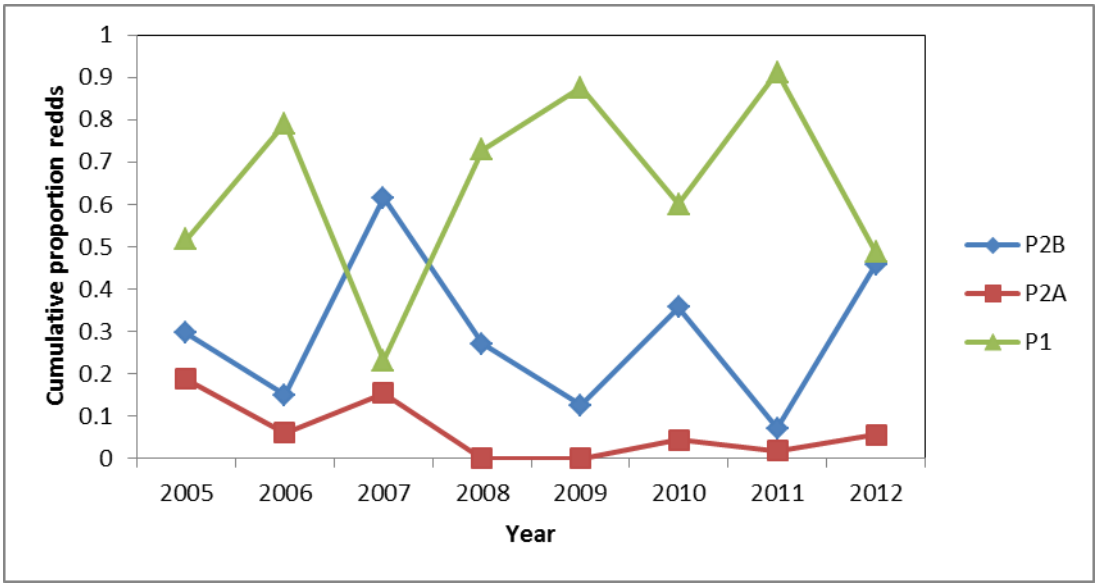


The 2005, 2007, and 2012 plots all show a delay in spawning for fish utilizing P2B. We hypothesize that this is due, in part, to passage problems at the Ruby Creek slide. In many years some fish eventually get past and spawn above the slide. In other, many of those fish spawn in suboptimal habitat in P2A or drop back down to P1, thus increasing superimposition rates.

A more normal year where spawn timing was similar across reaches occurred in 2011:



The relative proportions of redds from all 3 reaches are plotted here:



The peaks in 2005 and 2007 for P2A were anecdotally associated with low or late discharge and reduced passage opportunity at the Ruby Creek landslide. In 2005, substantial superimposition was noted by field crews and the decline to near 0 redds in P2A is likely due to poor spawning habitat and reproductive success of those fish that spawned there.

Above the slide (P2B) offers mainstem and tributary habitat that is typically underexploited by spawning steelhead, and more fully seeding the upper habitat likely offers the best opportunity to increase the overall abundance of steelhead in Peshastin Creek. Furthermore, trends from the 2007 and 2012 redd data suggest that the fish that spawned above the slide in 2007 may have experienced high reproductive success and their offspring may have homed to the same area to spawn in 2012 (2007 redds: 16, 2012 redds: 33). The middle and lower spawning survey reaches in Peshastin Creek seem to be functioning at or near capacity in most years. Improved passage at the Ruby Creek slide could result in increased abundance and productivity of Peshastin steelhead and at a minimum it would provide important resiliency to a key production area.