# Restoration, Acquisition, and Combination Project Proposal

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| --- | --- |
| **Project Number** | 15-1300 |
| **Project Name** | Cascade Creek |
| **Sponsor** | San Juan County Land Bank |

List all related projects previously funded or reviewed by RCO:

|  |  |  |
| --- | --- | --- |
| Project # or Name | Status | Status of Prior Phase Deliverables and Relationship to Current Proposal? |
| 09-1457 | Funded | The project was not completed because negotiations with the prior landowners were unsuccessful. |
|  | Choose a status |  |
|  | Choose a status |  |

If previous project was not funded, describe how the current proposal differs from the original.

*Please respond to each question individually. Do not summarize your answers collectively in essay format. Local citizen and technical advisory groups will use this information to evaluate your project.* ***Limit your response to ten pages (single-sided)****. You may delete the italicized portion of the questions and inapplicable supplemental questions to shorten the proposal.*

*RCO Manual 18, Salmon Recovery Grants section and appendix references are available at* [*www.rco.wa.gov/doc\_pages/manuals\_by\_number.shtml*](http://www.rco.wa.gov/doc_pages/manuals_by_number.shtml)*.*

*Submit this proposal as a PRISM attachment titled “Project Proposal.”*

1. **Project Location.** Cascade Creek is situated on Orcas Island in San Juan County. It flows from Cascade Lake in Moran State Park into Buck Bay near Obstruction Pass in the Salish Sea. The creek watershed begins at the top of Mt. Constitution in Moran State Park and continues through Mountain Lake and down to Buck Bay. The project seeks to protect the lower 2,000’ of the stream corridor including 300 feet hosting salmonids.
2. **Brief Project Summary.** The project goal is to acquire 23.95 acres of stream corridor and adjacent upland forest to protect existing salmon spawning and juvenile foraging habitat.
3. **Problem Statement.**
   1. **Describe the problem including the source and scale.** Cascade Creek is one of the last salmon spawning streams in San Juan County. The lower creek corridor is in relatively pristine condition with the last 300 feet inhabited by salmon and Sea run coastal cutthroat trout.

Currently, the entire portion of the lower creek that has salmonid use is privately owned without protection, exposing this unique salmon bearing stream to unacceptable future risks of development and disturbance. The entire property is listed for sale.

* 1. **List the fish resources present at the site and targeted by your** **project.**

|  |  |  |  |
| --- | --- | --- | --- |
| Species | Life History Present (egg, juvenile, adult) | Current Population Trend (decline, stable, rising) | Endangered Species Act Coverage (Y/N) |
| Chinook | Juvenile | Declining | y |
| Coho | Egg, juvenile, adult | Declining | n |
| Chum | Egg, juvenile, adult | Stable | n |
| Cutthroat trout | Egg, juvenile, adult | Declining | n |

* 1. **Describe the limiting factors, and limiting life stages (by fish species) that your project expects to address.** The lower stream corridor is excellent salmon spawning habitat for Coho and Chum salmon and Sea run coastal cutthroat trout (Boessow, DFW, 2007). It is also excellent foraging habitat for juveniles of these species and Chinook salmon as well (Boessow, DFW, 2007). The presence of each of these species in the Creek has been documented by at least two studies (Boessow, DFW, 2007; Glasgow, WFC, personal communication). In addition, numerous studies have documented the importance of freshwater streams to foraging salmon species, especially Chinook (Beamer, et al., 2013; Nelson and Temple, 2005). Protection of the stream corridor and adjacent uplands will protect the existing structure and function of this system.

1. **Project Goals and Objectives.** *When answering the questions below please refer to Chapter 4 of the Washington Department of Fish and Wildlife’s “[Stream Habitat Restoration Guidelines](http://wdfw.wa.gov/publications/01374/)”* *for more information on goals and objectives.*
   1. **What are your project’s goals**? *The goal of your project should be to remedy observed problems, ideally by addressing the problems’ root causes. Your goal statements should articulate desired outcomes (your vision for desired future condition) and what species, life stages, and time of year (if pertinent) will benefit from those outcomes.*
      1. Protect rearing habitat for Coho and Chum salmon, and Sea-run coastal cutthroat trout and protect foraging habitat for juvenile Chinook salmon. While this acquisition would not completely protect the riparian area hosting salmonids, The San Juan Preservation Trust has been in dialogue with the other owners and anticipates their participation in protecting the remaining habitat, possibly through donation of a conservation easement.
   2. **What are your project’s objectives**? *Objectives support and refine your goals, breaking them down into smaller steps. Objectives are specific, quantifiable actions your project will complete to achieve your stated goal. Each objective should be “SMART:”* ***S****pecific,* ***M****easurable,* ***A****chievable,* ***R****elevant, and* ***T****ime-bound*.
      1. Acquire fee simple title on at 8.05 acres of intact riparian habitat and 15.9 acres of upland buffer forest by 2017.
   3. **What are the assumptions and constraints that could impact whether you achieve your objectives?** The property owner may not agree on a sales price. We have secured a verbal assurance from the property owner’s realtor that she will accept appraised value for the property. We have also agreed on an MAI appraiser.
2. **Project Details.** *Please answer the questions below and all pertinent supplemental questions at the end of the application form.*
   1. **Provide a narrative description of your proposed project.** Acquisition of 23.95 acres of riparian corridor and buffering upland forest. As mentioned above, the creek provides excellent documented spawning habitat for Coho and Chum salmon and Sea run coastal cutthroat trout, and foraging habitat for juvenile Chinook. Previous projects have secured in stream water rights for year-round flow to the Creek and a vastly improved passageway to Buck Bay (SRFB project #07-1539). Protection of the riparian area is the final piece to insuring viable salmonid habitat for the foreseeable future.
   2. **Provide a scope of work.** Following approval of funding Land Bank staff will:
      * 1. order an appraisal.
        2. negotiate a purchase and sale agreement
        3. conduct due diligence
        4. close on the property
        5. create a stewardship plan
   3. **Explain how you determined your cost estimates**. The estimate of value was based upon recent sales information and conversations with real estate professionals.
   4. **Describe the design or acquisition alternatives that you considered to achieve your project’s objectives.** The property owner was unwilling to consider a conservation easement or partial sale, necessitating outright purchase.
   5. **How have lessons learned from completed projects or monitoring studies informed your project**? Properties protected by fee title acquisition or conservation easement have continued to support healthy salmonid habitat in the nearshore and riparian areas of the county and throughout the region. Maintaining flow to the Creek and securing an adequate passage beneath Point Lawrence Road have certainly contributed to on-going use of the Creek by salmonids. Acquisition of the parcel would complement these efforts.
   6. **Describe the long-term stewardship and maintenance obligations for the project or acquired land**. See the draft Stewardship Plan. The property will likely be opened for pedestrian access. Trails will have to be maintained, including the bridge over the Creek. The Land Bank draft Stewardship plan calls for abandoning some of the existing dirt/gravel roads and converting the remainder to rustic trails. This will greatly reduce the potential for sedimentation in the Creek.
3. **Context within the Local Recovery Plan.**
   1. **Discuss how this project fits within your regional recovery plan** **and/or local lead entity’s strategy to restore or protect salmonid habitat.** Protection of habitat, especially for Chinook, is the number one priority for WRIA2. As one of the last fish-bearing streams in the County, and with juvenile Chinook documented, this project fits extremely well to that priority.
   2. **Explain why it is important to do this project now instead of later.** The property has been listed for sale and could be developed.
   3. **If your project is a part of a larger overall project or strategy, describe the goal of the overall strategy, explain individual sequencing steps, and which of these steps is included in this application for funding.** If successful, the Land Bank and San Juan Preservation Trust intend to work with the other two landowners with property adjacent to the Creek to secure complete protection for the lower part of the Creek.

The project is one of several to protect shoreline/riparian habitat in high priority areas throughout the County. The overall goal is to maintain intact, undeveloped shoreline or riparian areas to insure protection of nearshore ecological processes benefiting salmon. A number of studies have shown that juvenile salmon depend on terrestrial food sources to a significant degree (Brennan et al., 2007; Kerwin, 2002) and maintaining the terrestrial/marine ecological interface is essential to rebuilding healthy salmon stocks. (Whitman, et al., 2012).

1. **Project Proponents and Partners.** *Please answer the following questions about your organization and others involved in the project.*
   1. **Describe your experience managing this type of project**. The Land Bank has successfully acquired a number of shoreline and inland properties since its inception in 1990. Overall, the Land Bank owns and manages over 3,500 acres of Preserves on four islands.
   2. **List all landowner names**. Kathleen Dickinson
   3. **List project partners and their role and contribution to the project**. *N/A*
   4. **Stakeholder Outreach**. The project has been discussed at public meetings of the Land Bank Commission and vetted with a number of Orcas Island residents. Support for the project has been unanimous to date.

### Acquisition Project Supplemental Questions

Applies to both acquisition-only and combination projects. Answer the following supplemental questions (these are not included in the ten-page limit):

1. **Provide a detailed description of the property.** Cascade Creek begins at the head of Buck Bay, which is a healthy saltwater bay currently used in part as an oyster rookery. From there, the creek passes under a bridge recently upgraded to facilitate passage of salmonids and healthy tidal exchange. The riparian corridor north of the bridge is excellent salmon, including gravel beds, woody debris, native vegetation along the creek and healthy stands of native conifers along the creek and the adjacent upland buffer.

The total watershed area of Cascade Creek is roughly 2,750 acres, of which approximately 1,800 are protected in Moran State Park. While this project is a minute fraction of this whole, the lower creek is, in fact, one of the most critical areas in the watershed. The project seeks to capitalize on the existing protection of the upper watershed and secured water rights which allow year-round in stream flow of high quality water.

1. **List type (fee title or conservation easement) and acreage of acquisitions proposed.** Fee title acquisition of 23.95 acres.
2. **Do you hold an option or purchase and sale agreement for the property?** No. However, the realtor for the owner has given verbal assurance that an offer of appraised value would be accepted.
3. **Describe adjacent land uses.** Adjacent properties are privately owned and either undeveloped or developed into private residences. Parcel map attached in PRISM.
4. **If uplands are included on the property, state their size and explain why they are essential for protecting salmonid habitat.** 13.9 acres of upland are included. They are essential to protecting salmonid habitat because they could be developed into four residences with the potential for guest houses and other appurtenant structures. The property is extremely steep and the potential for erosion and contamination by fertilizers and pesticides/herbicides is high.

The upland portion is also inextricably linked to the riparian corridor in that the only access is though the corridor and across a bridge on the property. The area in the riparian zone where the road passes is the steepest part of the property and erosion from upgrading the road for vehicular use would pose a significant risk of erosion.

1. **What percentage of the total project area is intact and fully functioning habitat?** The lower 300 feet of the stream host documented salmonids. The roughly 8 acres of riparian corridor is largely pristine. The upland 13.9 acres is completely forested.
2. **Is the site in need of restoration that is not part of this grant application?** No. However, a portion of the existing dirt/gravel road would be abandoned and replanted to forest. The road in the riparian area would be converted to a rustic trail.
3. **List structures (home, barn, outbuildings, fence, levees, bank armoring, other infrastructure) on the property and any proposed modifications.** There are no structures.
4. **Describe the:**
5. **Zoning/land use**. R-5 residential. One unit per five acres.
6. **Shoreline Master Plan designation**. n/a
7. **Portion of site within 100-year floodplain.** Approximately one acre.
8. **Portion of site within designated floodway**. n/a
9. **Explain why federal, state, and local regulations are insufficient to protect the property from degradation.** While there are setback requirements, residential development of this steep property could easily result in erosion and contamination from fertilizers and pesticides.

In addition, as a rudimentary road has already been constructed in the riparian area, improvements would likely be “grandfathered in” and insulated from the permitting process.

1. **For acquisition projects intending to purchase multiple properties within an area, identify the target parcels and how you will prioritize the parcels.** If successful with acquisition of this parcel, the Land Bank and San Juan Preservation Trust (SJPT) will attempt to secure protections on the two remaining parcels adjacent to the Creek. SJPT staff have been in contact with one of these owners who is very willing to move forward with a conservation easement. This owner also intends to purchase the more southerly property (which he formerly owned). Our hope is to secure protection of both parcels simultaneously in the near future.

# Comments

Use this section to respond to the comments you will receive after your initial site visits, and then again after you submit your final application.

Response to Site Visit Comments

**San Juan TAG Cascade Creek comments**.

Lead Entity Coordinator: Byron Rot

June 8, 2015

Lead Entity introduction: Thank you for submitting your project. We appreciate your work to conserve salmon and their habitat. The comments below are our attempt to guide development of your project or suggestions on additional information for the application. None of the TAG members have a conflict with this project. Good luck!

Pre-application scoring details

The local Salmon Technical Advisory Group (TAG) provided preliminary feedback regarding questions and/or recommendations on how the proposals could be enhanced. Scoring is based on Red, Yellow or Green.

**Red** = Not Recommend

Proposal does not fit the local salmon recovery strategy and/or issues can not be addressed during timeframe for the funding round. Proposal may not be eligible to move forward and be submitted for SRFB funding.

**Yellow** = Recommend with changes

Questions, feedback, comments and recommendations are provided to project proponent to clarify, enhance or improve proposal. Proposal could move to green once questions/issues are addressed.

Moving from Yellow to Green is via TAG consensus.

**Green** = Recommend

Proposal is acceptable and is eligible to be submitted for SRFB funding. Additional comments are noted to suggest enhancements or improvements for the proposal.

Below are comments from the TAG. The comments are anonymous.

**TAG #1.**

Certainty of Success Green

* Land Bank has demonstrated success with projects of this type
* I have some concern that only half of the stream will be protected

**Response: There are two other owners of the riparian areas of lower Cascade Creek. The San Juan Preservation Trust (SJPT) has worked with one of these owners on a previous SRFB project. This owner had to sell the more southerly property to complete a divorce settlement. He retains the more northerly parcel. He has indicated to SJPT staff his willingness to protect the riparian area on the more northerly property and has also indicated his intentions to buy back the southerly parcel and protect its riparian area and shoreline on Buck Bay. The Land Bank and/or SJPT will work with this owner as possible on one or both parcels. We believe the protection could be achieved largely through a donation of conservation easements.**

Benefit to Salmon Green

* Chinook (and other salmonid) presence has been verified
* Habitat looks good
* A stronger proposal might result if proponent promised to abandon the road that runs along the creek (*Note from LE Coord, this TAG member also noted in the meeting that road conversion to trail would be acceptable*)

**Response: If the Land Bank is successful with the acquisition, the road will be converted to a trail only. Portions of the road that aren’t necessary for public access will be restored to native vegetation.**

* This is one of the few streams in WRIA 2 that has year round flow

Fit to Strategy/Plan Green

* Protection is the first priority of our recovery plan
* Chinook have been seen using this resource

Socioeconomic Impacts (Provide comments only, Scored by CAG)

* Cost is 1,666 dollars per foot of usable habitat

**TAG #2**

Certainty of Success Green

Project is feasible, has limited maintenance, and willing landowner to sell property.

Issues, eastern bank of stream owned by another landowner; unless secured, purchase of property has limited protection on the lower portion of the stream which is where the salmon habitat is. Cost for benefit to salmon is high. If funded this acquisition project will consume a larger portion of all available SRFB funds. Applicant should look into ways to offset high cost.

**Response: The Land Bank has looked at a variety of potential funding sources for this project, including the Washington Wildlife and Recreation Program (WWRP), DNRs Rivers and Habitat Open Space Program (RHOSP) and partnering with the SJPT. None of these have panned out – the project is a poor fit for WWRP categories and is ineligible for RHOSP because it would be owned by a public agency and does not meet the other program criteria. SJPT is over-committed on other projects and is unable to assist monetarily on the Cascade Creek project at this time.**

Benefit to Salmon \_ Yellow/Green

Stream preservation a definite benefit to Coho and Cutthroat trout, however wild Chinook use of stream is not likely given the streams distance from natal rivers systems. Recent work points to distance of approx 20-30 km where juvenile CK are found in non-natal stream systems (Beamer et al. 2013). Project is not located in priority area. Project applicant should make a stronger case for acquisition of stream property by discussing the literature on salmon use of coastal streams more. If applicant wants I can provide them with list of citations to look into. Need to add stream layer to site map.

**Response: It is clear from the literature that juvenile salmon are using a variety of habitats in the San Juans, (Teel, et al., 2011). While the vast majority of usage in the islands is nearshore and not in streams, this is likely a function of the lack of good stream habitat in the County rather than an indication that juveniles prefer the nearshore. Juvenile salmon rearing in freshwater has been noted in a number of articles though not in the immediate vicinity (Nelson and Temple, 2005; Maslin, et al., 1998; Daum et al., 2011).**

**The PIAT report did not list Cascade Creek as a high priority, but this was largely a function of focusing on the nearshore due to the lack of high quality freshwater habitat. Cascade Creek, with legally guaranteed year-round water, good habitat and excellent access to Buck Bay represents an anomaly in the San Juans. It is really one of the only spawning/rearing streams in the entire archipelago.**

Fit to Strategy/Plan Green

Fits to strategy in that it is an acquisition project, however the focus of the WRIA 2 SRP is on Chinook salmon. All of the current literature and research I am aware of has only identified streams in WRIA 2 supporting hatchery Chinook.

Current PIAT strategy does not address salmon streams and project is located in low priority area. This is more a gap in the PIAT than not fitting in SRP strategy. Thus why applicant needs to make a stronger case as discussed in, “Benefit to salmon”.

**Response: See above response**.

**TAG #3**

Certainty of Success Green

Land Bank has proven track record in land acquisition.

Benefit to Salmon Green

Benefit will likely be primarily to hatchery Chinook because of the location of this stream. Clear benefit to Coho and cutthroat.

Fit to Strategy/Plan Green

Acquisition is our highest priority.

**TAG #4**

Certainty of Success: Green

Seller appears to be motivated. SJC-LB has a proven record of negotiating and acquiring/protecting stewarding habitat lands in WRIA 2.

Benefit to Salmon: Green

Cascade Creek is arguably the most important freshwater salmon habitat in WRIA 2. The creek has an instream flow allocation guaranteeing year-round water for rearing salmon. Upper watershed is protected in Moran State Park. The proposed acquisition has an intact riparian zone. Benefits to chinook, coho, and chum.

Fit to strategy/Plan Green

Protection in high priority salmon habitat is the highest priority for WRIA 2 recovery strategy. This project would protect juvenile salmon freshwater rearing habitat.

Socioeconomic Impacts

Property would likely be reopened to the public for access and nature interpretation.

**TAG #5**

Certainty of Success Green

Good protection of a unique system for the San Juans; one of our few spawning streams for any salmonid

Benefit to Salmon Green

Coho, Chum, Cutthroat

Fit to Strategy/Plan Green

Socioeconomic Impacts (Provide comments only, Scored by CAG)

If public access were allowed, it would constitute a good educational opportunity

**TAG #6** All green

Sounds like the beginnings of a protection strategy, but is salmon recovery the justification for the preservation of the unique system? It would appear they could close the deal if they had the money. Perhaps it should be part of a larger effort to protect the whole ecosystem.

Benefits to salmon are weak in an ESU context. More justification would be useful

**Response: See response to TAG#2 – Benefit to Salmon.**

I have some concerns about the fit to strategy given its location and likely impact on the bulk of the salmon in the islands.

**Response: Protection of high priority salmon habitat is the highest priority for WRIA 2 recovery strategy. This project would protect freshwater habitat for spawning and juvenile Coho, Chum and Sea run cutthroat trout and for juvenile Chinook.**

Socioeconomic: It would bring money to the islands and preserve a little ecosystem. Benefit vs. costs would need to be justified.

**Response: The total watershed area of Cascade Creek is roughly 2,750 acres, of which approximately 1,800 are protected in Moran State Park. While this project is a minute fraction of this whole, the lower creek is, in fact, one of the most critical areas in the watershed. The project seeks to capitalize on the existing protection of the upper watershed and secured water rights which allow year-round in stream flow of high quality water.**

**TAG #7**

Certainty of Success Green

* High, acquisition of 300 feet of salmon habitat and 15.9 acres of adjacent upland at cost of 581K. Project has high benefit to cost ratio.

**Response: See response to TAG#6 – Socioeconomic. Additionally, while there is more upland area than riparian habitat, the reality is that the two are inextricably linked. The owner is only willing to sell the property as a whole and any use of the upland portion would have to be accessed over the riparian area and existing bridge. Maintaining and improving the existing roadway/bridge would pose significant risks to the riparian area.**

* Land bank has proven track record.
* Land Bank needs to acquire land on both sides of Cascade Creek.

**Response: See response to TAG#1 – Certainty of Success.**

Benefit to Salmon Green

* Intact riparian corridor and watershed
* Preserves rearing and nursery habitat for coho, chum, cutthroat, and chinook.
* Documented chinook use (WDFW 2007)

Fit to Strategy/Plan Green

* Highest priority of WRIA 2 recovery plan
* Has synergy with Buck Bay Bridge project (SRFB funded)

**Additional comments Lead Entity Coordinator.**

1. Lincoln mentioned to me on the field trip this could be phase I of a multiphase property acquisition in Lower Cascade Creek. Tell whether that is feasible and how that could occur.

**Response: See the response to TAG#1 – Certainty of Success**

1. Regarding Sandy, the eastern bank owner that has kept remote site incubators (RSI) at this site for years (how many years?). What species did he have in the RSI? What was the intent of the RSI? Is there any data whether the RSI resulted in returning adults?

**Response: I have been unable to get this information.**

1. Beautiful riparian forest with big Sitka spruce, western red cedar, western hemlock, and Douglas-fir. Very moist site, unusual for the San Juans.
2. If property sold for development for homes, their legal access road runs up through the riparian corridor. Per my observation, it will have to be graveled, maybe widened, and in places the road side-slopes armored with rock. All which could have negative impacts to the stream and riparian corridor.

**Response: Yes, this is absolutely true. See the response to TAG#7 – Socioeconomic.**

1. This watershed has its headwaters in Moran State Park. What proportion of this watershed is in protected status?

**Response: See the response to TAG#6 – Socioeconomic.**

1. See Appendix C, page 100, from Manual 18, RCO, that must be covered in your application. Make sure there are no missing items.

Response to Post-Application Comments

Please describe how you’ve responded to the review panel’s post-application comments. *We recommend that you list each of the review panel’s comments and questions and identify how you have responded. You also may use this space to respond directly to their comments.*

Response to reviewer #1. We have attached a stewardship plan in PRISM. Note that any parking will be very close to the road, on an existing disturbed site, and away from sensitive areas. In addition, the plan makes use of the existing trail and rough road as much as possible. No access will be provided to the section of the stream inhabited by salmon. In fact, we believe we can do a better job at deterring people from entering that area than is presently occurring under private ownership.

Response to Paul Schlenger and Tom Slocum review: Regarding additional funding, see the response to TAG #2 Certainty of Success comments above. The Land Bank seeks to find additional funding routinely and has been quite successful with myriad federal, state and private sources. However, we have been unable to find any additional resources for this project other than salmon recovery funds to accompany revenue from the Land Bank’s real estate excise tax. Regarding the amount of upland, as stated previously in supplemental question 3, the entire property is interrelated by the fact that if it were developed the entrance road would run beside the Creek make a crossing and then switchback up the hill to the building sites. Additionally, the upland area is in designated forestland requiring significant harvest of timber in the next year. Acquisition will remove the property from DFL and obviate the development of the site preventing a serious potential for erosion and contamination from pesticides and fertilizers on the steep site.

Paul Schlenger and Tom Slocum #2. Map updated in the attached stewardship plan. The Long Live the Kings/Wild Fish Conservancy study of the Creek is not yet in publishable form. However, the raw data do show the presence of salmonids in the Creek.

Paul Schlenger and Tom Slocum #3. The idea of installing a fish ladder or passage system was considered at some point in the past. We are in agreement that there would be small, if any, benefit of doing so. Thus, the Land Bank will not be considering this option.

**Project cost estimate**

Cascade Creek acquisition

Salmon Recovery Project: 15-1300

Overall

|  |  |
| --- | --- |
| Item | Cost ($) |
| Acquisition | 550,000 |
| Acquisition incidentals (appraisal, titlework, etc) | 17,500 |
| Administrative | 13,500 |
| **Total** | **581,000** |

Sources of funding

|  |  |
| --- | --- |
| Category | Cost ($) |
| RCO contribution | 492500 |
| Donated paid labor (SJC Land Bank) | 13500 |
| SJC Land Bank REET | 75,000 |
| **Total** | **581,000** |

Acquisition costs are based on an estimate of value.

**References**

Daum, D. and B. Flannery, 2011. 'Canadian-Origin Chinook Salmon Rearing in Nonnatal U.S. Tributary Streams of the Yukon River, Alaska', Transactions of the American Fisheries Society, 140: 2, 207 — 220, First published on: 14 March 2011 (iFirst)

Teel, D., K. Fresh, A. Kagley, T. Sandell, B. Brown, D. Kuligowski, E. Beamer, 2011. ‘Genetic Analysis of Unmarked Juvenile Chinook Salmon in Nearshore Habitats of the San Juan Islands.’ Northwest Fisheries Science Center, NOAA Fisheries, Skagit River System Cooperative.

Maslin, P., R. McKinney, and T. Moore, 1998. *Intermittent Streams as Rearing Habitat for Sacramento River Chinook Salmon*., California State University.

Beamer, E., R. Henderson, and K. Wolf, 2013; Juvenile Salmon, Estuarine, and Freshwater Fish Utilization of Habitat Associated with the Fisher Slough Restoration Project in 2011. Technical report prepared for The Nature Conservancy.

Nelson, R.Jl, and N. Temple, 2005 ‘Death by a thousand cuts: the importance of small streams on the North and Central Coasts of British Columbia,’ Report of the Raincoast Conservation Society.

Boessow, H. Washington Department of Fish and Wildlife, 2007. Memorandum on Cascade Creek sampling results.

Glasgow, J., Wild Fish Conservancy, personal communication on 2014 sampling data.

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Kerwin, J., 2002 Salmon and Steelhead Habitat Limiting Factors Report for the SAN JUAN ISLANDS (Water Resource Inventory Area 2). Washington Conservation Commission.

Whitman, T, MacLennan, A. Schlenger, P., Small, J. Hawkins, S. and J. Slocomb. Strategic salmon recovery planning for San Juan County Washington: the pulling it all together (PIAT) project. Prepared by Friends of the San Juans, Coastal Geologic Services, Confluence Environmental and Anchor QEA for the SJC Lead Entity for Salmon Recovery and the Washington State Salmon Recovery Funding Board. Final report RCO #10-1789.