

Skinney Creek Floodplain Restoration Design May 2, 2014

Chelan County Natural Resources Department (and US Forest Service)

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PRISM #14-1732

Anticipated Request - SRFB/BPA:

\$107,000

Anticipated TOTAL Project Budget:

\$107,000



Confluence of Skinney Creek and Chiwaukum Creek, April 2014

Skinney Creek Floodplain Restoration Design Pre-Proposal Checklist

	UC Region Application Section :	Title page, final proposal checklist, UC Region Supplemental Application/Resource
	Salmon Project Proposal: Planning and Combination Planning/Acquisition Projects including project cost estimate	Pages 1-10
	Maps: <ul style="list-style-type: none"> • Figure 1: Project Area Overview • Figure 2: Spring Chinook Distribution and Spawning • Figure 3: Steelhead Distribution and Spawning 	Attached 9 pages
	Project Photographs: Photos 1-4	
	Design Materials WSDOT Sheets 55-57	
	Landowner Acknowledgement Form	
	Other PTAGIS data output (improved graphic with final proposal)	

Upper Columbia Region Supplemental Application/Resource

✓	Questions	Answers	RCO Application Location
All Projects (Mandatory) Fill in below			
1	What Upper Columbia subbasin is the project in?	Wenatchee	Section 3A page 2
2	What project category is your project?	Design Only	Page 1 planning type
3	What Assessment Unit is the project in?	Upper Wenatchee which includes the lower Chiwaukum and 1.3 miles of Skinney Creek	Section 3C page 3
4	What restoration and/or protection priority is the assessment unit the project is located in?	The Upper Wenatchee Assessment Unit is the number 2 priority for implementation of restoration actions in the Wenatchee basin.	Section 3C page 3
5	What is the primary species the project will target?	Steelhead	Section 3C page 4
6	What secondary species will the project will target?	Spring Chinook	Section 3C page 4
7	What PCSRF Metrics will be implemented with this project?	Activity Type – Instream Habitat Project 7-10 acres of floodplain reconnected and 0.5 mile of instream habitat treated	Section 2B page 2
8	What Primary Ecological Concern does the Project Address?	Channel Structure and Form	Section 3C pages 3-4
9	What other Ecological Concerns does the Project Address (not required for protection projects)?	Peripheral and Transitional Habitat – floodplain reconnection	Section 3C pages 3-4
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 and Peripheral and Transitional Habitat are the number one and two priority ecological concerns to be addressed in the Upper Wenatchee assessment unit	See additional info in Section 3C pages 3-4

Regional Technical Team Scoring Criteria Summary Information

1	What are the overarching goals and quantified objectives of the project?	<p>Goal: Restore natural channel and floodplain processes such as stream channel function and floodplain interaction/inundation in lower Skinney Creek to improve spawning and rearing habitat for spring Chinook and steelhead.</p> <p>Quantified Objectives:</p> <ul style="list-style-type: none"> -Remove 2,000 linear feet of levee adjacent to Skinney Creek. -Re-construct >2,000 linear feet of Skinney Creek -Construct a new valley with 7-10 acres of floodplain/floodprone area and associated riparian habitat. -Improve 0.5 mile of juvenile and adult rearing and migratory habitat for spring Chinook -Improve fish access to the upper Skinney Creek watershed which provides up to 3 miles of critical habitat for steelhead. -Create 0.5 mile of steelhead spawning habitat 	Section 3B pages 1- 2
2	Location of the Restoration Project	The application describes how this project is sited within an important spawning/rearing area and/or provides access to habitat that would function as important spawning/rearing habitat.	Sections 3B and C pages 2-4 Attachments: Figures 2-3 and PTAGIS data
3	Methodology, Location, and Scale of the Restoration Project	The project scope and scale has been designed to restore stream channel and floodplain function while minimizing impacts to existing riparian areas. Please see the additional information about design alternatives that will be considered and additional language about use of reference sites for project design.	See project description in Section 4A pages 5-6
4	Temporal effects of the proposed project	The Skinney Creek floodplain restoration design will be consistent with the fluvial-geomorphology of the stream. You will even have an opportunity to review proposed designs through NEPA and the WHSC. Construction is slated to start in 2017 and floodplain re-connection processes will be restored immediately, however, it will take longer to restore riparian vegetation cover. The cool thing about this project is that it restores natural stream channel processes which will persist throughout time because the project will be designed to allow channel migration within the floodplain. Restoring floodplain connections is an action consistent with amelioration of the effects of climate change.	N/A
5	Benefits to Freshwater Survival or Capacity	This restoration project will increase capacity for steelhead by improving access to Upper Skinney Creek spawning areas and providing 0.5 mile of spawning habitat. This restoration project will improve freshwater survival by providing improved rearing and refuge habitat for spring Chinook and steelhead juveniles through improved floodplain connection and in-stream complexity.	

Project Number	14-1732
Project Name	Skinney Creek Floodplain Restoration Design
Sponsor	Chelan County Natural Resources Department
Planning Type	Preliminary 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.

Railroad construction and subsequent construction of Highway 2, re-aligned Skinney Creek into its current channel configuration. The lower 2,000 feet of Skinney Creek is narrow and confined between two remnant berms or levees. This project proposes to re-construct the stream channel into it's former floodplain area. Figure 1 depicts the project location and it provides an overview of recent WSDOT Hwy 2 re-alignment and associated work in Skinney Creek. A more detailed description of the WSDOT project and fish barrier removals in Skinney Creek is included in Sections 3D and 4C below.

Photos 1 and 2 depict the current conditions in Skinney Creek documenting the channel constriction during high flows. The primary habitat-limiting factors within the Skinney Creek are artificial obstructions, riparian condition, channel entrenchment, water quality (fine sediment), off-channel habitat, and large woody debris (Andonaegui 2001). All fish passage barriers (artificial obstructions) have now been removed from Skinney Creek (See Section 4C below). However, highway and railroad construction have impacted stream processes such as hydro-geomorphic processes, woody debris recruitment, channel migration, instream habitat complexity, and gravel recruitment. Today, Skinney Creek within the project area is characterized by an entrenched channel with little habitat complexity, a lack of large wood and pools, and no floodplain access due to the levees that border the channel (USFS 1999).

Skinney Creek does provide habitat for spring Chinook and steelhead (Figures 2 and 3). However, there is likely limited use by both species under current conditions. The project goal is to restore natural stream processes such as stream channel function, channel complexity, and floodplain connectivity. This will increase habitat diversity and improve rearing and spawning potential in Skinney Creek for spring Chinook and steelhead.

2. Project Purpose

A. State the project goal(s).

Goal:

Restore natural channel and floodplain processes such as stream channel function and floodplain interaction/inundation in lower Skinney Creek to improve spawning and rearing habitat for spring Chinook and steelhead.

B. List the project's objectives.

Quantified objectives such as number and depth of pools and number of redds per reach will be developed as part of the preliminary project design.

Pre-design Objectives include:

- Remove 2,000 linear feet of levee adjacent to Skinney Creek.
- Re-construct >2,000 linear feet of Skinney Creek
- Construct a new valley with 7-10 acres of floodplain/floodprone area and associated riparian habitat.
- Improve 0.5 mile of juvenile and adult rearing and migratory habitat for spring Chinook.
- Improve fish access to the upper Skinney Creek watershed which provides up to 3 miles of critical habitat for steelhead.
- Create 0.5 mile of steelhead spawning habitat
- Increasing the number of pools in this reach

3. Project Context**A. Describe the location of the project in the watershed**

The Skinney Creek floodplain restoration project is located approximately 9 miles northwest of Leavenworth, WA on Highway 2 (Figure 1). The site is managed by the US Forest Service (25 North 17 E Section 4 Tax lot 000050 and Longitude 47 41' 36" N and Latitude 120 44' 27" W upstream end).

Skinney Creek is a 6,925 acre watershed area located in the Upper Wenatchee watershed. Skinney Creek is a perennial stream that flows into Chiwaukum Creek which is a tributary to the Wenatchee River. Over half of the watershed is USFS management and the remainder is primarily private timberlands. USGS operated a gage on Skinney Creek from 1954 – 1973 and the average peak flow measured was 31 cfs and the maximum peak flow recorded was 75 cfs. WSDOT modeling indicates that the 2 year event on Skinney Creek is 98 cfs and the 100 year event is 313 cfs (WSDOT 2009). Low flows range from 1-3 cfs in late summer (USFS 1999). Stream gradient within the project area ranges from 0.6% at the upstream end to 3% near the confluence; See Table 1 below which divides the project area into three areas to calculate the stream gradient using elevations and distances from the WSDOT plans (attached).

Table 1. Calculation of Stream Gradient within the project area

Area		Upstream	Downstream	Change	Gradient
Upstream	Elevation	1810.21	1807.66	2.55	0.57%
	Station	4423.77	4872.59	448.82	
Channelized	Elevation	1807.66	1771.4	36.26	2.05%
	Station	4872.59	6640	1767.41	
Confluence	Elevation	1771.4	1752.3	19.1	3.38%
	Station	6640	7204.36	564.36	

This project will occur in the mainstem of Skinney Creek starting approximately 600 feet upstream of the confluence with the Chiwaukum. Floodplain restoration will extend approximately 2,000 linear feet upstream and ending near the new entrance to Wenatchee River Road and the Hwy 2 crossing over Skinney Creek.

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

Figures 2 (updated) and 3 depict nearby spawning and distribution of spring Chinook and steelhead. Skinney Creek is known to support steelhead spawning and rearing based on spawning surveys and Forest Service stream surveys (ISEMP 2006 and 2007; USFS 1999). It was one of only two small tributaries where steelhead spawning was found to occur in the Wenatchee subbasin during random ISEMP spawning surveys.

A May 6, 2014 survey by USFS staff Cindy Raekes documented 7 steelhead (4 with adipose fins) in Skinney Creek and 3 redds. This was a quick one day survey that started at the mouth of Chiwaukum Creek and continued up Skinney Creek to the box culvert near the entrance to River road. The three spawning redds found appeared to be in areas where spawning gravel was recently placed; namely in the box culvert and in two areas in the downstream portion of the WSDOT re-construction area. This project design would incorporate more areas of appropriate sized spawning gravel that are currently lacking in this reach.

Skinney Creek is in a unique location just upstream from Tumwater Canyon and the confluence of Chiwaukum Creek and the mainstem Wenatchee. PTAGIS data indicates 25 adult tagged steelhead have entered Chiwaukum Creek between fall 2013-April 2014 which indicates a run number of approximately 250-325 steelhead entering Chiwaukum Creek. Because of the proximity of Skinney Creek to the Chiwaukum-Wenatchee confluence, it is likely a key area for juvenile refuge and rearing and could be a unique spawning area. It is the only tributary to Chiwaukum Creek known to support anadromous fish (USFS 1999).

This project will create 0.5 mile of steelhead spawning habitat. It will also improve migratory and rearing habitat for spring Chinook and steelhead. By improving the migratory corridor for adult steelhead, this will also provide improved access to existing steelhead spawning habitat in upper Skinney Creek.

Species	Life History Present	Current Population Trend	ESA (Y/N)	Life History Target
Spring Chinook	juvenile	Stable to declining	Y	juvenile, adult
steelhead	Egg, juvenile, adult	Stable	Y	Egg, juvenile, adult
Bull Trout	Potentially migratory juveniles	Stable	Y	Juvenile

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

This project was identified as a recommended habitat action in the Wenatchee Watershed Management Plan (WRIA 45 Planning Unit 2006). Specifically, Chiwaukum action # H-1 describes a need to “increase connectivity along Skinney Creek.”

Priority Area

Lower Skinney Creek (RM 0-1.3) is considered a tertiary sub-watershed within the mainstem Upper Wenatchee Assessment unit (UCRTT 2013 Appendix E p. 21). When compared to all of the assessment units in the Wenatchee basin, the Upper Wenatchee Assessment unit is the number 2 priority area for restoration actions in the Wenatchee basin (Table 7 page 25 Biological Strategy 2013).

Priority Action

Improving channel structure and form and providing peripheral and transitional habitat are the number one and two priority ecological concerns to be addressed within the mainstem Upper Wenatchee assessment unit. Consistent with Table 5 in the Biological Strategy (UCRTT 2013), this project will implement Tier 1 actions to improve channel structure and form such as, levee removal to improve bed and channel form and installing structures to capture large wood.

This project will also implement a Tier 1 action to remove the levee to restore the connection between Skinney Creek and floodplain (peripheral and transitional) habitat. Note: the Biological Strategy recommended action is for side channel and wetland (peripheral and transitional) habitat. That said, given the Skinney Creek channel size and form, reconnecting wetland, side channel, and/or floodplain peripheral and transitional habitat in Skinney Creek may provide similar geomorphic, hydrologic, and fish use benefits.

Target priority fish species

This project primarily targets improved spawning and rearing habitat for steelhead, however, lower Skinney Creek is also used by spring Chinook.

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

In 2013, WSDOT re-located Hwy 2 which involved replacing the bridge over Chiwaukum creek and restoring the historic confluence between Skinney Creek and Chiwaukum Creek (Photo 3). As part of this project, they also re-aligned the lower 570 linear feet of stream channel and further upstream, they re-aligned another 500' of Skinney Creek adjacent to the new Hwy crossing and intersection with Wenatchee River road. In between these two work areas in Skinney Creek, WSDOT removed the asphalt from the old Hwy bed. The old Hwy bed was the former Skinney Creek floodplain prior to railroad and Hwy 2 construction in the early 1900's. This project aims to restore Skinney Creek to its historic floodplain which may result in some changes in the recent WSDOT work areas within Skinney Creek. It would be best to do this work now before these recent work areas have mature vegetation re-established. USFS tried to seek funds

in previous years to time this restoration at the same time as WSDOT, however the restoration project was not funded at that time (see Section 3E below).

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

Project # or Name	Status	Status of Prior Phase Deliverables and Relationship to Current Proposal?
2010-1811	Not Funded	See description below
2012-1616	Not Funded	See description below

In 2010, CCNRD partnered with USFS to apply for restoration design funds for this same section of Skinney Creek (PRISM # 10-1811). CCNRD did not submit a final proposal for this project because USFS was still negotiating mitigation actions with WSDOT and the outcomes were anticipated to change proposed actions in Skinney Creek. In 2012, CCNRD partnered with USFS to apply for restoration design funds for this same section of Skinney Creek (PRISM # 12-1616). The project was not funded because it was deemed out of sequence; see 2012 RTT comments below:

The RTT has concerns regarding the DOT design. The DOT design could essentially reset the environmental baseline; therefore, there are concerns that the design produced under this proposal would need major revisions after the DOT project is completed. Therefore, the RTT suggested that this project could be out of sequence because of the timing of the DOT project. This project should be re-evaluated once the DOT project is completed.

The DOT Hwy re-location and work within Skinney Creek is now completed. See the project overview in Figure 1, the as-built Sheets 55 and 57 of the WSDOT plans (attached), and Photos 2-4.

4. Project Description

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

The lower 2,000 feet of Skinney Creek is narrow and confined between two remnant berms or levees (Photo 1). This project proposes to re-construct the stream channel into its former floodplain area which is visible in Photos 2 and 4. WSDOT has already restored the lower 570' and the confluence of Skinney Creek and Chiwaukum Creek (Photos 3-4 and Sheet 57). This project will design the floodplain restoration for ~2,000 linear feet of channel. Restoration design will start just upstream from the confluence and continue up to the Skinney Creek crossing under Hwy 2 near the intersection with Wenatchee River Road.

USFS staff will use existing WSDOT site survey plus they will conduct site surveys to verify as-built elevations. USFS staff will review hydrologic and hydraulic modeling and use them to model proposed conditions to evaluate design alternatives. USFS will develop a restoration plan that describes existing and desired conditions, generates restoration goals and objectives, and evaluates alternative methods for restoration. USFS will then document modeling, design criteria, and design methods in a preliminary design report. Conceptual

designs will be presented to stakeholders including the Wenatchee Habitat Subcommittee. All stakeholder review will be documented and included in the preliminary design report. Preliminary designs will be prepared in AutoCad and meet the criteria outlined in Appendix D of Manual 18. The preliminary design report will also describe the proposed design and the biological benefit.

Part of the project design will be to survey existing reference reaches with similar reach characteristics and use that information to guide project design. Information from the reference reach surveys will be used to establish target depths, velocity, low flow channel width, anticipated floodplain width, and stream sinuosity appropriate for stream channel flows and floodplain function in lower Skinney Creek.

Project development will also include soil sampling and testing within the historic BNSF prism to document conditions as part of a Phase 1 Environmental Assessment.

Project design will also include plans for re-vegetation of the entire historic road bed to minimize sediment deposition into Skinney Creek.

This floodplain reconnection project will address the limiting factors of riparian condition, large woody material, and channel entrenchment as identified in Andonaegui (2001). The restored channel and floodplain will lead to increased migration, refuge, spawning and rearing habitat, improved floodplain and channel structure and function, and restoration of natural channel processes in 0.5 mile of lower Skinney Creek. The completion of this channel reconstruction project should lead to improved salmonid abundance and productivity for multiple ESA-listed species. Depending upon the design, it is estimated that this project will lead to reconnection of 7-10 acres of floodplain to Skinney Creek and up to 0.5 mile of restored critical habitat for spring Chinook and steelhead.

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

As described above, this design project will result in the following deliverables consistent with Appendix D of Manual 18:

- Restoration Plan with the following elements:
 - Description of site conditions and salmon recovery context
 - Biologically-based goals and objectives
 - Evaluation of design alternatives
- Stakeholder comments on restoration plan and conceptual design alternatives
- Description of design considerations and preliminary analysis
- Description of permits needed, process, and preliminary regulatory feedback
- Preliminary design drawings (in AutoCad and meeting standards in Manual 18)
- Construction quantities and cost estimates for the proposed alternative.

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.

The overall goal of restoration actions in Skinney Creek is to provide fish passage and access to up to 3 miles of steelhead rearing and spawning habitat. This proposal will fund Phase 3 of a multi-year project implemented by the County, USFS, and WSDOT. All project phases are described below:

Phase 1 - Fish Barrier Removal

In 2006, CCNRD removed a fish passage barrier at RM 1.5 on Skinney Creek. WSDOT has also removed 3 fish passage barriers above RM 2 on Skinney Creek. In 2013, WSDOT removed the last remaining fish passage barrier in Skinney Creek at USFS Road 7908, or Chiwaukum Creek Road. We were standing on this fish passage barrier during the June 2012 SRFB project tour and the location is depicted on Figure 1. There are no additional fish passage barriers on Skinney Creek that need to be addressed.

Phase 2 – Skinney Creek confluence restoration

WSDOT replaced the Highway 2 bridge over Chiwakum Creek as part of the Tumwater bridge replacement project which also re-aligns a section of the highway (Figure 1). WSDOT mitigation actions included re-alignment of the lower 570 feet of Skinney Creek into the location of the original confluence with Chiwaukum creek (Sheet 57 and Photo 3).

Phase 3 - USFS Levee Removal and Floodplain Reconnection

CCNRD and USFS are seeking funding to design the lower Skinney Creek floodplain reconnection. CCNRD will work with USFS staff and consulting engineers to design the 2,000 feet levee removal and stream restoration.

This floodplain reconnection project is the final step in restoration of lower Skinney Creek. Once Phase 3 is completed, fish will have un-impeded access to the upper Skinney Creek watershed and up to 3 miles of critical habitat for steelhead.

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

E. If your proposal includes developing a design:

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

The project will be designed by a licensed professional engineer, however, the following USFS staff will provide design and design oversight:

Richard Vacirca has been a Fisheries Biologist with the US Forest Service for 16 years. During his career he has been a project leader and part of various stream channel and floodplain design teams in the Western US. Restoration projects for which he has been a part of include: channel reconstruction through meadow ecosystems and in other valley types, channel realignment and floodplain restoration where roads have adversely interacted with

streams during floods, designing and building new stream channels for aquatic organism passage projects, and other aquatic habitat enhancement. In addition, Richard has managed large aquatic monitoring programs which has included aquatic habitat and other hydrologic and geomorphic assessment. He is currently the Forest Fisheries Program Leader for the Okanogan-Wenatchee National Forest in Wenatchee, WA.

Matt Karrer is the acting Forest Hydrologist with the Okanogan-Wenatchee National Forest and the Wenatchee River Ranger District Hydrologist. Matt has over 20 years of experience in all aspects of forest hydrology. Matt received his B.S. from the Ohio State University in 1990.

Cindy Raekes has been a Fisheries Technician with the Forest Service for 20 years, with experience in stream/riparian inventory and monitoring, and small restoration project management. Cindy has an A.A.S. in Forestry and is currently enrolled in the fisheries science program at Oregon State University.

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? *N/A*

F. If your proposal includes a fish passage or screening design: *N/A*

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

Figure 4 attached depicts the three design concepts that will be evaluated as part of this proposal.

1. North levee removal only.
2. North levee removal and partial restoration of the stream channel with the historic floodplain (e.g. extended floodplain bench, grade control in the existing Skinney Creek).
3. Levee removal and full reconstruction of a stream channel within the historic floodplain.

This restoration design will evaluate the alternatives listed above as part of the development of a restoration plan. There will be opportunity for stakeholder review and feedback on selection of the preferred alternative through the WHSC and the NEPA process.

Option 1 would remove the anthropogenic influence of the north levee without stream channel or floodplain re-construction. This restoration option would be the least

expensive and it would allow Skinney Creek to re-establish floodplain reconnection through natural stream channel processes (coupled with floodplain re-vegetation).

Option 2 would remove the north levee and construct an inset floodplain. This may provide the best balance between minimizing short term riparian impacts and providing long term restoration of floodplain connection functions. Option 2 would leave the south bank of the stream with intact existing riparian to provide interim stream shading while the riparian vegetation on the north side is restored. Any trees removed from the north levee would remain on site and be incorporated into the restoration project. Option 2 would be much less expensive than Option 3. Options 1 and 2 aim to maintain existing habitat features such as mature trees in the riparian area along the south levee and existing instream features.

Option 3 would maximize floodplain re-connection through stream channel re-location. While this option may be too expensive to pursue given the biological gain, a rough analysis will be explored to estimate the cost benefit prior to selection of the preferred alternative.

H. Describe your experience managing this type of project.

CCNRD has managed project design for small and large restoration projects within the Wenatchee Watershed. CCNRD will assist USFS with stakeholder coordination with WSDOT and the WHSC. CCNRD will also ensure that design deliverables meet Manual 18 requirements and that design alternatives maximize biological benefit at a reasonable cost. USFS staff have extensive experience managing this type of project. As noted above, they have designed and implemented many similar restoration projects over the past several decades.

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

The design cost estimate for the final proposal is based upon an engineering design consultant cost estimate based upon their experience with the number of hours it takes for each task to meet the deliverables outlined in SRFB Manual 18 Appendix D. The cost estimate is attached at the end of this proposal.

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

The USFS signed landowner agreement documents their partner contribution to this project

K. List all landowner names)

USFS is the landowner within the proposed project area. The signed landowner acknowledgement form is attached to this proposal.

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 most cost effective way to complete the engineering design is to use the USFS Restoration Team for survey, Greg Kuyumijan to design the project, and USFS staff time as design oversight. However, the current cost proposal assumes that design will be sub-contracted to an engineering design firm. CCNRD will work with USFS staff and the engineering design consultant to ensure that project design stays on schedule and design deliverables are met.

M. List and describe the major tasks and schedule you will use to complete the project.

Item/Milestone	Outcome	Target Date (Month/Year)
WSDOT Asphalt removal from the floodplain and restoration of the confluence with Skinney Creek		Completed 2013
Survey and existing conditions modeling	Survey data	December 2014
Field data collection to support design such as development of channel profile, cross sections, bed material classification, sub-surface soil sampling, riparian vegetation classification, etc	Existing conditions documentation	October 2015
Develop restoration plan, WHSC review and selection of alternative	Recommended Conceptual Alternative	Spring 2016
Preliminary (60% or permit ready) design	Preliminary Design	September 2016
NEPA and permitting*	Authorizations	Spring 2017
Construction*	Floodplain connection	Summer-Fall 2017

*Future phases not funded by this proposal

References:

- Andonaegui, C. 2001. Salmon, Steelhead and Bull Trout Habitat Limiting Factors for the Wenatchee Subbasin (WRIA 45) and Portions of WRIA 40 within Chelan County (Squilchuck, Stemilt and Colockum Drainages). Washington State Conservation Commission.
- ISEMP. 2006. Annual Report of the Integrated Status and Effectiveness Monitoring Program: Fiscal Year 2007. Prepared by Terraqua, Inc. and funded for and by Bonneville Power Administration's Integrated Status and Effectiveness Monitoring Program. April 2008.
- ISEMP. 2007. Annual Report of the Integrated Status and Effectiveness Monitoring Program: Fiscal Year 2008. Prepared by Terraqua, Inc. and funded for and by Bonneville Power Administration's Integrated Status and Effectiveness Monitoring Program. April 2009.
- UCRTT. 2013. A Biological Strategy to Protect and Restore Salmonid Habitat in the Upper Columbia Region
- UCSRB 2007. Upper Columbia Salmon Recovery Board's Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan. Available online <http://www.ucsrb.com/plan.asp>
- USFS. 1999. Upper Wenatchee Watershed Assessment. USDA Forest Service. Wenatchee River Ranger District. Leavenworth, WA.
- WRIA 45 Planning Unit (2006). Wenatchee Watershed Management Plan.
- WSDOT 2009. Site and Reach Assessment Skinney Creek at US 2.

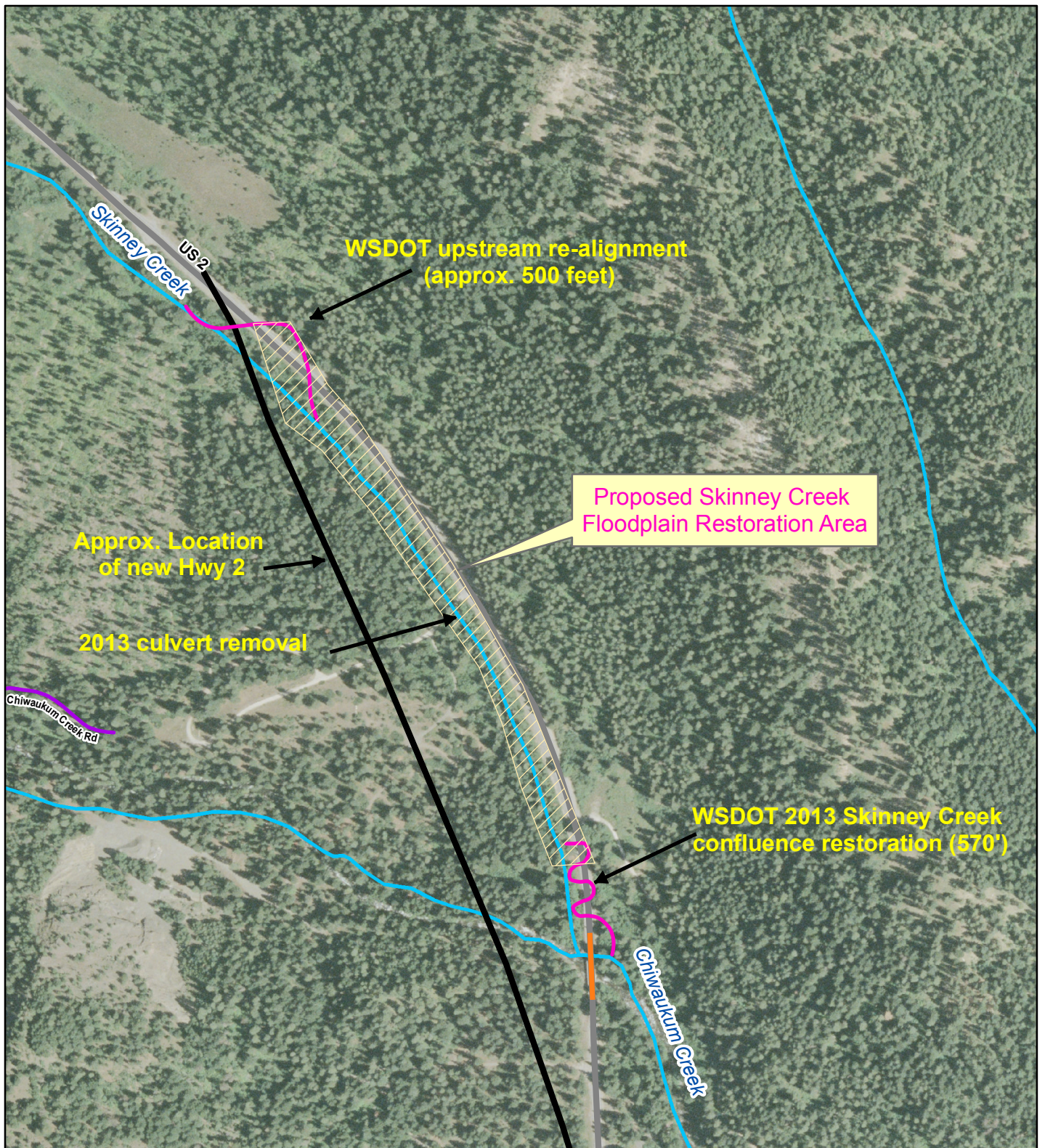


Figure 1: Project Area Overview on 2006 aerial photograph



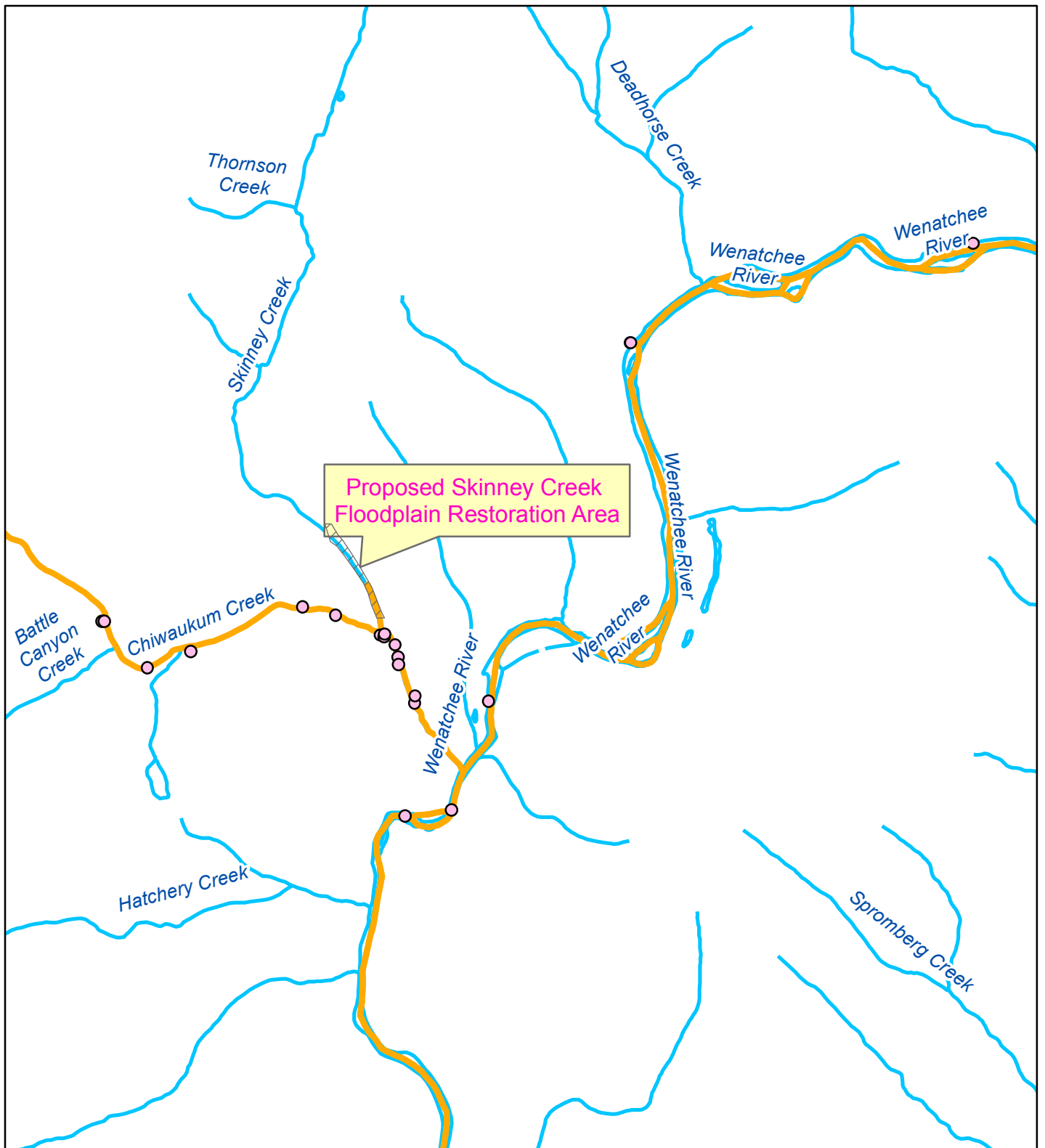


Figure 2: Spring Chinook Distribution and Spawning Redds (2003-2012)
Data source UCSRB GIS shapefiles downloaded June 2013

Legend

- Spring Chinook Redds
- Spring Chinook Distribution



0 2,250 4,500 9,000 Feet

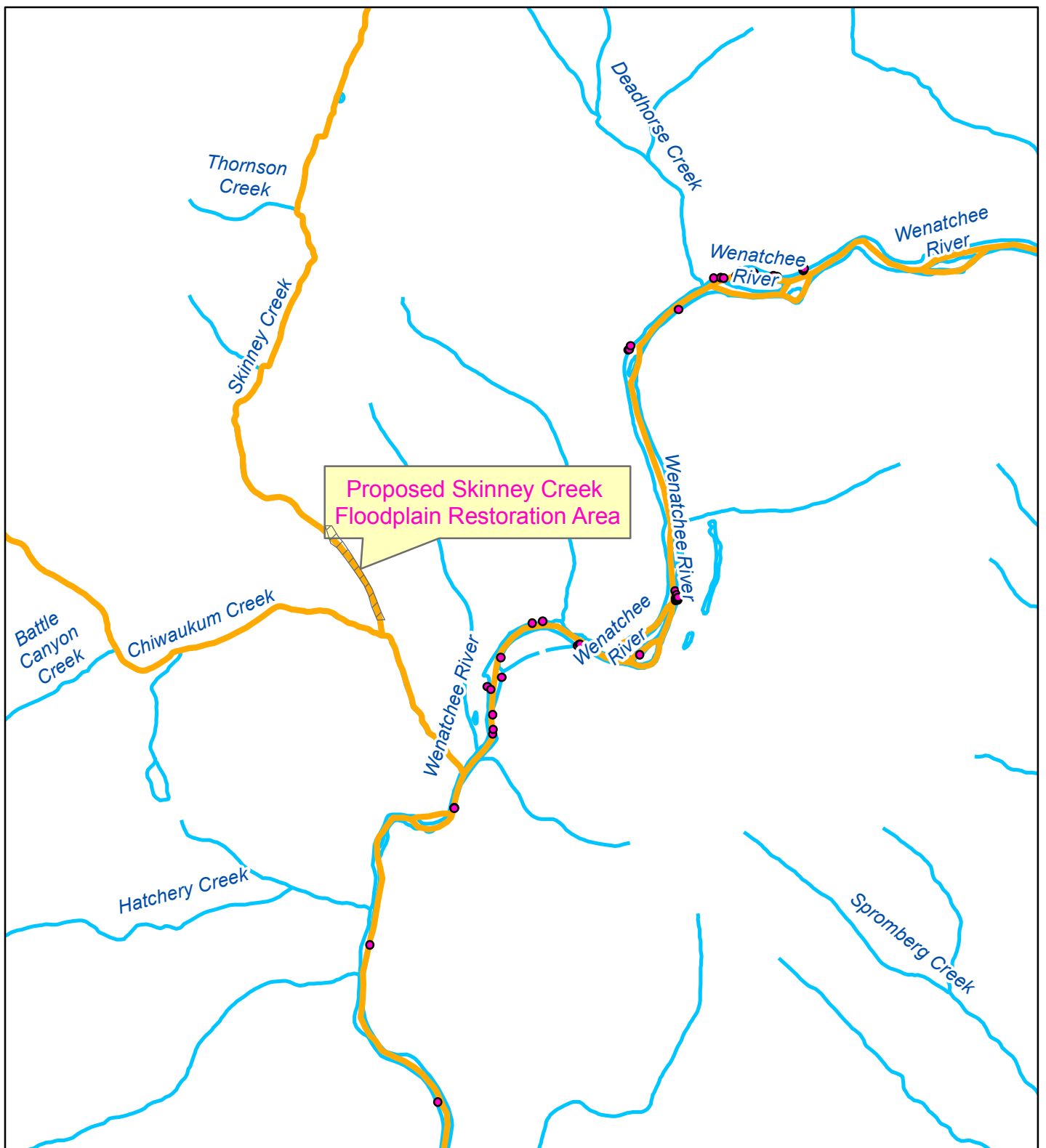


Figure 3: Steelhead Distribution and Spawning Redds (2005-2012)
 Data source UCSRB web site GIS files downloaded June 2013;
 need to verify lack of redds in tributaries in this data source

Legend

- Steelhead Redds
- Steelhead Distribution



0 2,250 4,500 9,000 Feet

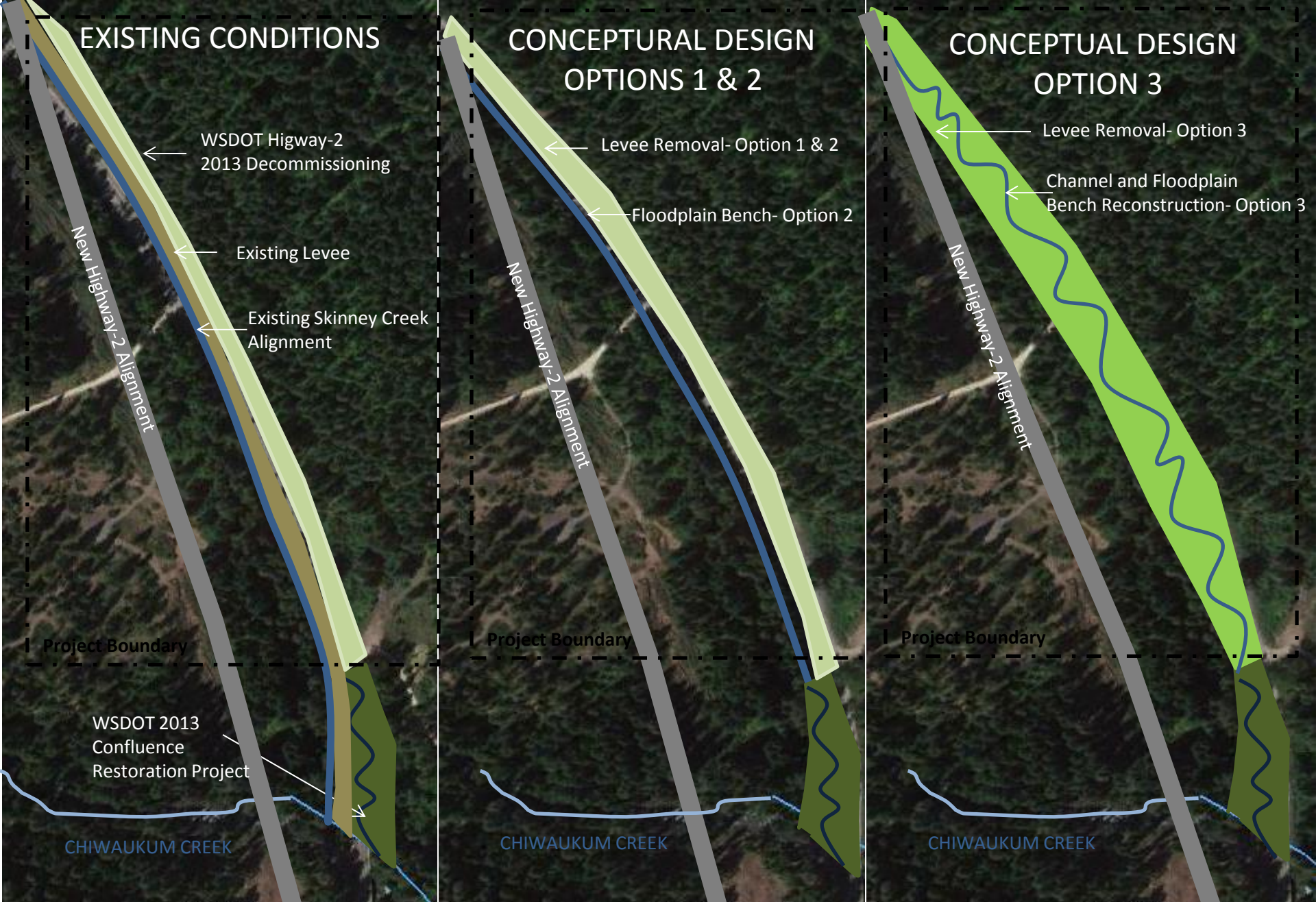


Figure 4: Existing Conditions and Three Conceptual Design Options



Photo 1: Existing conditions in Skinny Creek.
Note the channel confinement and lack of floodplain area.

Photo 2: Existing conditions in Skinny Creek.
Note the channel confinement. This photo depicts the Chiwaukum road culvert removal area. In the top of the photo is the historic Skinny Creek floodplain (the old Hwy 2 alignment). This project will remove floodplain fill and re-align Skinny Creek back into the historic floodplain area.



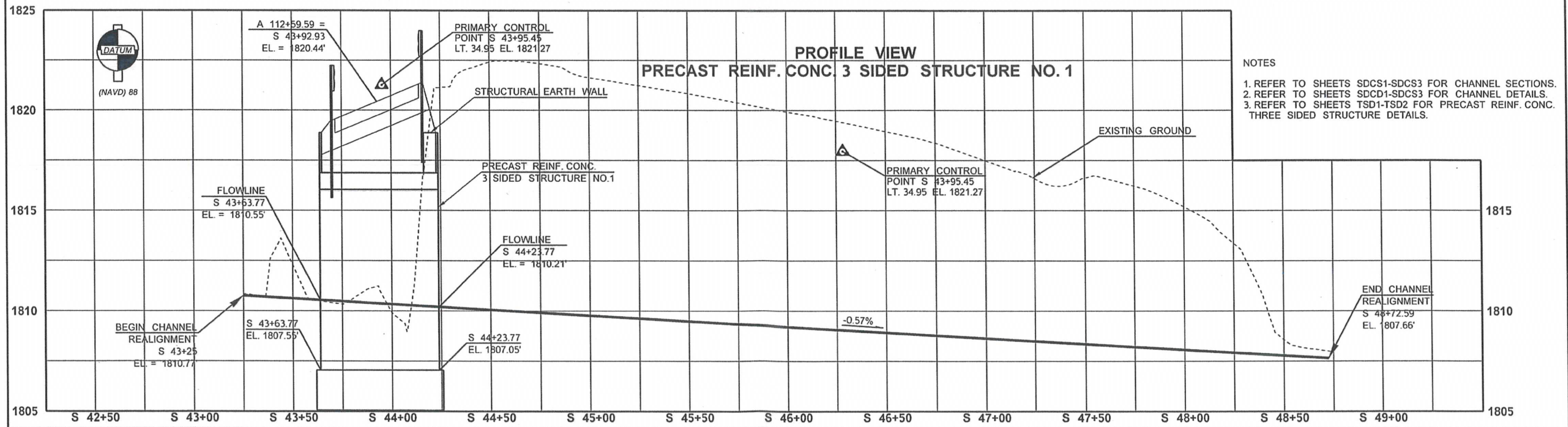
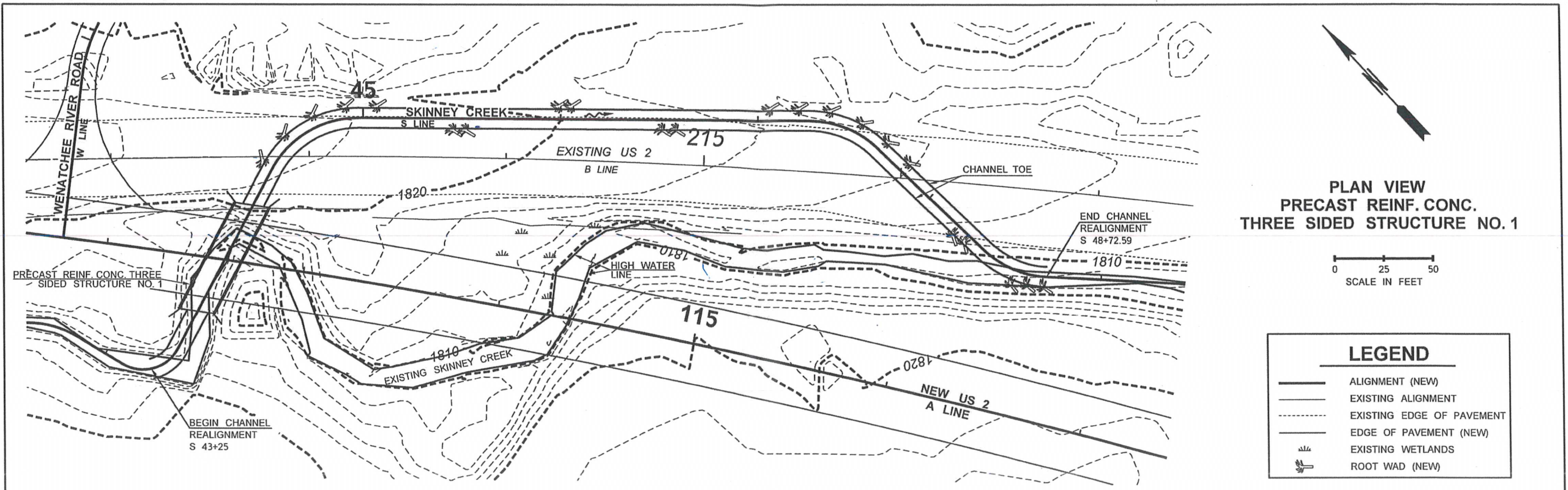


Photo 3: Skinny Creek confluence with Chiwaukum Creek, April 2014.

Note the historic Skinny Creek floodplain area depicted in the top end of this photo (former Hwy 2 alignment). The remainder of the channel will be re-constructed into this area.

Photo 4: WSDOT re-alignment of Skinny Creek.

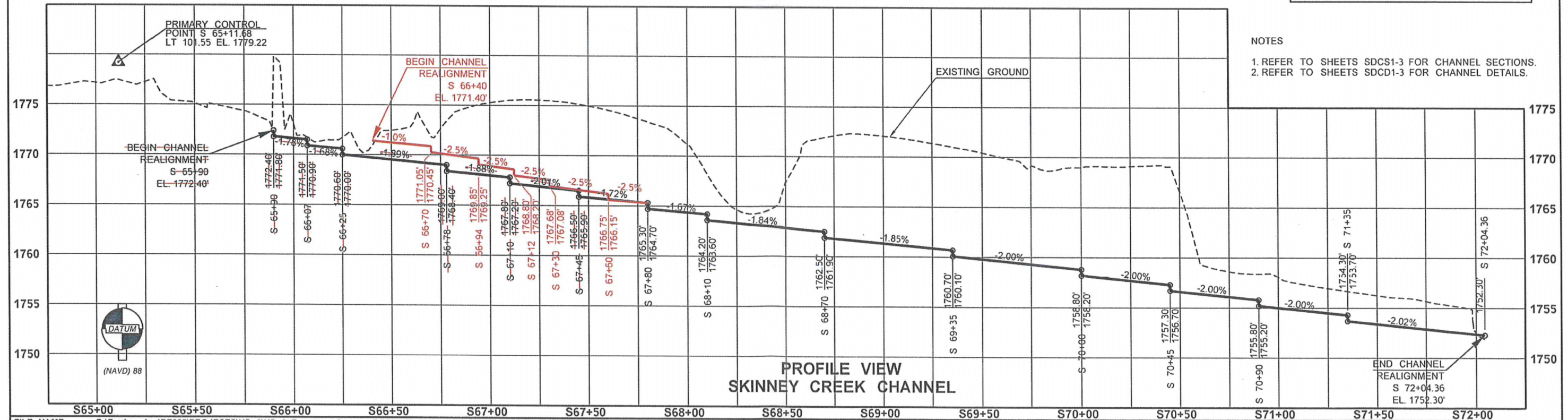
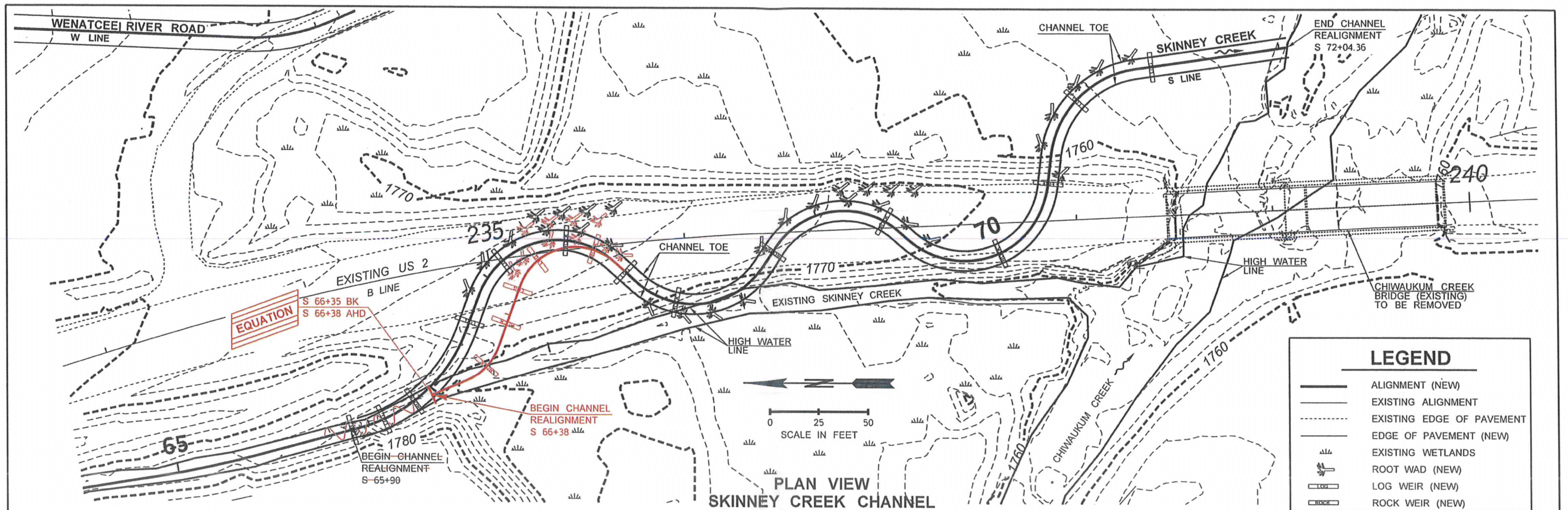




NOTES

1. REFER TO SHEETS SDCS1-SDCS3 FOR CHANNEL SECTIONS.
2. REFER TO SHEETS SDCD1-SDCS3 FOR CHANNEL DETAILS.
3. REFER TO SHEETS TSD1-TSD2 FOR PRECAST REINF. CONC. THREE SIDED STRUCTURE DETAILS.

FILE NAME		G:\Engineering\PE305\PROJECTS\US 2\US 2 Tumwater Canyon Bridge Replacements\CB139\As Built\CADD\XL2793 PS SKINNEY CREEK.dgn		REGION NO.		STATE		FED.AID PROJ.NO.		US 2		PLAN REF NO		Plot 2	
TIME		8:30:02 AM		10		WASH						SCP1			
DATE		3/18/2014		JOB NUMBER		11B015		LOCATION NO.		XL2793		SHEET		55	
PLOTTED BY		RoyM		CONTRACT NO.				DATE				OF		228	
DESIGNED BY		S. HONEYCUTT						P.E. STAMP BOX				WASHINGTON STATE		Department of Transportation	
ENTERED BY		M. ROY						DATE				US 2		TUMWATER CANYON	
CHECKED BY		S. HONEYCUTT						DATE				BRIDGE REPLACEMENTS			
PROJ. ENGR.		R. ROMINE						DATE				SKINNEY CREEK PLAN AND PROFILE			
REGIONAL ADM.		D. SARLES						DATE						SHEETS	
REVISION				DATE		BY									



FILE NAME: G:\Engineering\PE305\PROJECTS\US 2\US 2 Tumwater Canyon Bridge Replacements\C8139\As Builts\CADD\XL2793 PS SKINNEY CREEK.dgn		REGION NO. 10		STATE WASH		FED.AID PROJ.NO.		ROBERT T. ROMINE REGISTERED PROFESSIONAL ENGINEER 30522		Washington State Department of Transportation		US 2 TUMWATER CANYON BRIDGE REPLACEMENTS		Plot 4 PLAN REF NO SCP3	
TIME: 8:30:24 AM		JOB NUMBER: 11B015		CONTRACT NO.		LOCATION NO. XL2793		DATE		DATE		SKINNEY CREEK PLAN AND PROFILE		SHEET 57 OF 228 SHEETS	
DATE: 3/18/2014															
PLOTTED BY: RoyM															
DESIGNED BY: S. HONEYCUTT															
ENTERED BY: M. ROY															
CHECKED BY: S. HONEYCUTT															
PROJ. ENGR. R. ROMINE															
REGIONAL ADM. D. SARLES															
REVISION		DATE		BY											

Appendix F: Landowner Acknowledgement Form

Landowner Information

Name of Landowner: US Forest Service

Landowner Contact Information:

☒ Mr. ☐ Ms. Title: District Ranger

First Name: Jeff

Last Name: Rivera

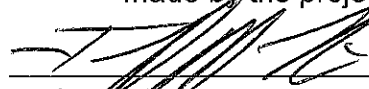
Contact Mailing Address: 600 Sherbourne, Leavenworth, WA 98826

Contact E-Mail Address: jrivera02@fs.fed.us

Property Address or Location:

Skinney Creek Legal Description 25 North 17 E Section 4 Tax lot 000050

1. US Forest Service (Landowner or Organization) is the legal owner of property described in this grant application.
2. I am aware that the project is being proposed on my property.
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.



Landowner Signature

30 APR 14

Date

Project Sponsor Information

Project Name: Skinney Creek Floodplain Restoration

Project Applicant Contact Information:

☐ Mr. ☒ Ms. Title: Natural Resource Specialist, Chelan County Natural Resources Dept.

First Name: Jennifer

Last Name: Goodridge Hadersberger

Mailing Address: 316 Washington St, Suite 401, Wenatchee, WA 98826

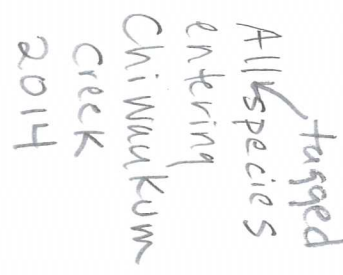
E-Mail Address: Jennifer.goodridge@co.chelan.wa.us

Tag Code	Map File Name	Site Name	First Time Value	Last Time Value	First Antenna Group Name	Last Antenna Group Name	Release Date MIDDYYYY	Species Code	Species Name	Run Code	Run Name	Ant Type	Code	Release Site
309-IBF19D151	TM1360.TUM	CHW - Chihuahua Creek	3/27/2014 2:22Z	4/18/2014 1:59	DOWNSTREAM ARROY	DOWNSTREAM ARROY	7/11/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IBF1ACB682	TM1327.TUM	CHW - Chihuahua Creek	4/25/2014 0:10	4/26/2014 21:54	DOWNSTREAM ARROY	DOWNSTREAM ARROY	10/4/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IBF19B6C69	TM1327.TUM	CHW - Chihuahua Creek	4/25/2014 0:13	4/25/2014 0:14	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/23/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IC200CBED7	BCK11255.28	CHW - Chihuahua Creek	4/24/2014 4:42	4/24/2014 4:42	UPSTREAM ARROY	UPSTREAM ARROY	9/13/2011	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC200CB64F	BCK11255.28	CHW - Chihuahua Creek	4/23/2014 4:20	4/23/2014 4:22	UPSTREAM ARROY	UPSTREAM ARROY	4/27/2011	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC209C694F	WEN12342.28	CHW - Chihuahua Creek	4/22/2014 20:54	4/22/2014 23:54	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/29/2012	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IC20F7771A	TM13276.TUM	CHW - Chihuahua Creek	4/17/2014 0:15	4/19/2014 6:15	DOWNSTREAM ARROY	DOWNSTREAM ARROY	10/24/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20F7771A	TM13276.TUM	CHW - Chihuahua Creek	4/17/2014 0:15	4/17/2014 6:15	DOWNSTREAM ARROY	DOWNSTREAM ARROY	4/9/2014	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IC20F76C6C	NBD1405.BRK	CHW - Chihuahua Creek	4/16/2014 6:35	4/16/2014 12:21	DOWNSTREAM ARROY	DOWNSTREAM ARROY	4/10/2012	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IC20D0B630	CKM1311.BAD	CHW - Chihuahua Creek	4/13/2014 7:13	4/13/2014 4:58	UPSTREAM ARROY	UPSTREAM ARROY	6/23/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: TUMBER - TUM - Release into the Forebay within 0.5 km up	
309-IC20F76A4F	TM131189.PHO	CHW - Chihuahua Creek	4/10/2014 2:17	4/13/2014 4:58	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/6/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IBF197C93F	TM13276.TUM	CHW - Chihuahua Creek	4/9/2014 12:59	4/23/2014 21:37	DOWNSTREAM ARROY	DOWNSTREAM ARROY	10/9/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: PBD101 - PBD0 - Release into the Left Bank (facing Downstre	
309-IC20B83959	CKM13259.DDR	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: DIFNEY - DIFN - Release into the Forebay within 0.5 km up	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05	DOWNSTREAM ARROY	DOWNSTREAM ARROY	8/19/2013	3	Sheelshed	W	Summer	W	Wild fish or Natural Product: CHWAT - Chihuahua Creek, tributary to Werentache River	
309-IC20B83959	TM13276.TUM	CHW - Chihuahua Creek	4/1/2014 12:55	4/1/2014 5:05										

Chimaukum
Creek
Fall 2013 -
April 2014

Species

- ☒ (All)
- ☒ Chinook
- ☒ Coho
- ☒ Other
- ☒ Sockeye



Rear Type
☒ (All)
☒ Hatchery
☒ Unknown
☒ Wild

Skinney Creek Restoration Design Cost Estimate

		Design Consultant		CCNRD		USFS Tech Review		Total
Project Phase Requirements		Hrs	Rate	Hrs	Rate*	Hrs	Rate	
Conceptual Design	Conceptual Design							
	Project description of site and salmon recovery context	20	160	8	50	20	50	4600
	Goals and objectives	16	160	8	50	12	50	3560
	Designs	90	160	4	50	16	50	15400
	Stakeholder comments on design alternatives	12	160	24	50	4	50	3320
	Selection of preferred alternative	12	160	12	50	16	50	3320
	Construction cost estimate for preferred alternative	12	160	5	50	8	50	2570
Preliminary Design	Preliminary Design Report							
	Introduction with goals and objectives	8	160	8	50	16	50	2480
	Characterize existing conditions	8	160	8	50	16	50	2480
	Preliminary Design Alternatives	40	160	4	50	20	50	7600
	Preferred Alternative	40	160	8	50	24	50	8000
	Design Considerations and Preliminary Analysis	60	160	4	50	20	50	10800
	Permitting and Stakeholder Consultation	10	160	24	50	4	50	3000
	Preliminary Design Drawings	120	160	4	50	12	50	20000
	Construction Quantities and cost estimates	20	160	5	50	8	50	3850
	Cultural Resources	4	100	2	50	40	50	2500
Project Management and Administration		10	65	32	50	20	50	3250
Environmental Assessment (soil sampling in BNSF prism)								10,000
Total								106730

*Ave. staff rate that includes staff time plus benefits and indirect rate

October 15, 2014

Response to the Salmon Recovery Funding Board State Review Panel 's 9/22/14 Comments

Lead Entity:	Upper Columbia Fish Recovery Board
Project Number:	14-1732
Project Name:	Skinney Creek Floodplain Restoration Design
Project Sponsor:	Chelan County NRD
Grant Manager:	Marc Duboiski

SRFB Review Panel has applied the following condition:

Please provide the results of the feasibility study and alternatives analysis for Panel review and approval before proceeding with the preliminary design process.

Response:

The project sponsor has agreed to the condition