

The logo features a stylized mountain range in shades of green and blue against a yellow and orange sunset sky. Below the mountains, the text "North Olympic Peninsula" is written in a white, serif font. To the right of the text is a white silhouette of a salmon. Below this, on a blue background, are two more salmon silhouettes: a black one on the left and a brown one on the right.

North Olympic Peninsula

Lead Entity for  
*Salmon*

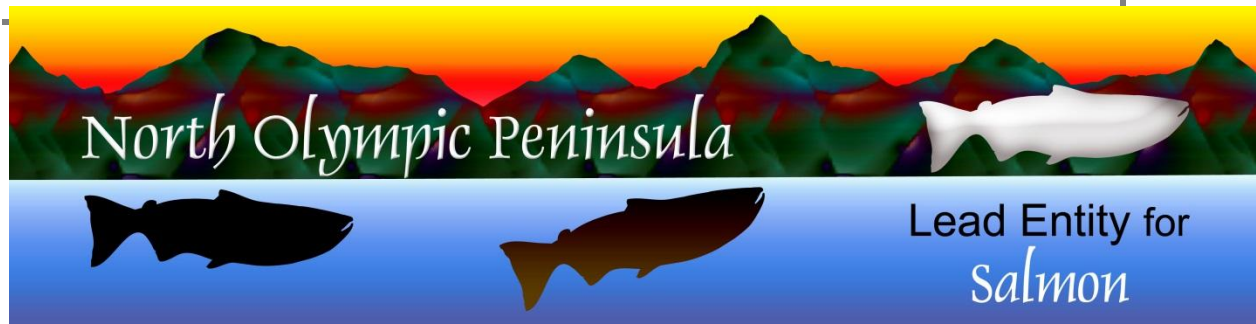
# 2016 Work Plan

North Olympic  
Peninsula Lead Entity  
for Salmon  
Clallam County  
Courthouse  
223 E. Fourth Street, # 5  
Port Angeles, WA  
98362  
360/417-2326



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### North Olympic Peninsula Lead Entity for Salmon

Clallam County Courthouse  
223 E. Fourth Street, # 5  
Port Angeles, WA 98362  
360/417-2326

February, 2016

**WHAT THIS IS:** This document is our 2016 Work Plan. Our work plan is a roadmap which guides our salmon recovery and ecosystem restoration efforts across the North Olympic Peninsula in Washington State. This plan is a way of managing the implementation of both capital and non-capital projects, activities and programs needed to implement the restoration of ecosystems and recovery of both listed and non-listed salmon species in our numerous watersheds from Blyn on Clallam County's east side, across the Strait of Juan de Fuca to Cape Flattery, our consortium's most northwest boundary in Neah Bay. This plan is updated annually with new projects which are ranked and scored, along with updates when needed to existing projects. However, the plan anticipates projects that, with landowner approval, funding and a sponsor, might be advanced within a four year period.

This report is required by the Puget Sound Partnership, which is our regional salmon recovery organization. Recovery of listed Chinook is one of the Partnership's significant mandates, so it tends to report more heavily on efforts to restore Puget Sound Chinook, including both Elwha and Dungeness Chinook which are found in our area. Efforts to delist Eastern Strait of Juan de Fuca Summer Chum, which also inhabit our area; is under the purview of the Hood Canal Coordinating Council; which is the Regional Recovery Organization for summer chum. It is important to note that we work to recover multiple species such as coho, steelhead, and pinks, plus stocks of tribal significance; while also restoring numerous watersheds that they call home.

Our organization members met in November of 2013 to review and offer possible additions, deletions and revisions to our work plan process. Only minor revisions were made to our overall salmon recovery strategy, while there were a few changes to project criteria added to the overall scoring process. Those changes are noted herein.

Our policy is to do a major work plan revision every three years, so this existing work plan process, would be used in 2014, 2015 and 2016, with another major review needed prior to the 2017 work plan. There will be scoring of all projects on the work plan by our technical team only once every three years.

In those years in which a major review is not needed, we will still issue a call for major updates to existing work plan projects, as well as adding new projects to be considered and those projects will be scored or rescored. New project additions were due in January of 2016, after which those projects were scored by members of our Technical Review Team. Based on a scatter plot indicating all project scoring, the Technical Team made a recommendation at their Jan. 27, 2016 to the policy team, our Lead Entity Group; where the project prioritization line should be drawn. The Lead Entity Group met and reviewed the Technical Team's recommendation and scatter plot and decided at their Feb. 3, 2016 meeting that only projects ranked 55 & up are eligible to apply for SRFB/PSAR funding, but submittals are **Highly Encouraged** from projects ranked 38 and up. In addition, the LEG wants **all** project sponsors applying for funds to address in their Letter of Intent & in their grant round funding presentation why their project ranks where it is on the Workplan & the importance of bringing forth this particular project at this particular time.

**WHO WE ARE:** We are a consortium of area governments and tribes, as well as non-profit organizations and citizens involved in salmon recovery efforts. Member governments include: the Makah, Lower Elwha Klallam and Jamestown S'Klallam Tribes, Clallam County including unincorporated areas such as Neah Bay, Clallam-Bay Sekiu and Joyce, as well as the cities of Port Angeles and Sequim.

Our offices are located in the Clallam County Courthouse. We are part of Clallam County's Department of Community Development which serves as the fiscal agent for the lead entity.

If you would like more information about our work, do not hesitate to email me at [cbaumann@co.clallam.wa.us](mailto:cbaumann@co.clallam.wa.us) or call me at 360/417-2326.

Sincerely,

*Cheryl Baumann*

Cheryl Baumann, Coordinator

North Olympic LE for Salmon

**2016 Lead Entity Group Membership (Citizen & Policy Team)**

**Andy Brastad**, Clallam County, Environmental Health Director  
**Scott Chitwood**, Jamestown S’Klallam Tribe, Natural Resources Director  
**Scott Johns**, City of Port Angeles, Associate Planner  
**Stephanie Martin**, Makah Tribe, Habitat Division Manager/ Ecologist  
**Raymond Moses**, Lower Elwha Klallam Tribe, Project Biologist  
**Steve Rankin**, Citizen & Sequim Area Resident, MBA, Retired  
**Tom Riepe**, Citizen & WRIA 18 West Area Resident, MPA, Retired  
**Jean Sigmar**, Citizen & WRIA 19 Area Resident, Retired Educator  
Sequim City Government Seat, currently vacant

**2016 Technical Review Group Membership**

**Meghan Adamire**, Clallam Conservation District, Conservation Planner  
**Rebecca Benjamin**, North Olympic Salmon Coalition, Executive Director  
**Chris Byrnes**, Washington Dept. of Fish & Wildlife, Watershed Steward  
**Coleman Byrnes**, Streamkeepers; Citizen Salmon Advocate  
**John Cambalik**, Straits Ecosystem Recovery Network, Coordinator  
**Michele Canale**, North Olympic Land Trust, Conservation Director  
**Kim Clark**, (Alt.) North Olympic Salmon Coalition, Project Manager  
**Patrick Crain**, Olympic National Park, Biologist  
**Keith Denton**, Lower Elwha Klallam Tribe, Fisheries Biologist & Consultant  
**Gretchen Glaub**, Puget Sound Partnership, Ecosystem Recovery Coordinator  
**Mike Haggerty**, Makah Tribe Representative, Watershed Scientist  
**Joe Holtrop**, (Alt.) Clallam Conservation District, Executive Director  
**Randy Johnson**, Jamestown S’Klallam Tribe, Habitat Program Manager  
**Robert Knapp** (Alt.) Jamestown S’Klallam Tribe, Restoration Planner  
**Cathy Lear**, Clallam County Dept. of Community Development, Habitat Biologist  
**Jim McCullough**, Streamkeepers; Retired Alaska Fisheries Regional Biologist  
**Mike McHenry**, Lower Elwha Klallam Tribe; Habitat Restoration Manager  
**Ian Miller**, Ph.D; Washington Sea Grant, Coastal Hazards Specialist  
**Tim Rymer**, Citizen; Formerly NMFS & Retired WDFW Habitat Biologist  
**Pete Vanderhoof**, Citizen; Salt Creek Farmer; B.S. WWU Environmental Policy  
**Jim Walton**, Ph.D; Peninsula College Fisheries & Centralia College President

**Lead Entity Staff**

**Cheryl Baumann**, Coordinator  
**Eric Carlsen**, Restoration Planner

**Technical Support**

**Kristina L. Mayer**, Ed. D. KLMayer Consulting Group Inc.  
**Walter Pearson**, Ph.D, Peapod Research  
**Lara Lampert**, HWS & Lead Entity Support

This report is a result of the collaborative work of the North Olympic Lead Entity for Salmon, its members, stakeholders, consultant and staff. It builds on work created by Walter Pearson, Ph.d of Peapod Research and Sam Gibboney of ISE Consultants.

For more information on this document or salmon recovery involving the North Olympic Peninsula Lead Entity for Salmon, please contact Coordinator Cheryl Baumann at [cbaumann@co.clallam.wa.us](mailto:cbaumann@co.clallam.wa.us) or by calling 360-417-2326.

For additional information on local salmon recovery efforts go to the Habitat Work Schedule online at <http://hws.ekosystem.us/> click on 'Lead Entities', and then 'North Olympic Peninsula LE for Salmon'

For restoration projects you can visit on the North Olympic Peninsula and elsewhere in Puget Sound go to: <http://salmontrails.org/watershed/north-olympic/>

List of Ranked Work Plan Narratives	Date:
	2/29/16

**2016**

Category is either Capital or  
NON-Capital

**New projects are highlighted in  
yellow**

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
1	Indian Creek Habitat Restoration Program	147.49	0.89	16103	Capital	LEKT
2	3 Crabs Estuarine and Nearshore Restoration	135.78	0.82	13104.1	Capital	NOSC
3	Elwha Hot Springs Road Restoration	135.08	0.82	16104	Capital	LEKT
4	Morse Creek Acquisition & Restoration	131.37	0.80	16102	Capital	NOLT/LEKT/ Govt Entities

# NOPL Work Plan 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
5	Dungeness River Floodplain Restoration (replaces project 35 and 36 Corps dike setback)	131.21	0.80	<b>09092 (Project #s 35 &amp; 36 combined)</b>	Capital	Jamestown S'Klallam Tribe/Clallam County/Army Corps
6	Elwha Floodplain Push Up Dike Removal	129.82	0.79	<b>14105</b>	Capital	Lower Elwha Klallam Tribe
7	Elwha Revegetation Project	126.41	0.77	<b>11087</b>	Capital	LEKT/ONP
8	Lower Hoko Acquisition and Restoration Project	125.05	0.76	<b>13101.1</b>	Capital	LEKT, Makah, NOSC, NOLT, Washington State Parks
9	Elwha Acquisition and Restoration Project	124.91	0.76	<b>14106</b>	Capital	North Olympic Land Trust and Lower Elwha Klallam Tribe
10	Elwha ELJ Project	123.19	0.75	<b>09016.2</b>	Capital	Lower Elwha Klallam Tribe



Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
<b>11</b>	Dungeness Drift Cell Protection	122.65	0.74	<b>16101</b>	Capital	Clallam County DCD
<b>12</b>	Dungeness Drift Cell Conservation	122.16	0.74	<b>09032.1</b>	Capital	NOLT, Jamestown Skallam Tribe
<b>13</b>	North Sequim Bay Drift Cell Conservation Project	119.97	0.73	<b>09093 (Project #s 45 &amp; 37 combined)</b>	Capital	JS'KT
<b>14</b>	Pysht River Salt Marsh Estuary Restoration	118.50	0.72	<b>09009.1</b>	Capital	LEKT/Merril and Ring/ Cascade Conservancy
<b>15</b>	Dungeness River Stream Flow Restoration-Irrigation Efficiencies	116.69	0.71	<b>09091 (Projects 33, 34, 38, 42, 43 combined)</b>	Capital	CCD
<b>16</b>	Sequim Bay Shoreline Restoration	116.20	0.70	<b>14107</b>	Capital	NOSC, JSKT
<b>17</b>	Dungeness River Large Wood Restoration (formerly project 29, Dung R ELJ)	115.83	0.70	<b>09029.1</b>	Capital	Jamestown S'Klallam Tribe/Clallam County

# NOPL Work Plan 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
<b>18</b>	Pysht River Watershed LWD Restoration: Phase 3	115.41	0.70	<b>11085.1</b>	Capital	LEKT/NOLT/ Merrill and Ring
<b>19</b>	Little River LWD	115.01	0.70	<b>13102</b>	Capital	LEKT
<b>20</b>	Dungeness River Riparian Restoration (replaces project 31)	114.57	0.69	<b>09031.1</b>	Capital	NOSC, JS'KT
<b>21</b>	Ediz Hook Beach Restoration Phase 3	112.71	0.68	<b>13103</b>	Capital	LEKT, WDNR, City of Port Angeles
<b>22</b>	Dungeness Riparian Habitat Protection	112.52	0.68	<b>09030.1</b>	Capital	JS'KT, WDFW, North Olympic Land Trust
<b>23</b>	Nearshore Restoration Strategy for Twin Rivers	110.45	0.67	<b>09011</b>	Capital	CWI, WDFW, WDNR & LEKT
<b>24</b>	IMW Restoration Treatments	109.10	0.66	<b>09010.1</b>	Capital	LEKT

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
25	12 River Channel Migration Zone Assessment	89.05	0.66	09066.1	Non-Capital	JSKT, LEKT, Makah & CC
26	Clallam County Culvert Inventory	88.63	0.66	09050.1	Non-Capital	LEKT/Clallam County
27	Elwha River Estuary Restoration	108.26	0.66	09018	Capital	LEKT, CC, WDFW & TNC
28	Elwha Estuary Restoration Engineering Assessment	88.50	0.66	12100	Non-Capital	LEKT
29	Dungeness River Habitat Resurvey (formerly project 63)	87.54	0.65	09063.1	Non-Capital	Jamestown S'Klallam Tribe, US Forest Service, Tetra Tech
30	Elwha Watershed Adaptive Management Plan & Monitoring	87.44	0.65	09057.1	Non-Capital	LEKT/NOAA/USGS/USFWS/WDFW
31	Dungeness River Stream Flow Restoration-Storage	105.89	0.64	12098	Capital	CCD, CC, WUA, WWT

# NOPL Work Plan 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
<b>32</b>	Elwha Conservation Planning	84.83	0.63	<b>09054</b>	Non-Capital	NOLT, LEKT & CC
<b>33</b>	Elwha Nearshore Restoration	84.76	0.63	<b>09055.1</b>	Non-Capital	CWI
<b>34</b>	Lyre River Protection and Restoration	103.52	0.63	<b>10080.1</b>	Capital	North Olympic Land Trust
<b>35</b>	Elwha River Nearshore Biodiversity Investigations	83.83	0.62	<b>09056</b>	Non-Capital	NOAA, USGS & LEKT
<b>36</b>	Clallam Watertype Inventory and Assessment	83.77	0.62	<b>09053</b>	Non-Capital	WFC
<b>37</b>	Port Angeles Harbor Basin Program	83.75	0.62	<b>09059</b>	Non-Capital	NOPL & MRC
<b>38</b>	Acquisition of Priorities identified in the "Western Strait of Juan de Fuca Salmonid Habitat Conservation Plan"	102.27	0.62	<b>12096</b>	Capital	NOLT
Submittals are <i>Highly Encouraged</i> from projects ranked 38 and up						



# NOPLE Work Plan 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
39	Siebert Creek Ecosystem Protection	99.60	0.60	09027.1	Capital	North Olympic Land Trust
40	Siebert Creek Hwy 101 Fish Passage Restoration	99.05	0.60	09028.1	Capital	JS'KT - design project: conceptual bridge and site design to 10% engineering. WSDOT - final design, culvert removal, bridge construction.
41	McDonald Creek Barrier Removal	98.69	0.60	09039.2	Capital	Jamestown S'Klallam Tribe
42	Washington Harbor Habitat Protection Project	96.12	0.58	09046	Capital	NOLT & JSKT
43	Elwha Culvert Replacement	94.70	0.57	09019	Capital	ONP & LEKT
44	Hoko 9000 Road Abandonment	94.46	0.57	11083	Capital	LEKT/ Rayonier
45	NOPLE Area wide Monitoring Program	77.17	0.57	09075	Non-Capital	NOPLE, CC, COPA & COS

# NOPL Work Plan 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
46	Grays Marsh and Gierin Creek	93.60	0.57	10077	Capital	WDFW
47	McDonald Creek Large Wood Restoration	92.93	0.56	10078.1	Capital	JKT
48	Pysht Floodplain Acquisition and Restoration	92.63	0.56	09086.1 (Project #s 8 & 81 combined)	Capital	Phase IV and future: North Olympic Land Trust; Phase III: Makah Tribe, Lower Elwha Klallam Tribe, WDOT, and Mike Haggerty
49	Salt Creek Habitat Protection	91.77	0.56	09013	Capital	NOLT
50	Salt Creek Final Fish Passage Corrections Project	89.80	0.54	09015	Capital	LEKT, CCD & CC
51	Kreaman Creek-Trib. To Salt Creek	89.70	0.54	09015.1	Capital	Lower Elwha Klallam Tribe
52	Siebert Creek Large Wood Restoration	89.64	0.54	11090.1	Capital	Jamestown S'Klallam Tribe
53	Hoko 9000 Road Barrier Culvert	89.18	0.54	11082	Capital	LEKT/ Rayonier

# NOPE Work Plan 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
<b>54</b>	Ediz Hook Beach Nourishment	89.18	0.54	<b>09023</b>	Capital	City of PA, Port of PA, WDNR & LEKT
<b>55</b>	Morse Creek Property Acquisition	89.08	0.54	<b>09026</b>	Capital	WDFW
Projects ranked 55 & up are eligible to apply for SRFB/PSAR funding						
<b>56</b>	Dungeness Improved Fisheries Enforcement	69.91	0.52	<b>09064</b>	Non-Capital	WDFW & JSKT
<b>57</b>	Little Hoko LWD Project	84.81	0.51	<b>09001.1</b>	Capital	LEKT
<b>58</b>	Bear and Cub Creek LWD project	84.62	0.51	<b>11084</b>	Capital	LEKT/ Rayonier
<b>59</b>	Ennis Creek Culvert Replacement	83.48	0.51	<b>11088.1</b>	Capital	City of Port Angeles with potential partnership with LEKT, NOSC
<b>60</b>	Lower Hoko River - Riparian Revegetation	79.46	0.48	<b>09003</b>	Capital	NOSC & Makah
<b>61</b>	Elwha River Native Steelhead Brood Development Project	64.79	0.48	<b>09048</b>	Non-Capital	LEKT

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
62	Sekiu, Clallam, Pysht Riparian Re-vegetation	77.88	0.47	09006	Capital	Makah, LEKT, & NOSC
63	Hoko River- Emerson Flats LWD Supplementation	76.26	0.46	09002	Capital	Makah
64	Nelson Creek Fish Passage Barrier Removal Project	75.69	0.46	09012	Capital	CC & WDNR
65	Sekiu Mainstem (RM 2-5) LWD Restoration	75.23	0.46	09005	Capital	Makah
66	Chicken Coop Rd. Culvert Replacement	73.73	0.45	11094	Capital	Clallam County
67	Port Angeles Waterfront Property Acquisition	73.36	0.45	09024	Capital	NOLT, COPA, LEKT & VCRC
68	Hoko River/ Hermans Creek - Instream LWD Supplementation	68.97	0.42	09004	Capital	Makah
69	Jimmycomelately Creek & Dungeness River Habitat	56.36	0.42	09065	Non-Capital	WDFW, JSKT, NOLT & CC



# NOPL Work Plan | 2016

Rank	Title	Weighted Mean Score	Normalized Score	Project ID	Plan Category	Sponsor
70	Valley Creek Phase 3 Restoration	67.51	0.41	09021	Capital	City of PA
71	Cassalery Creek Instream Flow Enhancement Project	65.26	0.40	09040	Capital	SWD
72	Ennis Creek Habitat Restoration & Protection	64.83	0.39	09020	Capital	WFC, LEKT & NOLT

## **NOPLE for Salmon 2016 Ranking Work Plan Narratives**

**Date:**

**20-Jan-16**

**Work Book Constructed by:**

WH Pearson

**1/17/2011**

Peapod Research

for

North Olympic Peninsula Lead Entity for Salmon

**Data Entered; Review & Normalization by:**

**1/26/2016**

L Lampert

for North Olympic Peninsula Lead Entity for Salmon

# NOPLE for Salmon 2016 Ranking Work Plan Narratives

Date:

20-Jan-16

## List of New or Updated Work Plan Narratives 2016

Category is either Capital or NON Capital

<i>No.</i>	<i>Project Name</i>	<i>Plan Category</i>	<i>Likely Sponsor</i>	<i>Weighted Mean Scored</i>	<i>Normalized Score</i>	<i>Max Score Capital</i>
16101	Dungeness Drift Cell Protection	Capital	Clallam County DCD	122.65	0.74	164.85
16102	Morse Creek Acquisition & Restoration	Capital	NOLT/LEKT/ Govt Entities	131.37	0.80	
16103	Indian Creek Habitat Restoration Program	Capital	LEKT	147.49	0.89	
16104	Elwha Hot Springs Road Restoration	Capital	LEKT	135.08	0.82	

# NOPLE 2016 Ranking Work Plan Narratives

Date:

20-Jan-16

Mean of all Scores: 3.77

SD of all Scores: 0.74

2 X SD of all Scores: 1.480  
55974

Mean - 2 X: 2.29

Mean + 2 X: 5.25

## Capital Project

16101

Dungeness Drift Cell Protection

## Overall Weighted Score

122.65

NS = No Score Given

CoV = Coefficient of Variation  
(Standard deviation/Mean as %)

ID	Criteria for Ranking	Score 0 to 5 with 5 being best															Mean Score	Weight	Weighted Mean Score	CoV (%)
		Scorer 1	Scorer 2	Scorer 3	Scorer 4	Scorer 5	Scorer 6	Scorer 7	Scorer 8	Scorer 9	Scorer 10	Scorer 11	Scorer 12	Scorer 13	Scorer 14	Scorer 15				
1	Watershed Priority	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	NS	4.27	4.27	2.88	12.30	0.0%
2	Addresses limiting factor	3.00	2.00	4.60	5.00	4.50	5.00	3.00	2.00	4.00	5.00	5.00	2.00	5.00	NS	4.00	3.86	4.04	15.61	31.6%
3	Addresses stock status and trends	2.00	2.00	4.40	5.00	4.50	5.00	4.00	2.00	2.50	5.00	4.00	2.00	4.00	NS	3.00	3.53	2.56	9.03	34.8%
4	Benefits an ESA-listed stock	1.00	2.50	4.60	5.00	4.50	5.00	4.00	2.50	4.00	5.00	5.00	2.00	4.00	NS	3.00	3.72	3.33	12.39	35.0%
5	Benefits other stocks	4.00	2.50	4.60	5.00	4.50	5.00	4.00	2.50	4.00	5.00	5.00	3.00	4.00	NS	3.00	4.01	3.00	12.02	23.1%
6	Protects high-quality fish habitat	5.00	1.00	4.80	5.00	4.00	4.00	3.00	2.00	3.00	5.00	5.00	1.00	5.00	NS	3.00	3.63	3.82	13.86	41.0%
7	Restores formerly productive habitat	1.00	2.00	4.20	5.00	2.00	4.00	3.00	2.00	1.00	0.00	1.00	0.00	2.00	NS	3.00	2.16	3.88	8.37	71.0%



# NOPL Work Plan | 2016

8	Supports restoration and maintenance of ecosystem functions	5.00	4.00	4.80	5.00	4.50	5.00	3.00	3.50	4.00	5.00	4.00	5.00	5.00	NS	4.00	4.41	3.67	16.20	15.0%
9	Spatial-Temporal Scale of Influence	3.00	2.00	4.80	5.00	4.00	4.00	3.50	3.00	2.50	2.00	5.00	1.00	3.00	NS	4.00	3.34	3.27	10.93	36.3%
10	Project Readiness	5.00	4.00	4.80	5.00	5.00	5.00	4.50	5.00	5.00	5.00	5.00	4.00	4.00	NS	5.00	4.74	2.52	11.93	8.9%

Mean

3.33	2.63	4.59	4.93	4.18	4.63	3.63	2.88	3.43	4.13	4.33	2.43	4.03	NS	3.63	Overall Weighted Score				122.65
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CoV

47.6 %	41.5 %	5.0%	4.7%	19.6 %	10.5 %	16.4 %	37.0 %	34.1 %	41.9%	28.8 %	66.3 %	23.5 %	NS	19.9 %
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Outside 2 Standard Deviations?

N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
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## Comments

Interesting concept but question the costs necessary to buy all the houses in the drift cell. 7 million for three small properties. Policy question of using public monies to bail out past bad decisions. sense if indeed widespread armoring is a likely outcome. To date the drift cell is essentially intact.
Dungeness Drift Cell Protection - It would be helpful to know the percent of the total linear distance of shoreline that also contain structures at risk of failure within the drift cell that this project would potential armoring. This project is the most appropriate and logical next step to begin implementing the recommendations from the Dungeness Drift Cell: Conservation Toolbox report for protecting drift cell function for this vitally important portion of the migratory corridor.
Some things are unclear: What would the home owners do with the houses if they were left to themselves, would the houses be abandoned to fall, or would the home owners find funds to relocate themselves? It seems the proposal is to purchase the land then move homes back from the bluff; this seems odd, that salmon money would buy residential property and maintain it as residential. Y proposal there is reference to 'conservation measures', so is this a purchase or conservation easement? What is to prevent the home owners rip-rapping in the future as the bluff continues to ma relocated homes and how is the salmon recovery investment to be insured? Benefit to salmon and protects high quality fish habit sections are written too broadly and don't provide a good sense of benefit at the project site itself.
16101: RCW & WAC armoring restrictions and Puget Sound Partnership resolution 2011-2015 seem to make armoring unlikely
What will happen to the properties after purchase, and is there some type of commitment for management of the properties on the part of the county? Should be mentioned

<b>NOPLE 2016 Ranking Work Plan Narratives</b>	Date:
	20-Jan-16

Mean of all Scores:	4.01
SD of all Scores:	0.48
2 X SD of all Scores:	0.96893904
Mean - 2 X:	3.04
Mean + 2 X:	4.97

**Capital Project**

16102
Morse Creek Acquisition & Restoration

**Overall Weighted Score**

131.37
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NS = No Score Given

CoV = Coefficient of Variation  
(Standard deviation/Mean as %)

ID	Criteria for Ranking	Score 0 to 5 with 5 being best															Mean Score	Weight	Weighted Mean Score	CoV (%)
		Scorer 1	Scorer 2	Scorer 3	Scorer 4	Scorer 5	Scorer 6	Scorer 7	Scorer 8	Scorer 9	Scorer 10	Scorer 11	Scorer 12	Scorer 13	Scorer 14	Scorer 15				
1	Watershed Priority	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	NS	3.90	3.90	2.88	11.23	0.0%
2	Addresses limiting factor	5.00	3.00	4.20	4.00	4.00	5.00	4.00	3.00	2.00	5.00	3.00	3.00	4.00	NS	4.00	3.80	4.04	15.35	23.6%
3	Addresses stock status and trends	4.00	3.00	4.20	4.00	3.50	5.00	5.00	4.00	2.00	5.00	4.00	4.00	3.00	NS	4.00	3.91	2.56	10.00	21.5%
4	Benefits an ESA-listed stock	4.00	4.00	4.20	4.00	4.00	4.00	5.00	4.00	1.00	5.00	4.00	5.00	3.00	NS	3.00	3.87	3.33	12.89	26.6%
5	Benefits other stocks	5.00	2.00	4.80	4.00	4.00	5.00	5.00	4.00	3.00	5.00	4.00	3.00	4.00	NS	4.00	4.06	3.00	12.17	22.3%
6	Protects high-quality fish habitat	4.00	4.00	4.80	4.00	5.00	5.00	5.00	5.00	3.00	4.00	4.00	5.00	5.00	NS	4.00	4.41	3.82	16.86	14.4%

# NOPL Work Plan | 2016

7	Restores formerly productive habitat	4.00	1.00	4.20	3.00	3.00	5.00	5.00	2.00	0.00	0.00	4.00	0.00	5.00	NS	5.00	2.94	3.88	11.42	67.6%
8	Supports restoration and maintenance of ecosystem functions	5.00	4.00	4.80	3.00	4.50	5.00	4.50	4.00	5.00	5.00	4.00	5.00	5.00	NS	4.00	4.49	3.67	16.46	13.6%
9	Spatial-Temporal Scale of Influence	4.00	4.00	4.80	3.00	4.50	4.00	4.00	5.00	5.00	5.00	3.00	3.00	4.00	NS	5.00	4.16	3.27	13.62	18.3%
10	Project Readiness	5.00	4.00	4.60	3.00	5.00	5.00	5.00	3.50	5.00	5.00	5.00	4.00	4.00	NS	5.00	4.51	2.52	11.36	15.1%
Mean		4.39	3.29	4.45	3.59	4.14	4.69	4.64	3.84	2.99	4.29	3.89	3.59	4.09	NS	4.19	Overall Weighted Score		131.37	
CoV		12.0 %	32.0 %	7.7%	14.2 %	15.2 %	10.7 %	10.6%	23.0%	58.8%	36.6 %	14.6%	41.9%	18.1 %	NS	15.2 %				
Outside 2 Standard Deviations?		N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N				

## Comments

Although I like the idea of conserving these lands, the fact remains that they are above an anadromous barrier and thus will do little to address limiting factors or stock recovery in Morse Creek. On the other hand another Four Seasons Type Development would not be good either.
Morse Creek Acquisition & Restoration - While not necessarily a technical criteria, the urgency associated with this project due to both the PSAR funding timing limitations (i.e. 2016 relative to 2018), the risk of property purchase by investors and perhaps, the longevity of the City's willingness to wait are all factors for the LEG to consider at some point in time. Completion of this project would be another major milestone, like the Morse Creek remeander project, toward the restoration of this important watershed.
Has the City been asked to consider keeping this property for its conservation value and allowing others to then seek to remove infrastructure and restore it? More information about the quantity and quality of habitat downstream of the natural falls versus upstream is needed. Without it, it's difficult to score the benefit to salmon. Benefits of dam removal with the natural barrier downstream need to be explored. The narrative points to LWD recruitment as a key benefit of dam removal. Is there currently a stockpile of high quality LWD behind the dam? The LFA didn't call out dam removal? Why? What is the quality of riparian habitat? Maps should show falls and dam location. Is it really necessary to purchase all 800 acres to achieve salmon benefits, what acres are upland versus directly related to salmon? Quality of existing habitat is not well addressed although riparian cover looks decent from the aerals.
Morse Creek project was evaluated based on only the lower four parcels, as the upstream parcels are not within the zone of anadromy.
The actual acreage and location in the watershed wasn't clear from the information provided. Benefits to salmon isn't clear - which stocks are in Morse Creek?

# NOPLE 2016 Ranking Work Plan Narratives

Date:

20-Jan-16

Mean of all Scores: 4.52

SD of all Scores: 0.28

2 X SD of all Scores: 0.56013101

Mean - 2 X: 3.96

Mean + 2 X: 5.08

## Capital Project

16103

Indian Creek Habitat  
Restoration Program

## Overall Weighted Score

147.49

NS = No Score Given

CoV = Coefficient of Variation  
(Standard deviation/Mean as %)

ID	Criteria for Ranking	Score 0 to 5 with 5 being best															Mean Score	Weight	Weighted Mean Score	CoV (%)
		Scorer 1	Scorer 2	Scorer 3	Scorer 4	Scorer 5	Scorer 6	Scorer 7	Scorer 8	Scorer 9	Scorer 10	Scorer 11	Scorer 12	Scorer 13	Scorer 14	Scorer 15				
1	Watershed Priority	5.00	NS	5.00	5.00	5.00	5.00	5.00	NS	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.88	14.40	0.0%
2	Addresses limiting factor	5.00	NS	4.80	5.00	4.00	5.00	5.00	NS	4.00	5.00	4.00	4.00	4.00	3.00	5.00	4.45	4.04	17.96	14.6%
3	Addresses stock status and trends	5.00	NS	4.80	5.00	4.00	5.00	5.00	NS	5.00	5.00	5.00	5.00	4.00	5.00	5.00	4.83	2.56	12.37	7.7%
4	Benefits an ESA-listed stock	5.00	NS	4.80	5.00	4.00	5.00	5.00	NS	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.91	3.33	16.34	5.7%
5	Benefits other stocks	5.00	NS	4.60	5.00	4.00	5.00	5.00	NS	5.00	5.00	5.00	3.00	5.00	5.00	4.00	4.66	3.00	13.98	13.4%
6	Protects high-quality fish habitat	5.00	NS	4.20	4.00	3.50	4.00	5.00	NS	0.00	0.00	3.00	4.00	4.00	0.00	0.00	2.82	3.82	10.78	71.8%



# NOPLE Work Plan | 2016

7	Restores formerly productive habitat	5.00	NS	4.80	4.00	4.00	5.00	5.00	NS	5.00	5.00	5.00	4.00	5.00	5.00	5.00	4.75	3.88	18.44	9.1%
8	Supports restoration and maintenance of ecosystem functions	5.00	NS	4.80	4.00	4.00	5.00	5.00	NS	5.00	5.00	5.00	5.00	3.00	5.00	5.00	4.68	3.67	17.16	13.4%
9	Spatial-Temporal Scale of Influence	5.00	NS	4.60	3.00	4.00	4.00	5.00	NS	4.00	4.70	5.00	4.00	2.00	5.00	5.00	4.25	3.27	13.91	21.5%
10	Project Readiness	5.00	NS	4.60	4.00	5.00	5.00	5.00	NS	5.00	5.00	5.00	4.00	5.00	5.00	5.00	4.82	2.52	12.13	7.9%
Mean		5.00	NS	4.70	4.40	4.15	4.80	5.00	NS	4.30	4.47	4.70	4.30	4.20	4.30	4.40	Overall Weighted Score		147.49	
CoV		0.0 %	NS	4.6 %	15.9 %	11.4 %	8.8%	0.0 %	NS	36.4 %	35.2 %	14.4 %	15.7 %	24.6 %	38.1 %	35.9 %				
Outside 2 Standard Deviations?		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				

## Comments

Indian Creek Habitat Restoration Program - Assuming that this project is the result of a previous Indian Creek assessment project (?), this restoration plan seems to be an excellent and most appropriate long-term option to restore the lower portion of this vitally important sub-basin. Modeling this effort after the highly successful Morse Creek remeander project is quite appropriate. It's unclear from the proposal if this project would involve any private landowners, and if so, what's the level of willingness.

Need and benefit of the project is very clear. The map clearly illustrates the loss of habitat with the current condition and the need for re-location to the old channel. This is a high priority project to adaptively manage the effects of the Elwha Dam Removal project and ensure the maximum benefits to salmonids returning to the newly accessible habitat.

16103: Potential recovery of Indian Creek/Sutherland sockeye add value to this project

<b>NOPLE 2016 Ranking Work Plan Narratives</b>	Date:
	20-Jan-16

Mean of all Scores:	4.13
SD of all Scores:	0.43
2 X SD of all Scores:	0.86351696
Mean - 2 X:	3.27
Mean + 2 X:	4.99

Capital Project
16104
Elwha Hot Springs Road Restoration

Overall Weighted Score
135.08

NS = No Score Given

CoV = Coefficient of Variation  
(Standard deviation/Mean as %)

ID	Criteria for Ranking	Score 0 to 5 with 5 being best															Mean Score	Weight	Weighted Mean Score	CoV (%)
		Scorer 1	Scorer 2	Scorer 3	Scorer 4	Scorer 5	Scorer 6	Scorer 7	Scorer 8	Scorer 9	Scorer 10	Scorer 11	Scorer 12	Scorer 13	Scorer 14	Scorer 15				
1	Watershed Priority	5.00	NS	5.00	5.00	5.00	5.00	5.00	NS	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.88	14.40	0.0%
2	Addresses limiting factor	3.00	NS	4.40	3.00	2.50	5.00	4.00	NS	5.00	5.00	4.00	3.00	4.00	3.00	3.00	3.76	4.04	15.20	23.9%
3	Addresses stock status and trends	3.00	NS	4.60	5.00	2.50	5.00	5.00	NS	5.00	5.00	3.00	3.00	4.00	4.00	4.00	4.08	2.56	10.46	22.9%
4	Benefits an ESA-listed stock	4.00	NS	4.80	5.00	3.00	5.00	5.00	NS	5.00	5.00	5.00	5.00	5.00	4.50	5.00	4.72	3.33	15.70	12.6%
5	Benefits other stocks	3.00	NS	4.60	5.00	3.50	5.00	5.00	NS	5.00	5.00	4.00	3.00	5.00	4.50	4.00	4.35	3.00	13.06	17.8%
6	Protects high-quality fish habitat	5.00	NS	4.40	5.00	2.00	5.00	5.00	NS	0.00	1.00	3.00	3.00	4.00	0.00	0.00	2.88	3.82	10.99	71.5%

# NOPLE Work Plan | 2016

7	<i>Restores formerly productive habitat</i>	4.00	NS	4.50	3.00	3.00	5.00	4.00	NS	4.00	5.00	5.00	4.00	3.00	4.50	3.00	4.00	3.88	15.52	19.8%
8	<i>Supports restoration and maintenance of ecosystem functions</i>	5.00	NS	4.80	4.00	3.50	5.00	4.00	NS	4.00	5.00	5.00	4.00	4.00	4.50	5.00	4.45	3.67	16.32	12.2%
9	<i>Spatial-Temporal Scale of Influence</i>	4.00	NS	4.60	5.00	3.50	4.00	5.00	NS	3.00	5.00	4.00	5.00	3.00	4.00	4.00	4.16	3.27	13.61	17.4%
10	<i>Project Readiness</i>	3.00	NS	4.20	3.00	4.00	5.00	3.50	NS	4.00	5.00	3.00	4.00	4.00	4.00	4.00	3.90	2.52	9.83	16.8%
<b>Mean</b>		3.90	NS	4.59	4.30	3.25	4.90	4.55	NS	4.00	4.60	4.10	3.90	4.10	3.80	3.70	<b>Overall Weighted Score</b>		<b>135.08</b>	
<b>CoV</b>		22.5 %	NS	5.1 %	22.1 %	26.4 %	6.5 %	13.2 %	NS	39.1 %	27.5 %	21.4 %	22.5 %	18.0 %	37.8 %	40.4 %				
<b>Outside 2 Standard Deviations?</b>		N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N				

## Comments

Elwha Hot Springs Road Restoration - Pursuing this restoration opportunity, at this point in the recovery of the Elwha ecosystem, is the logical and timely next step. It's unclear from the proposal if this project would involve any private landowners; not likely. It's good to see that the ONP is open to road relocation, not an insignificant decision on the part of a National Park. Successful relocation of this roadway and restoration of this portion of the river may offer a positive example of a long-term solution for the ONP (and other entities, both private and public, like WSDOT) to consider implementing within other watersheds that have similar road infrastructure problems.

Restores formerly productive habitat and maintains ecosystem function... could score higher or lower depending on where the road relocation ends up. Park partnership and funding will be critical as this project progresses. This is an excellent opportunity to restore floodplain function and remove a road from critical floodplain.

How will ONP factor into the proposal? Is there a chance for federal funding since the road wash-out is on federal land?

Demonstration of ONP support will be important moving forward

# NOPLE 2016 Ranking Work Plan Narratives

Capital Project		Overall Weighted Score:		NS = No Score Given CV = Coefficient of Variation (Standard deviation/Mean as %)													Date:				
MAXIMUM POSSIBLE SCORE		164.85															20-Jan-16				
ID	Criteria for Ranking	Score 0 to 5 with 5 being best															Mean Score	Weight	Weighted Mean Score	CV (%)	
		Scorer 1	Scorer 2	Scorer 3	Scorer 4	Scorer 5	Scorer 6	Scorer 7	Scorer 8	Scorer 9	Scorer 10	Scorer 11	Scorer 12	Scorer 13	Scorer 14	Scorer 15					
1	Watershed Priority	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.88	14.40	0.0
2	Addresses limiting factor	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.04	20.20	0.0
3	Addresses stock status and trends	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.56	12.80	0.0
4	Benefits an ESA-listed stock	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.33	16.65	0.0
5	Benefits other stocks	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	15.00	0.0
6	Protects high-quality fish habitat	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.82	19.10	0.0
7	Restores formerly productive habitat	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.88	19.40	0.0
8	Supports restoration and maintenance of ecosystem functions	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.67	18.35	0.0
9	Spatial-Temporal Scale of Influence	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.27	16.35	0.0
10	Project Readiness	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.52	12.60	0.0
Mean		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	Overall Weighted Score w/ Watershed		164.85	
CV (%)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Overall Weighted Score w/o Watershed		150.45	

# NOPE 2016 Ranking Work Plan Narratives

Date:

20-Jan-16

## Final Watershed Priorities Sorted by Normalized Score

WRIA	System	Normalized Score (1 to 5)
18	Elwha River	5.00
18	Dungeness River	4.76
17	Nearshore	4.27
18	Nearshore	4.27
19	Nearshore	4.02
18	Morse Creek	3.90
19	Lyre River	3.05
19	Hoko River	2.93
19	Pysht River	2.93
19	Clallam River	2.80
19	Salt Creek	2.80
19	Sekiu River	2.68
17	Jimmycomelately Creek	2.56
18	Ennis Creek	2.56
18	McDonald Creek	2.32
18	Siebert Creek	2.20
19	Deep Creek	2.20
19	East Twin River	2.20
19	West Twin River	2.20
19	Jim Creek	1.83
19	Sail River	1.71
19	Whiskey Creek	1.71
18	Lees Creek	1.59
18	Meadowbrook Creek	1.59
18	Peabody Creek	1.59
18	Tumwater Creek	1.59
18	Valley Creek	1.59
19	Colville Creek	1.59

WRIA	System	Normalized Score (1 to 5)
19	Butler Creek (19.0112)	1.59
19	Field Creek	1.59
19	Joe Creek	1.46
19	Murdock Creek	1.46
18	Bell Creek	1.34
18	Bagley Creek	1.34
18	Dry Creek	1.34
17	Chicken Coop Creek	1.22
17	Dean Creek	1.22
17	Johnson Creek	1.22
18	18.0017 (Cooper Creek)	1.22
19	Olsen Creek	1.22
18	Cassalery Creek	0.98
18	Gierin Creek	0.98
17	17.0277	0.73
17	17.0284	0.73
17	17.0295	0.73
17	17.0296	0.73
17	17.0297	0.73
17	17.0300	0.73
18	18.0159	0.73
18	Agnew Creek (18.0172)	0.73
19	Falls Creek	0.73
19	19.0005	0.00
19	19.0006	0.00
19	19.0018	0.00
19	19.0019	0.00
19	19.0080	0.00

## North Olympic Peninsula Lead Entity (NOPE) for Salmon Criteria & Weights for Scoring and Ranking 2016 Capital Projects

*Final wording and weights from Fall 2013 Retreat. New or modified wording in **BOLDFACE Italics***

*The scale for criterion mean weight is from 1 to 5, with 5 being highest.*

*Criteria 1 through 10 inclusive are used to assess Work Plan Narratives for Capital Projects.*

*All Criteria are used to assess Project Proposals for Current Year's funding.*

ID	Criteria for Ranking	Criteria Narratives	Mean Weight
1	<b>Watershed Priority</b>	This criterion is based on data concerning historical and current productivity and stock diversity of the NOPE watersheds. The data was presented and the priorities established in the development of the 2008 Strategy. Consideration of watershed priority is mandated by regulation. This score is added by Lead Entity staff for the watershed(s) covered by the proposed project.	<b>2.88</b>
2	<b>Addresses limiting factor</b>	This criterion pertains to the extent to which the proposed work would address the limiting factor(s) relevant to the watershed and stock. How well does the proposed work address the relevant limiting factors?	<b>4.04</b>
3	<b>Addresses stock status and trends</b>	This criterion derives directly from NOPE's GOAL to achieve robust fish stocks and pertains to the extent to which the proposed work takes into account stock status and trends. Is the proposed work appropriate for the current status and trends of the stock(s) of interest?	<b>2.56</b>
4	<b>Benefits an ESA-listed stock</b>	<b><i>NOPE's goal is to address ESA-listed stocks. NOPE recognizes the regulatory apparatus that favors ESA-listed stocks but values the recovery of all stocks. To what extent does the proposed work benefit ESA-listed stock(s)?</i></b>	<b>3.33</b>



ID	Criteria for Ranking	Criteria Narratives	Mean Weight
5	Benefits other stocks	This criterion derives directly from NOPL's long-standing principle that "All stocks need attention." To what extent to which the proposed work provide tangible benefit(s) to non-listed stock(s)?	3.00
6	Protects high-quality fish habitat	<i>NOPLE's goal is to protect and restore fish habitat. A project with acquisition, easements or other instruments that protect habitat may score higher than projects focused exclusively on restoration or ecosystems. How well does the proposed instrument protect existing or potential high-quality salmon habitat? How does this protection instrument relate to the watershed restoration strategy?</i>	3.82
7	Restores formerly productive habitat	<i>NOPLE's goal is to protect and restore fish habitat. A project with active measures to restore habitat may score higher than projects focused on protection or ecosystems. To what extent does the proposed work restore formerly productive salmon habitat?</i>	3.88
8	Supports restoration and maintenance of ecosystem functions	<i>NOPLE's goal is to restore and maintain ecosystem function(s) through acquisition, restoration and combination projects. Projects that restore a number of ecosystem processes may score higher. To what extent does the proposed work support restoration or recovery of ecosystem function(s)?</i>	3.67
9	Spatial-Temporal Scale of Influence	This criterion addresses the scale in space and time over which the benefits of the project would extend. A project for which the benefits would extend over a region or watershed and for years to decades would score high. Projects of local extent or temporary duration would score lower.	3.27
10	Project Readiness	This criterion addresses how ready are projects to implement. A project that can be implemented within the current year should score high. A project that is several years away should score low.	2.52

ID	Criteria for Ranking	Criteria Narratives	Mean Weight
11	<b>Likelihood of success based proposer's past success in implementation</b>	This criterion is a standard one in project selection and management. What is the probability that the project sponsor will succeed with the proposed work given their previous experience and current expertise and capability with the type of work proposed?	<b>1.85</b>
12	<b>Likelihood of success based on approach</b>	This criterion is a standard one in project selection and management. Is the approach appropriate to the work proposed? What is the probability of success of the proposed approach?	<b>2.86</b>
13	<b>Reasonableness of cost and budget</b>	This criterion is a standard one in project selection and management. Do the scope of work, overall estimated cost, and budget align? Are the budget items and costs reasonable given the scope of work?	<b>2.17</b>

## North Olympic Peninsula Lead Entity (NOPLE) for Salmon Criteria & Weights for Scoring and Ranking 2016 NON-Capital Projects

*Final wording and weights from Fall 2013 Retreat. New or modified wording in BOLDFACE Italics*

*The scale for criterion mean weight is from 1 to 5, with 5 being highest.*

*Criteria 1 through 9 inclusive are used to assess Work Plan Narratives for NON-Capital Projects.*

*All Criteria are used to assess Project Proposals for Current Year's funding.*

ID	Criteria for Ranking	Criteria Narratives	Mean Weight
1	<b>Advances robust harvestable stocks</b>	This criterion derives from NOPLE's GOAL to achieve harvestable fish stocks. To what extent does the proposed work lead to progress towards harvestable fish stocks?	<b>3.23</b>
2	<b>Advances implementation of recovery plan(s)</b>	This criterion derives from NOPLE's GOAL to implement recovery plans. To what extent does the proposed work lead to progress in the implementation of recovery plan(s)?	<b>3.73</b>
3	<b>Advances habitat protection and restoration</b>	This criterion derives from NOPLE's GOAL to protect and restore salmon habitat. To what extent does the proposed work lead to progress in protecting and/or restoring salmon habitat?	<b>4.05</b>
4	<b>Advances recovery of ecosystem function</b>	This criterion derives from NOPLE's GOAL to support recovery and restoration of ecosystem function. To what extent does the proposed work lead to progress in the recovery and restoration of ecosystem function(s)?	<b>4.21</b>

ID	Criteria for Ranking	Criteria Narratives	Mean Weight
5	<b>Advances ecosystem awareness</b>	This criterion derives from NOPLE's GOAL to instill ecosystem awareness. To what extent does the proposed work increase the ecosystem awareness and its application? To what extent does the proposed work address and overcome obstacles to awareness?	<b>2.81</b>
6	<b>Advances integration</b>	This criterion derives from NOPLE's objective of advancing the integrations of the four H's: Habitat, Harvest, Hatcheries, and Hydropower. To what extent does the proposed work acknowledge the influence of the other H's on the work and the potential influence of the work on the other H's?	<b>2.05</b>
7	<b>Fulfills requirements of external agencies</b>	This criterion derives from NOPLE's objective to network with other entities and agencies. To what extent does the proposed work recognize and coordinate with the efforts and requirements of agencies? To what extent does the proposed work contribute to the knowledge and databases at the regional and state levels?	<b>1.71</b>
8	<b>Advances multi-agency funding strategy</b>	This criterion derives from NOPLE's objective of diversifying the funding base. To what extent will the proposed work be eligible and competitive for Non-SRFB funding?	<b>1.81</b>
9	<b>Has large spatial-temporal scale of effects</b>	This criterion derives from NOPLE's objective to support non-capital projects that benefit salmon recovery on a NOPLE-wide or regional basis. To what extent does the proposed work aid salmon recovery to a broad degree in time and space?	<b>3.38</b>

ID	Criteria for Ranking	Criteria Narratives	Mean Weight
10	<b>Likelihood of success based on proposer's past success in implementation</b>	This criterion is a standard one in project selection and management. What is the probability that the project sponsor will succeed with the proposed work given their previous experience and current expertise and capability with the type of work proposed?	<b>1.92</b>
11	<b>Likelihood of success based on approach</b>	This criterion is a standard one in project selection and management. Is the approach appropriate to the work proposed? What is the probability of success of the proposed approach?	<b>3.10</b>
12	<b>Reasonableness of cost and budget</b>	This criterion is a standard one in project selection and management. Do the scope of work, overall estimated cost, and budget align? Are the budget items and costs reasonable given the scope of work?	<b>2.69</b>

## **Draft Review of Scoring of NOPLE for Salmon 2016 Work Plan Narratives January 26, 2016**

Thank you...

- Scorers and Sponsors that updated their work plan narratives and/or offered new ones

Prior to scoring:

- Sponsors submitted 4 new capital project narratives.
- Project sponsors provided minor updates to the following existing projects: Lower Hoko Acquisition & Restoration, Three Crabs Estuarine & Nearshore Restoration, and Dungeness River Floodplain Restoration

In January 2016, 15 TRG members scored 4 capital projects.

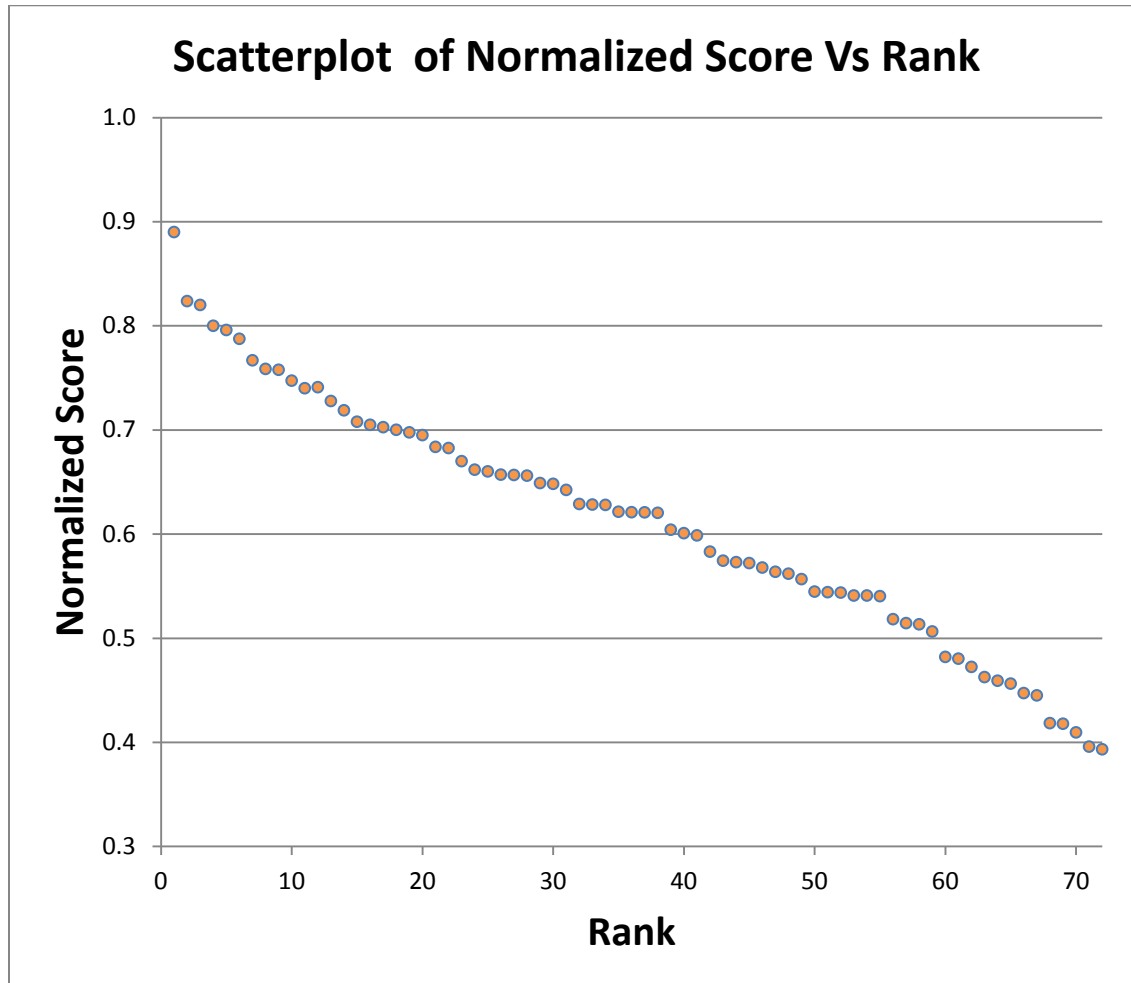
- TRG Members scored all narratives against criteria 1 through 10 for capital projects, except where they were primary sponsors, employees or board members of primary sponsor organizations, or there was another conflict of interest of the possible appearance thereof.

The variation of scores for each criterion was generally below about 40% with exceptions:

- The Coefficient of Variation was only above 60% twice for criterion 6 'Protects high-quality fish habitat' and twice for criterion 7 'Restores formerly productive habitat'
- CVs were low this year!

Visual inspection of the scatterplot reveals data breaks after

- Project ranked in 1<sup>st</sup> place (Score: 0.89- About 1% of the Narratives), 55<sup>th</sup> place (Score: 0.54- About 76% of the Narratives), 59<sup>th</sup> place (Score: 0.51- About 82% of the Narratives), & 67<sup>th</sup> place (Score: 0.45- About 93% of the Narratives)



No.	Project Description	Likely Sponsor(s)
<b>Capital Projects</b>		
<b>HABITAT</b>		
12096	<p><b>Acquisition of Priorities identified in the “Western Strait of Juan de Fuca Salmonid Habitat Conservation Plan”</b></p> <p><b>Description:</b> This capital project will conserve the highest priority parcels identified in The Western Strait of Juan de Fuca (WSJF) Habitat Conservation Plan (Draft). The Plan identifies and prioritizes aquatic and riparian habitat within the planning area that are important to salmon and steelhead productivity and survival. Habitats and properties along the western portion of the Strait of Juan de Fuca were prioritized based on the recommendations and a system of prioritization set forth in the WRIA 19 Salmonid Restoration Plan (North Olympic Peninsula Lead Entity for Salmon [NOPL] 2011) and assess ecosystem function, market value, and landowner willingness on a parcel-by-parcel basis to develop a plan for land acquisition through permanent conservation easements and acquisition. This project benefits multiple stocks.</p> <p><b>Why the Project is needed (limiting factors to be addressed):</b> Protection of land with the best existing salmon habitat and ecosystem function on private land can only happen through voluntary conservation tools such as conservation easements. Acquisition of priority parcels will protect ecosystem function for salmonids in WRIA 19.</p> <p>These limiting factors would be eliminated if lands were permanently protected:</p> <ul style="list-style-type: none"> <li>• Floodplain development and alterations</li> <li>• Loss of large woody debris</li> <li>• Estuary and nearshore alterations</li> <li>• Degraded water quality and high stream temperatures</li> <li>• Barriers that block access to spawning and rearing habitat</li> <li>• Conversion of riparian forests to non-forest uses</li> <li>• Excess sedimentation, including fine sediment in spawning gravels</li> <li>• Degraded riparian conditions (e.g, conversion from conifer to hardwood dominated riparian forests)</li> <li>• Stream channelization and bank armoring</li> <li>• Stream cleaning</li> <li>• Channel destabilization and channel incision</li> <li>• Loss of adequate quality and quantity of spawning gravel</li> <li>• Increased peak flows</li> <li>• Unauthorized water withdrawals and low flows</li> </ul> <p>According to the Puget Sound Recovery Plan, “any further reduction in habitat quality and quantity will require more restoration to achieve recovery goals...protection is needed at the individual habitat site as well as the ecosystem scale to ensure the processes that create habitat to continue to function (p. 353). This is why it is paramount to follow the newly emerging tenet for species recovery - ‘protect the best and restore the rest’.</p> <p><b>Benefit to Salmon:</b> Five salmonid species are targeted to benefit from implementing the recommendations contained in this Plan: Chinook, coho, and chum salmon, and steelhead and coastal cutthroat trout. These species depend on sufficient habitat quantity and quality throughout their lifecycle.</p> <p><b>Which Salmon Recovery Plan Objective does this Project Meet and How?</b></p>	NOLT



	<ul style="list-style-type: none"> <li>• Puget Sound Recovery Plan – Habitat: Protect Existing Physical Habitat &amp; Habitat Forming Processes</li> <li>• Puget Sound Partnership – Protect Habitat</li> <li>• Salmonid and Steelhead Habitat Limiting Factors in the Western Strait of Juan De Fuca – protect channel migration zone and conifer riparian areas.</li> <li>• NOPL Recovery Strategy 2008 - implement salmon recovery plans to protect fish habitat &amp; maintain ecosystem function.</li> <li>• WRIA 19 Salmonid Restoration Plan- Draft - Protect habitat</li> </ul> <p><b><u>How Project supports Restoration or Protection of Ecosystem Functions?</u></b></p> <p>This project would result in protection of the most important floodplain, riparian, and nearshore habitats for salmonid and steelhead productivity, based on the recommendations and a system of prioritization set forth in the WRIA 19 Salmonid Restoration Plan (North Olympic Peninsula Lead Entity for Salmon [NOPL] 2011).</p> <p><b><u>Project's Spatial-Temporal Scale of Influence:</u></b></p> <p>The project covers the entire WRIA, from the Elwha to the western edge of Clallam County. The projects proposed for funding will likely be clusters of high priorities in a certain reach of a river, for example the Hoko River, which ranked the highest.</p> <p><b><u>Timing Needs and Sequencing Requirements (project readiness):</u></b></p> <p>The project is ready to move forward once funding is available. The plan has many priorities for the WRIA, knowing that landowner willingness will be a limiting factor. If the highest priority is interested in conservation options, we will move down the list until there is a willing landowner.</p> <p><b><u>Range of Estimated Costs:</u></b></p> <p>The Land Trust generally prefers conservation easements, though will consider land acquisition for certain projects. If high priority parcels are acquired fee-simple, land values will probably be around \$6,000/acre, and conservation easements, on average, are about half of fair market value, \$3,000/acre. The incidental costs, including survey, appraisal and review, legal, title, forest management plan, can add up to \$30,000.</p> <p><b><u>Watershed priority &amp; watershed area (which WRIA):</u></b></p> <p>WRIA 19</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b></p> <p>The Plan was funded by the Salmon Recovery Funding Board (Project #09-1518) in 2009, and will be completed at the end of 2011. The intent of the Plan was to prioritize acquisition proposed in future funding phases. This project meets that intent.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/17386">http://waconnect.paladinpanoramic.com/Project/180/17386</a></p>	
09005	<p><b>Sekiu Mainstem (RM2-5) LWD Restoration</b></p> <p><b><u>Project Description:</u></b></p> <p>The current Fall Chinook population returning to the Sekiu is very low and habitat needs to be improved to facilitate recovery of this traditional Chinook population. Furthermore, this watershed has been severely impacted by logging and road impacts. This project will restore spawning and rearing habitat in the Sekiu Mainstem, which is known Chinook habitat. Adding LWD to this reach will create habitat complexity, providing sheltering areas for spawning adults and rearing fingerlings. LWD also has the potential to moderate temperature by creating large deep pools. It will also assist in gravel bed creation and maintenance. This project will benefit Chinook as well as coho, chum, steelhead and cutthroat. Improvement of upland habitat conditions will contribute to recovering health of estuarine areas and the nearshore migration corridor, which is used by a wide variety of</p>	Makah

	<p>species and stocks as they exit and return to Puget Sound.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/5495">http://waconnect.paladinpanoramic.com/Project/180/5495</a></p>	
09006	<p><b>Sekiu, Clallam, Pysht Riparian Re-vegetation</b></p> <p><b>Project Description:</b>  This project will restore the riparian zone along the independent tributaries to the Strait of Juan de Fuca. All of these rivers are known Chinook habitat, although current populations are much depressed. Re-vegetation of riparian zones will reduce sediment impacts, improve water quality, and restore channel migration zone habitat and function. Shade and eventual LWD recruitment will continue to improve resting and rearing conditions in the mainstem for returning adults and rearing young. Reducing sediment will improve spawning bed and egg incubation conditions. This project will benefit Chinook as well as coho, chum, steelhead and cutthroat. Improvement of upland habitat conditions will contribute to recovering health of estuarine areas and the nearshore migration corridor, which is used by a wide variety of species and stocks as they exit and return to Puget Sound.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/6668">http://waconnect.paladinpanoramic.com/Project/180/6668</a></p>	Makah/ LEKT/ NOSC
<b>UPDATED!</b> 13101.2	<p><b>Lower Hoko Acquisition and Restoration Project</b></p> <p><b>Project Description:</b>  This multi-component, multi-partner project will improve salmon habitat and ecosystem functions on the Lower Hoko River and estuary (RM 0 to 3.4). The project will restore up to 3.4 miles of the Lower Hoko River, which includes estuarine, floodplain riverine habitat up to the confluence with Little Hoko River. The project will reconnect up to 180 acres of floodplain and off-channel wetland habitat.</p> <p>Acquisition will provide long-term protection for Hoko floodplain habitat through fee simple and conservation easements on Lower Hoko properties, particularly for those parcels identified as priorities in the Western Straits Conservation Plan due to their value as salmon habitat. Extending the area to the confluence of the Little Hoko will include the number 1, 5, 6, 8, and 9 ranked parcels for all of WRIA 19.</p> <p>Restoration will accelerate the recovery of natural processes through the addition of large wood, removal of abandoned railroad grades and associated infrastructure, and fill impacts, and will increase the quality and quantity of riparian habitat through native tree plantings. Restoration and acquisition will likely be accomplished in partnership with the Lower Elwha Klallam and Makah Tribes, North Olympic Land Trust, North Olympic Salmon Coalition, and Washington State Parks.</p> <p><b>Limiting Factors Addressed:</b>  The Salmon and Steelhead Limiting Factors of the Western Strait of Juan de Fuca states that a major limiting factor for salmonids is lack of large wood debris (LWD). This project will restore/improve spawning habitat for returning adults and provide rearing habitat for juvenile salmonids through the installation of LWD. Not only will LWD reduce scour and assist in gravel bed creation, LWD placement has the potential to moderate temperature by creating large deep pools. The Hoko Watershed Analysis identifies sedimentation and depletion of in-channel wood as significant limiting factors in the Hoko watershed (PenTech 1995; appendices E&amp;F). Water Resource Inventory Area 19 (Lyre-Hoko) Salmonid Restoration Plan, Chapter 5 (Haggerty et al. 2009), specifies that "Identified limiting factors in WRIA 19 include the following: ... Degraded water quality and high stream temperature and ...Degraded riparian conditions". Restoration elements will also include the</p>	Lower Elwha Klallam Tribe, Makah Tribe, North Olympic Salmon Coalition, North Olympic Land Trust, Washington State Parks

implementation of riparian floodplain plantings that addresses each of these factors. Haggerty et al. (2009) also states that, "Floodplain development from roads and other infrastructure have altered habitat forming processes and riparian conditions." An abandoned railroad crosses the Hoko Valley perpendicular to stream flow in the vicinity of river mile 3 and constrains the floodplain at that point. Acquisition within the project area will ensure long term protection of habitat forming processes on the Hoko.

**Benefits to Salmon:**

Multiple species of salmon will benefit from this project. Olympic Peninsula chinook ESU, Olympic Peninsula coho ESU, Olympic Peninsula chum salmon, Olympic Peninsula steelhead ESU and Coastal Cutthroat trout will benefit from restoration and protection of habitat in the project area. Improvement of upland habitat conditions will contribute to recovering the health of the main-stem Hoko River and estuarine areas and the nearshore migration corridor. Additions of large wood will be designed to maximize floodplain connectivity by encouraging continued bed aggradation and lateral migration. Several Hoko River stocks are performing below their potential and are considered stocks of concern. The summer/fall Hoko River Chinook stock is considered "depressed" because it has been chronically below its escapement goal of 1000 fish. Hoko steelhead and coho are currently considered healthy, meeting their escapement goals of 400 and 2,200 fish respectively in most years. The Hoko fall chum status is unknown, but most spawning for chum takes place in the lower eight miles of the Hoko River.

**Recovery Plan Objectives:**

Although there are no ESA-listed fish in the Hoko River, it is considered an important watershed in the region because it has more available low gradient habitat than any other river and currently supports the largest natural coho salmon and winter steelhead populations on the North Olympic Peninsula. This project addresses the primary objective of the 2011 NOPL strategy by attempting to protect and restore fish habitat on the North Olympic Peninsula while maintaining existing ecosystem function.

The Hoko River is included in the 2013 Western Straits Conservation Plan and has a significant amount of large river floodplain habitat, including in-channel, estuary, and floodplain/riparian acres. There are many high priority parcels along the Hoko that are not conserved.

**Restoration or Protection of Ecosystem Function:**

The project will address both restoration and protection of ecosystem functions.

Acquisition: Fee-Simple acquisition or conservation easements on critical Lower Hoko floodplain parcels will protect existing ecosystem functions and enable the restoration of up to 180 acres of key salmonid habitat.

Restoration: Olympic Peninsula salmonid populations evolved with extremely high levels of in-stream large wood. Wood provides physical fish habitat, serves as a biological substrate, roughens stream channels to scour pools and stabilize spawning habitat, and aggrades channel beds so these systems interact with their floodplains. Revegetation of riparian zones will increase bank stability thereby reducing sediment impacts and improving water quality in this reach of the river. Shade and eventual LWD recruitment will continue to improve resting and rearing conditions in the mainstem for returning adults and rearing young.

**Spatial/Temporal Influence:**

Spatial: The project will restore portions of 3.4 miles of the Lower Hoko River, which includes estuarine, riverine, and floodplain habitat. The project could reconnect up to 180 acres of floodplain habitat.

Temporal: Natural recovery of the system is ongoing and some lands within the project area are under long term protection with Washington State Parks. Acquisition of priority floodplain parcels will provide benefits in perpetuity. Removal of railroad grades will promote more floodplain interactions and LWD installation will be designed for long-term benefits (withstand 100 YR floods) and plantings will be maintained until they are established.

	<p><b><u>Project Readiness:</u></b> A portion of the project area is currently under WA State Park ownership, allowing restoration actions in the near future. The local community has expressed interest in restoration of the Lower Hoko River and its fish runs. Restoration work on railroad grade areas are being discussed with landowners.</p> <p><b><u>Cost:</u></b> For Acquisition, land is approximately \$6,000-\$8,000/acre if purchased fee simple, and \$3,000-\$6,000 for a conservation easement. With 180 acres of potential acquisition, the estimate is \$1,400,000. The restoration estimate is \$500,000. Total estimated cost is \$1,900,000.</p> <p><b><u>Watershed Priority:</u></b> The Hoko River has a normalized score of 2.93, and is ranked as 8th priority watershed (5th freshwater).</p> <p><b><u>Miscellaneous:</u></b> The Hoko is the largest watershed in WRIA 19 and a portion of this project includes the WRIA 19 nearshore which is the 5th watershed priority in NOPL with a 4.0 watershed score. After the WRIA 19 nearshore and the Lyre, the Hoko River is the third highest ranked watershed in WRIA 19 in NOPL. It has a normalized score of 2.93 and is ranked 8th overall priority watershed (5th freshwater) in NOPL. Other nearby restoration includes floodplain and tributary restoration on the mainstem Hoko, Little Hoko River, Ellis Creek and the removal of culvert barriers on the Hoko 9000 Road Crossing and restoration of Brownes Creek.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/39804">http://waconnect.paladinpanoramic.com/Project/180/39804</a></p>	
11082	<p><b>Hoko River 9000 Road Barrier Correction</b></p> <p><b><u>Project Description:</u></b> The 9000 Road crosses the upper Hoko River at river mile 21.3. The road was originally constructed in the 1950's as a railroad grade; it was converted to a mainline logging road in the early 1970's. The existing crossing on the Hoko River is a 7' corrugated metal pipe that has an outlet drop of ~5' and is considered a total barrier to anadromous fish. LEKT in partnership with Rayonier Timber proposes to remove the existing culvert structure and replace it with a three piece prefabricated concrete bridge with a total span of ~130'. Correction of this long standing barrier would allow access to approximately 3 miles of low gradient habitat above the road crossing as well as allow fluvial transport of sediment and large wood.</p> <p><b><u>Limiting Factors Addressed:</u></b> This project will restore historic access to the upper portions of the Hoko River. The Hoko Watershed Analysis (Pentec 1995) identifies this culvert as the most significant barrier in the Hoko Watershed (Appendix F). This barrier has long been recognized by local habitat biologists for limiting anadromous fish access to the upper watershed.</p> <p><b><u>Benefits to Salmon:</u></b> This project will restore access to the upper Hoko River including approximately 3 miles of low gradient habitat. Multiple species of salmon will benefit from this project. Olympic Peninsula Chinook ESU, Olympic Peninsula coho ESU and Olympic Peninsula steelhead ESU as well as cutthroat trout will be the primary beneficiaries along with coastal cutthroat. Habitats accessed above the 9000 Road will likely provide spawning and rearing habitat primarily for coho, steelhead and cutthroat. Small numbers of Chinook may also access</p>	LEKT/ Rayonier

	<p>areas above the 9000 Road. Correction of human caused barriers is a fundamental concept in salmon habitat restoration. In a review of salmon restoration strategies in Pacific Northwest streams, Roni et al. (2006) considered these projects the highest priority for systematic watershed restoration.</p> <p><b><u>Recovery Plan Objectives:</u></b></p> <p>The Hoko River is not currently included in any federally listed fish stocks in Washington State. There is no formal recovery plan for the Hoko River per se. However, several Hoko River stocks are performing below their potential and are considered stocks of concern. Of particular note is the summer/fall Hoko River Chinook stock which is considered in a “depressed” status because it has been chronically below its escapement goal of 1000 fish. Hoko steelhead and coho are currently considered healthy, meeting their escapement goals of 400 and 2,200 fish respectively in most years. The Hoko River currently supports the largest amount of low gradient habitat of any watershed in the NOPLEG planning area. A watershed analysis was completed for the Hoko Watershed (Pentec 1995). The analysis did not include a complete assessment of barriers in the basin; however the 9000 Road was noted (appendix F).</p> <p><b><u>Restoration or Protection of Ecosystem Function:</u></b></p> <p>This project restores ecosystem function by restoring fish passage to historically accessible habitats in the upper Hoko Watershed. The primary land use in the Hoko Watershed is industrial forestry. Ecosystem functions are assumed to be protected through the Forest and Fish Agreement (FFA), which increased the standards of forest practices rules in Washington beginning in 2000. Examples of ecosystem protection measure instituted in the Hoko Watershed by FFA include wider riparian buffers, road improvements, identification and avoidance of geologically unstable areas and correction of fish passage barriers.</p> <p><b><u>Spatial/Temporal Influence:</u></b></p> <p>This project represents a portion of the landowner’s ongoing efforts to correct habitat problems generated by the location, historic construction practices and use of the 9000 Road. This road was originally constructed as a railroad grade adjacent to 2.5 miles of the upper Hoko River. The road accesses large blocks of industrial forest land in the upper Hoko, Dickey and Ozette watersheds. During wet weather haul, this road has historically been a chronic producer of fine sediment to the Hoko River. Rayonier has invested significant resources to correct this problem including relocating 2.5 miles of the road to a more stable ridge top location, installing sediment control measures, improving road surfacing and limiting wet weather haul. Upstream of the 9000 Road crossing on the 9200 Road, Rayonier has corrected two other culvert barriers in the upper Hoko under the FFA.</p> <p><b><u>Project Readiness:</u></b></p> <p>Preliminary engineering has been completed by Rayonier. Additional engineering is currently underway and when completed will allow for a detailed cost estimation. Permitting could begin following completion of the final engineering design and if funded this project could be implemented within 2 years of the award.</p> <p><b><u>Cost:</u></b></p> <p>Estimated cost is \$350,000-450,000. Rayonier is providing a 50% cash match according to the most recent RCO policies on fish barrier projects associated with the FFA.</p> <p><b><u>Watershed Priority:</u></b></p> <p>The Hoko River has a normalized score of 2.93, and is ranked as 8<sup>th</sup> priority watershed (5<sup>th</sup> freshwater).</p> <p><b><u>Miscellaneous:</u></b></p> <p>This project is also related spatially/temporally to the Hoko 9000 Road Abandonment Project which is located between river mile 18.5 and 20.0 and includes removal of side cast and road fill materials, revegetation and LWD additions to that reach of the Hoko River.</p>	
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	<p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/18083">http://waconnect.paladinpanoramic.com/Project/180/18083</a></p>	
11083	<p><b>Hoko River 9000 Road Abandonment</b></p> <p><b><u>Project Description:</u></b>  The 9000 Road was formerly a railroad grade that connected Clallam Bay/Sekiu through the Hoko Watershed to the Sol Duc Valley. The grade was converted to a mainline logging road in the 1970's as railroad transport of logs was abandoned by the timber industry in favor of truck transport. The upper section of the 9000 Road begins at Lake Pleasant in the Sol Duc Valley and parallels portions of the Hoko River from the watershed divide at 2.4 miles to the confluence of the 6000 road (6.5 miles). This section of road has historically been a chronic producer of fine sediment to the Hoko River. Heavy use to access large tracts of forest lands in the Hoko, Dickey and Ozette watersheds, created very significant surface erosion issues. Additionally, the grade was constructed using large cut and fill surfaces that are potentially unstable. Beginning in 2000, significant efforts by the landowner have been made to improve road surfacing to reduce erosion from the road, and unstable fill that could be removed while maintaining a usable mainline road were removed. In 2005, Rayonier relocated 2.5 miles of the 9000 Road away from the Hoko River to a more stable location between the Hoko River and Bear Creek. While the early efforts to reduce landslide potential were worthwhile, large areas of unstable fill from the original grade construction remain on the old road surface. These remaining fills have landslide potential and some have recently failed and directly delivered sediment to the upper Hoko River. In this project we propose to fully abandon this portion of the old 9000 grade. Thirty-six sites have been identified for side-cast fill or stream-crossing fill removal. The material will be removed using heavy equipment and transported to stable locations for wasting. Natural water courses will be reestablished and the entire grade will be revegetated using native conifers. Additionally, LWD will be placed in the upper Hoko between River Mile 18.5-19.0 to restore in-channel fish habitat.</p> <p><b><u>Limiting Factors Addressed:</u></b>  This project will reduce the risk of landslide and fine sediment delivery to the upper Hoko River, a reach which is heavily utilized for spawning and rearing by multiple species of salmon. It will restore natural water drainage patterns and increase the long-term potential of functional riparian zones along the 2.5 mile reach. Additions of large wood will improve spawning and rearing habitat in a 0.5 mile reach of low gradient stream habitat. This reach of the Hoko River is included in long-term assessment of changes of in-channel wood on Olympic Peninsula streams. Since 1982, this site has maintained very low volumes of LWD (12.0-15.5 m<sup>3</sup>/100 m). The Hoko Watershed Analysis (Pentec 1995) identifies the sedimentation and depletion of in-channel wood as significant limiting factors for salmon habitat in the Hoko Watershed (Appendices E&amp;F).</p> <p><b><u>Benefits to Salmon:</u></b>  This project will reduce the risk of accelerated sedimentation as well as improve hydrologic, riparian and in-channel spawning and rearing habitat in the upper Hoko River between river mile 18-22.5. It will also reduce potential sedimentation sources to the river as a whole. Multiple species of salmon will benefit from this project. Olympic Peninsula chinook ESU, Olympic Peninsula coho ESU, Olympic Peninsula chum salmon, Olympic Peninsula steelhead ESU as well as coastal cutthroat have all been documented to use habitats in this reach. Additions of LWD will improve pools structure in a reach that had only 35% pools by surface area (Pentec 1995). This reach is heavily utilized by multiple species of salmon for spawning and rearing.</p> <p><b><u>Recovery Plan Objectives:</u></b>  The Hoko River is not currently included in any federally listed fish stocks in Washington</p>	LEKT/ Rayonier

	<p>State. There is no formal recovery plan for the Hoko River per se. However, several Hoko River stocks are performing below their potential and are considered stocks of concern. Of particular note is the summer/fall Hoko River Chinook stock which is considered in a “depressed” status because it has been chronically below its escapement goal of 1000 fish. Hoko steelhead and coho are currently considered healthy, meeting their escapement goals of 400 and 2,200 fish in most years. The Hoko River currently supports the largest amount of low gradient habitat of any watershed in the NOPLEG planning area.</p> <p><b><u>Restoration or Protection of Ecosystem Function:</u></b> This project restores ecosystem function by reducing the potential of direct delivery of sediment to the upper Hoko River. It also restores hydrologic, riparian and in-channel functions to this reach. The primary land use in the Hoko watershed is industrial forestry. Ecosystem functions are afforded protection by the Forests and Fish Agreement (FFA). Examples of ecosystem protection measure instituted in the Hoko watershed by FFA include wider riparian buffers, road improvements, identification and avoidance of geologically unstable areas and correction of fish passage barriers. This restoration action is complementary to those long-term management strategies</p> <p><b><u>Spatial/Temporal Influence:</u></b> This project represents a portion of the landowner’s ongoing efforts to correct habitat problems generated by the location and use of the 9000 Road. Rayonier has invested significant resources to correct this problem including relocating 2.5 miles of the road to a more stable ridge top location, installing sediment control measures, removing unstable fill, improving road surfacing and limiting wet weather haul. Additionally, Rayonier has proposed to remove the largest remaining fish barrier in the Hoko River (9000 road crossing) and has corrected numerous other culvert barriers in the upper Hoko.</p> <p><b><u>Project Readiness:</u></b> Preliminary engineering has been completed by Rayonier. If funded this project could be implemented within 2 years of the award.</p> <p><b><u>Cost:</u></b> Estimated cost is \$250,000-350,000.</p> <p><b><u>Watershed Priority:</u></b> The Hoko River has a normalized score of 2.93, and is ranked as 8<sup>th</sup> priority watershed (5<sup>th</sup> freshwater).</p> <p><b><u>Miscellaneous:</u></b> This project is also related spatially/temporally to the Hoko 9000 Barrier Correction Project.</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/16286">http://waconnect.paladinpanoramic.com/Project/180/16286</a></p>	
09001.1	<p><b>Little Hoko River LWD Project</b></p> <p><b><u>Project Description:</u></b> This project is an on-going effort to improve salmon habitat; adult spawning and juvenile rearing. Between 1994 and 1998, the Little Hoko received extensive habitat restoration which included; cattle exclusion, planting of 20,000 native trees and shrubs, restructuring of channel habitats using 2,500 pieces of LWD, floodplain road abandonment, and off-channel habitat development. This project was one of the largest restoration projects conducted on the Olympic Peninsula at that time. Monitoring has shown that the project has been partially successful in restoring channel and riparian habitat features, however much of the wood that was utilized were smaller cut logs that have been buried by channel aggradation or degraded over time. In this proposal we propose to add additional LWD (200 pieces) using a helicopter. All wood will be very large coniferous trees with root wads</p>	LEKT



attached and wood will be placed in aggregations to maximize channel effects. Adding additional LWD in Little Hoko will create additional habitat complexity, providing sheltering areas for spawning adults and rearing fingerlings. It will also reduce scour and assist in gravel bed creation and maintenance. Continuing the process of bed aggradation will assist with floodplain connectivity that was lost through incision caused by historic land uses.

**Limiting Factors Addressed:**

This project will restore/improve spawning habitat for returning adults and provide rearing habitat for juvenile salmonids. Not only will LWD reduce scour and assist in gravel bed creation, LWD placement has the potential to moderate temperature by creating large deep pools. The Hoko Watershed Analysis (PenTech 1995) identifies the sedimentation and depletion of in-channel wood as significant limiting factors in the Hoko watershed (appendices E&F). For the Little Hoko, the intentional removal of LWD along with channelization and unrestricted grazing, has led to channel incision and disconnection of its floodplain Pentech 1995, Appendix E). While the previous restoration efforts have been beneficial in promoting recovery, additional inputs of LWD are recommended based on long term monitoring conducted by LEKT (McHenry 2008).

**Benefits to Salmon:**

Multiple species of salmon will benefit from this project. Olympic Peninsula chinook ESU, Olympic Peninsula coho ESU, Olympic Peninsula chum salmon, Olympic Peninsula steelhead ESU as well as coastal cutthroat have all been documented to use habitats in the Little Hoko River. Improvement of upland habitat conditions will contribute to recovering health of main-stem Hoko River and estuarine areas and the nearshore migration corridor. Additions of large wood will be designed to maximize floodplain connectivity by encouraging continued bed aggradation and lateral migration. Previously planted riparian trees are rapidly gaining height and size to partially support these processes. Unfortunately the overall stand age of the forest established some twenty years ago is still too small to support all riparian functions.

**Recovery Plan Objectives:**

The Little Hoko River is not currently included in any federally listed fish stocks in Washington State. There is no formal federal recovery plan for Little Hoko River. However, a watershed analysis has been completed for the watershed (PenTec 1995). The channel section (appendix E) found that because of conversion of the forested floodplain to agricultural uses and significant wood removal, channel incision of up to a 1.5 meter had occurred. Additionally, wood recovery is listed as an important component of overall Hoko recovery. A restoration plan for the Little Hoko River prepared by LEKT (1993) guided initial restoration actions through the late 1990's. That plan included the following objectives: 1) control of unrestricted livestock grazing, 2) revegetation of floodplain riparian areas, 3) channel restructuring with LWD, 4) development of off-channel habitats (connected wetlands, ponds), and 5) floodplain road abandonment. A long term monitoring component was also instituted to evaluate the project over time. Based on monitoring results (McHenry 2007), these objectives have largely been met although further LWD introductions were recommended.

**Restoration or Protection of Ecosystem function:**

This project restores ecosystem function by restoring fish habitat, improving riparian zones, and re-connecting floodplain throughout Little Hoko River Watershed and as such is a restoration function project. However, the lower portions of the Little Hoko River are owned by the Washington State Parks and Recreation Commission. The Cowan Ranch State Park is undeveloped and managed primarily for day use only at this time.

**Spatial/Temporal Influence:**

This project represents a continued effort to build upon LEKT's ongoing efforts to improve habitat problems in the Little Hoko River generated by historic land uses including logging, agriculture, and channelization. Natural recovery of the system is ongoing and lands in the project area are under long term protection in Cowan Ranch State Park.



	<p><b><u>Project Readiness:</u></b> If funded this project could be implemented within 2 years of award. Washington Parks and Recreation has been a strong project partner during previous restoration efforts and will be asked to partner again.</p> <p><b><u>Cost:</u></b> \$250,000-350,000</p> <p><b><u>Watershed Priority:</u></b> Little Hoko River has a normalized score of 2.93, and is ranked as 8<sup>th</sup> priority watershed (5<sup>th</sup> freshwater).</p> <p><b><u>Miscellaneous:</u></b> The Little Hoko River is the largest tributary of the Hoko River and was the site of the first comprehensive watershed scale restoration effort. The Hoko River currently has more available low gradient habitat than any other river in the NOPLEG planning area and currently supports the largest natural coho salmon and winter steelhead populations.</p> <p><b><u>HWS Link:</u></b> <a href="http://waconnect.paladinpanoramic.com/Project/180/5494">http://waconnect.paladinpanoramic.com/Project/180/5494</a></p>	
09002	<p><b>Hoko River – Emerson Flats LWD Supplementation</b></p> <p><b><u>Project Description:</u></b> This project will restore spawning and rearing habitat in the Hoko Mainstem, approximately RM 6, which is known Chinook habitat.</p> <p><b><u>Why the Project is Needed (limiting factors addressed)?</u></b> Adding LWD to this reach will create habitat complexity, providing sheltering areas for spawning adults and rearing fingerlings. It will also reduce scour and assist in gravel bed creation and maintenance.</p> <p><b><u>Benefit to Salmon:</u></b> This project will benefit Chinook, as well as coho, chum, steelhead and cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> Hoko River Fit To Strategy on <a href="http://www.Noplegroup.org">www.Noplegroup.org</a></p> <p>1. The NOPE strategy plan, defined by WIRA 19 lists “Severe Lack of Large Woody Debris (LWD)” as one of “the major limiting factors for the Hoko River system.” “Sediment transport and water velocity effects are worsened by a severe lack of large woody debris (LWD). Many riparian areas are dominated by hardwoods, and will not contribute to future LWD. Also, it is believed that the change in age and type of surrounding forests contributes to an increased frequency and severity of peak flows.”</p> <p>2. Hoko Watershed Analysis Riparian Function</p> <p>The Department of Natural Resources completed a Hoko Watershed Analysis in 1995 that lists LWD as one of the major limiting factors. There is a low amount of LWD, the future prospect for LWD recruitment is low, and this has impacted salmonid habitat.</p> <p><b><u>Other Key Information:</u></b> Makah as project sponsor</p> <p><b><u>HWS Link:</u></b></p>	Makah

	<a href="http://waconnect.paladinpanoramic.com/Project/180/6665">http://waconnect.paladinpanoramic.com/Project/180/6665</a>	
09003	<p><b>Lower Hoko River - Riparian Revegetation</b></p> <p><b>Project Description:</b> This project will compliment phase I by restoring the riparian zone along the Hoko Mainstem, RM 1-7, which is known Fall Chinook habitat.</p> <p><b>Why the Project is Needed (limiting factors addressed)?</b> Water Resource Inventory Area 19 (Lyre-Hoko) Salmonid Restoration Plan, Chapter 5 (draft dated April 20, 2008), specifies that "Identified limiting factors in WRIA 19 include the following: ... Degraded water quality and high stream temperature and ...Degraded riparian conditions"</p> <p><b>Benefit to Salmon:</b> This project will restore known Hoko Fall Chinook habitat, and also benefit coho, chum, steelhead and cutthroat.</p> <p><b>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</b> Water Resource Inventory Area 19 (Lyre-Hoko) Salmonid Restoration Plan, Chapter 5 (draft dated April 20, 2008), specifies that "Identified limiting factors in WRIA 19 include the following: ... Degraded water quality and high stream temperature and ...Degraded riparian conditions". These are two of the numerous limiting factors that have lead to a decline in the salmonid populations in WRIA 19, and restoring the quality and quantity of healthy salmonid habitat will help restore salmonid populations on the Hoko.</p> <p><b>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</b> Revegetation of riparian zones will increase channel stability thereby reducing sediment impacts and improving water quality in this reach of the river. The floodplain and channel migration zone will benefit from increased roughness by reducing water velocity and increasing floodplain storage capabilities and creating access to greater diversity of habitat for all salmonids. Shade and eventual LWD recruitment will continue to improve resting and rearing conditions in the mainstem for returning adults and rearing young. Reducing sediment will improve spawning bed and egg incubation conditions.</p> <p><b>Address Timing Needs &amp; Sequencing Requirements:</b> This project will compliment other projects by restoring the riparian zone along the Hoko Mainstem, RM 1-7, which is known Fall Chinook habitat.</p> <p><b>Other Key Information:</b> NOSC as project sponsor, Makah as sponsor</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/6671">http://waconnect.paladinpanoramic.com/Project/180/6671</a></p>	NOSC/ Makah
09004	<p><b>Hoko River/Hermans Creek – Instream LWD Supplementation</b></p> <p><b>Project Description:</b> This project will restore formerly productive spawning and rearing habitat to Herman Creek, a Tributary to the Hoko River and known Chinook habitat. Adding LWD to this tributary will create habitat complexity, providing sheltering areas for spawning adults and rearing fingerlings. It will also reduce scour and assist in gravel bed creation and maintenance. Herman creek provides high quality habitat for Chinook as well as coho, steelhead and cutthroat.</p>	Makah

	<b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/6667">http://waconnect.paladinpanoramic.com/Project/180/6667</a>	
11084	<b>Bear and Cub Creek LWD Project</b>  <b><u>Project Description:</u></b> Bear and Cub creeks are low gradient tributaries in the Upper Hoko Watershed. Historically affected by logging and road impacts, salmon habitat has been degrading over time by loss of large woody debris and pool structure. This project will restore spawning and rearing habitat in both Bear and Cub creeks for Chinook and coho salmon, steelhead and cutthroat trout. Using a heavy lift helicopter, a total of 150 large conifer logs with root wads attached will be flown into pre-selected sites in the lower reaches (river miles 0-1.5 in each creek) creating habitat complexity for sheltering spawning adults and rearing juveniles.  <b><u>Limiting Factors Addressed:</u></b> This project will restore/improve spawning habitat for returning adults and provide rearing habitat for juvenile salmonids. Not only will LWD reduce scour and assist in gravel bed creation, LWD placement has the potential to moderate temperature by creating large deep pools that increase groundwater connectivity. Treatment reaches are focused on the lower portions of both creeks which are characterized by pool-riffle, forced pool-riffle and plane bed habitat types. These types of channels are unconstrained by their valleys, have gradients less than 3%, and generally respond favorably to the additions of large wood (Montgomery and Buffington 1993). Both Cub and Bear creeks are part of a long term study assessing changes in channel wood characteristics over time on Olympic Peninsula streams in response to logging. Both creeks continue to have dramatic reductions in wood volume. Since 1982, volumes of LWD have dropped by 84% and 72% in Cub and Bear creeks, respectively (McHenry et al. 1998; McHenry et al. In Prep.).  <b><u>Benefits to Salmon:</u></b> This project will restore habitat and potentially benefit Chinook, coho, steelhead, and cutthroat trout; chum might also utilize these creeks. Multiple species of salmon will benefit from this project. Olympic Peninsula Chinook ESU, Olympic Peninsula coho ESU, Olympic Peninsula chum salmon, Olympic Peninsula steelhead ESU as well as coastal cutthroat have all been documented to use habitats in the Hoko River and its larger tributaries. Improvement of upstream habitat conditions will contribute to recovering health of the mainstem Hoko River and estuarine areas and the nearshore migration corridor.  <b><u>Recovery Plan Objectives:</u></b> The Hoko River is not currently included in any federally listed fish stocks in Washington State and there are no formal federal recovery plans for either Cub or Bear creeks. However, a watershed analysis has been completed for the Hoko watershed (Pentec 1995). Wood recovery is listed as an important component of the overall watershed health (appendices E & F). The Hoko Watershed Analysis found that riparian forests had been harvested between 1920's and 1960's and that extensive wood removal had occurred throughout the watershed. The current structure of riparian forests in the Hoko River is generally inadequate to provide for natural habitat-forming processes particularly with regards to in-channel wood. For example, plots of the riparian forests along Bear and Cub creeks conducted in the Hoko Watershed Analysis found that forests were dominated by deciduous trees (average 88%) with diameters that did not exceed 26" (Pentec 1995 Appendix E).  <b><u>Restoration or Protection of Ecosystem Function:</u></b> This project restores ecosystem function by restoring in-channel fish habitat and improving floodplain connectivity throughout both tributaries. The primary land use in the Hoko Watershed is industrial forestry. Ecosystem functions are afforded protection by the Forests and Fish Agreement (FFA). Examples of ecosystem protection measure instituted in	LEKT/ Rayonier

	<p>the Hoko Watershed by FFA include wider riparian buffers, road improvements, identification and avoidance of geologically unstable areas and correction of fish passage barriers. This restoration action is complementary to those long-term management strategies.</p> <p><b><u>Spatial/Temporal Influence:</u></b> This project represents an expansion of recent effort in the upper Hoko River to improve habitat conditions for anadromous fish consistent with the Forests and Fish Agreement. Two other projects are proposed just upstream of this site (Hoko 9000 Road Abandonment/Hoko 9000 Road Barrier Correction). Downstream, a large scale restoration project on the mainstem Hoko River and Ellis Creek was completed by partners in 2008. This project included the removal of a culvert barrier (trib 19.0191), abandonment of 0.5 miles of floodplain road, removal of two railroad trestles, and additions of large wood in Ellis Creek and in the mainstem Hoko River.</p> <p><b><u>Project Readiness:</u></b> If funded, this project could be implemented within 2 years of award. Project layout/design would proceed permitting. Rayonier Timberlands and the Makah Tribe would be the primary potential partners.</p> <p><b><u>Cost:</u></b> \$100,000-155,000</p> <p><b><u>Watershed Priority:</u></b> The Hoko Watershed has a normalized score of 2.93, and is ranked as 8<sup>th</sup> priority watershed (5<sup>th</sup> freshwater).</p> <p><b><u>Miscellaneous:</u></b> This project is modeled after similar projects conducted by LEKT with support from Columbia Helicopter in Sadie Creek (2004), Salt Creek (2006 and 2010), East Fork Deep Creek (2007), West Fork Deep Creek (2009) and Ellis Creek (2008). These projects have focused on small to medium-sized, low gradient streams in forested settings. The Vertol Helicopter, which is a smaller version of the Chinook, is the perfect cost effective machine for these types of settings. It is fast and causes virtually none of environmental impacts associated with ground based LWD placements.</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/16257">http://waconnect.paladinpanoramic.com/Project/180/16257</a></p>	
11085.1	<p><b>Pysht River Watershed LWD Restoration: Phase 3</b></p> <p><b>Project Description:</b> This project is part of a long term effort to improve salmon habitat in the mainstem Pysht River and its major tributaries. In this Phase 3 proposal, we propose to construct 35 engineered logjams in the mainstem Pysht River between river mile 7.0-9.0. The project will occur on a combination of ownerships including lands recently purchased for conservation by North Olympic Land Trust using SRFB funding. Since 1994, Merrill and Ring and the Lower Elwha Klallam Tribe have conducted a series of cooperative restoration projects focusing on in-channel LWD and riparian restoration at multiple sites in the watershed. On the SF Pysht River (Phase 1), LWD has been added to ten reaches between river mile 0.5-7.0. On the mainstem Pysht River, LWD (Phase 2) has been added on one reach (river mile 10.0-11.5). Monitoring has shown that these projects have been successful in restoring channel and riparian habitat features favored by salmon for spawning and rearing. Because of historic logging and stream cleaning practices, the entire watershed is considered chronically deficient in in-</p>	Lower Elwha Klallam Tribe

	<p>channel LWD (McHenry et al. 1994, WRIA 19 Salmon Recovery Plan). Additionally, the age and composition of riparian forests is currently not adequate to support habitat forming processes.</p> <p><b>Limiting Factors Addressed:</b> This project will restore/improve spawning habitat for returning adults and provide improved rearing habitat for juvenile salmonids. Not only will LWD reduce scour and assists in gravel bed creation, LWD placement has the potential to moderate temperature by creating large, deep pools that increase groundwater exchange with the channel. A basin wide evaluation of habitat conditions identified depletion of in-channel wood and age/composition of riparian forests as significant limiting factors in the Pysht watershed (McHenry et al. 1994; Haggerty et al. (2009)). Additionally, the intentional removal of LWD along with channelization from the construction of Highway 112; has led to channel incision and disconnection of the floodplain, further degrading habitat conditions. While the previous restoration efforts were beneficial in promoting recovery, <b>additional LWD is necessary in the Pysht to connect reach scale restoration and achieve watershed level restoration.</b></p> <p><b>Benefits to Salmon:</b> Multiple species of salmon will benefit from this project including coho and chum salmon, steelhead and cutthroat trout. A population of chinook salmon historically used this reach of the Pysht River for spawning therefore restoration of mainstem habitats is critical toward recovering this stock. Small numbers of chinook are observed in the Pysht River in some years and this population is considered highly imperiled. This reach of the Pysht River is also heavily used by Pysht River chum salmon, the largest chum population in WRIA 19. This population has declined in recent years, likely due to the degraded mainstem habitat conditions. Additions of large wood in this project have been designed to maximize floodplain connectivity by encouraging continued bed aggradation, lateral migration and activation of abandoned side-channels.</p> <p><b>Recovery Plan Objectives:</b> The Pysht River has no federally listed stocks of salmon; however listed stocks of chinook salmon from Puget Sound and the Columbia River have been found rearing in the Pysht River estuary (Shaeffer et al. 2009). Other species of salmon from the Pysht (i.e. Olympic Peninsula Coho and Chinook) have been included within the larger and more numerous populations along the Washington Coastal ESU and therefore were not included with listed ESU's from Puget Sound. The WRIA 19 salmon recovery plan (Haggerty 2009) recognizes that LWD recovery is fundamental to recovering salmon habitat and populations in the Pysht watershed.</p> <p><b>Restoration or Protection of Ecosystem Function:</b> This is a salmon habitat restoration project that protects and restores habitat forming processes. The proposed project will occur on lands with existing conservation easements or those that have been identified for future acquisition or easements. Pysht River floodplain conservation easements are a high priority in the WRIA 19 conservation strategy for North Olympic Land Trust and complement a large conservation easement in the Pysht River estuary obtained by Forterra. Protection of habitat forming processes through easements while accelerating the recovery of floodplain habitats through restoration is the long term goal for the Pysht Watershed.</p> <p><b>Spatial/Temporal Influence:</b> This is a continuation of multiple reach scale</p>	
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	<p>in-channel and riparian restoration projects dating to 1995. These are significant restoration efforts that have occurred in over <b>eight miles</b> of the mainstem and SF Pysht Rivers. The project builds on North Olympic Land Trust efforts to conserve the Pysht floodplain and Forterra's large scale, protective easement in the Pysht Estuary. It also complements a proposed large-scale restoration of the Pysht Estuary which has been designed and approved by the landowner Merrill &amp; Ring, with North Olympic Lead Entity and SRFB Review Panel approval for possible large capital PSAR funding. Several additional estuary restoration actions are anticipated in the future.</p> <p><b>Project Readiness:</b> This project will be shovel ready by early 2015. <b>The Makah and Lower Elwha Tribe have already contributed \$650,000 in matching funds</b> for materials, project engineering, design, and outreach. A final design will be completed in winter of 2015 with permit application to follow.</p> <p><b>Cost:</b> \$1.2- 1.8 million. Cost estimates have been developed with the support of a licensed engineer and are consistent with similar projects. This project could be logically split into two discrete restoration actions to reduce the funding burden in a given SRFB cycle.</p> <p><b>Watershed Priority:</b> The Pysht River has a normalized score of 2.93 (ranked 9<sup>th</sup> overall and 6<sup>th</sup> by watershed). Recovery of the Pysht River watershed and its salmon populations is high priority for four Treaty Tribes including Lower Elwha Klallam, Makah, Jamestown and Port Gamble S'Klallam Tribes. Pysht River salmon have historically support treaty harvests. These salmon populations are now so depleted that the Tribes have virtually ceased fishing in the Pysht to conserve and protect remaining stocks.</p> <p><b>Miscellaneous:</b> The Pysht River contains the third largest amount of currently accessible low gradient stream habitat in the NOPL planning area. In a recent statewide competitive grant competition (Floodplains by Design) the project ranked 17<sup>th</sup> of over 80 projects statewide, but likely just below the expected funding level.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/19261">http://waconnect.paladinpanoramic.com/Project/180/19261</a></p>	
09086.1	<p><b>Pysht Floodplain Acquisition and Restoration</b></p> <p><u><b>Project Description:</b></u>  This is a multi-phase project. Phase I and II have been completed, and NOLT acquired 58-acres fee simple and 68 acres through conservation easement (09-1528 and 10-1509). Phase III will install engineered log jams, create roughness elements within the active floodplain on the Pysht Conservation Area purchased by NOLT with grant #09-1528 and on property down river to protect instream habitat, and prevent sedimentation problems associated with Hwy 112 near milepost 23. Additional restoration may also be merited, and all restoration will be accomplished in partnership with the Makah Tribe and Lower Elwha Klallam Tribe, and some components of the restoration will involve Mike Haggerty and the Washington Department of Transportation. Phase IV and other phases will protect additional floodplain and riparian habitat along the Pysht River, by means of conservation easements and fee simple acquisition, particularly those properties identified as priorities in the Western Straits Conservation Plan. NOLT is working with landowners between RM 6.6 to approximately RM 9.9. The project will be complete when a river corridor from the estuary to River Mile 9.9 is conserved.</p>	<p>Phase IV and future: North Olympic Land Trust;</p> <p>Phase III: Makah Tribe, Lower Elwha Klallam Tribe, WDOT, and Mike Haggerty</p>

**Why the Project is Needed (limiting factors addressed):**

There are a number of limiting factors that are addressed by this project. According to the Salmon and Steelhead Habitat Limiting Factors in the Western Strait of Juan de Fuca, one major problem is the lack of large woody debris. Phase III proposes to install large wood instream. Another significant limiting factor cited in the LFA is the conversion of conifer riparian forest, leading to a lack of future large woody debris and high water temperatures. It is not certain whether future zoning will protect riparian functions that are still relatively intact. Conservation easements and acquisition by a local Land Trust are the only way to guarantee habitat protection in perpetuity.

Floodplain impacts are also identified as a limiting factor for Pysht River habitat. In comparison with other watersheds in WRIA 19, the Pysht River floodplain has the highest degree of floodplain impacts per river mile. These impacts are imposed by two methods, (1) floodplain encroachment by HWY 112 and (2) previous land alterations for river crossings and agriculture. Pysht Phase III plans to address both of these disturbances. By implementing Engineered Log Jams (ELJ's), the floodplain areas will be reactivated, permitting lateral aqueous and sediment interactions. They will also facilitate instream habitat creation of pool riffle complexes in the currently channelized portion of the project. The habitat complexity created by the ELJ's will provide thermal refugia, additional cover for rearing salmonids and mitigate for sedimentation issues identified as a limiting factor from logging roads. Two ELJs will be installed downriver of the Pysht Conservation Area as part of Phase III, and those ELJs will address problems with the highway, impaired salmon habitat, and potential mass wasting. Four ELJs will be installed on the Pysht Conservation Area, and those ELJs will improve habitat, adding wood where there is a lack of large woody debris.

**Benefits to Salmon:**

This project aims to protect a highly utilized reach of Pysht river that is annually used for spawning habitat by multiple salmonid species. The Pysht River system supports nine species of freshwater fish: five species of salmonids and four species of non-salmonids (WDFW 2002; Mongillio & Hallock 1997). Salmonids present include: chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), chum salmon (*Oncorhynchus keta*), coastal cutthroat trout (*Oncorhynchus clarki clarki*), and steelhead/rainbow trout (*Oncorhynchus mykiss*). Chinook escapements of several hundred fish were observed into the 1950s, but the run rapidly collapsed in the 1960s and 1970s (McHenry et al. 1996). A few chinook salmon are observed annually during chum and coho spawning ground surveys, however it is unclear whether these few fish represent a remnant population or strays from adjacent populations such as the Hoko River. Pysht River chum salmon are a species of concern, representing a historically large population. During the period from 1986 to 1994 Pysht River chum salmon escapements averaged 2,146 (median 1,896), from 1995 to 2003 escapement averaged 1,039 (median 800), a decrease of more than 50%.

**Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this project meet and how?**

- The Pysht River is included in the Western Straits Conservation Plan and has a significant amount of large river floodplain habitat, including in-channel, estuary, and floodplain/riparian acres. There are many high priority parcels along the Pysht that are not conserved. These acquisitions would be pursued as part of Phase IV and future phases. Some of the parcels would have been prioritized in the Conservation Plan, but they are already conserved.
- This project meets the recovery goals identified in the DRAFT WRIA 19 Recovery Plan (Haggerty et al. 2009). These goals were identified as priorities by the local citizens of WRIA 19 for the recovery of both depressed salmonid stocks and the critical habitat they utilized within the Pysht river.
- This project addresses the primary objective of the NOPLE strategy by attempting



	<p>to protect and restore fish habitat on the North Olympic Peninsula while maintaining existing ecosystem function (NOPL Strategy 2008).</p> <ul style="list-style-type: none"> <li>• It also exemplifies the objectives of the Puget Sound Partnership which promote protecting and restoring habitat, preservation of biodiversity, and recovery of imperiled species (Puget Sound Partnership 2008).</li> </ul> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b></p> <p>According to the Salmon and Steelhead Habitat Limiting Factors in the Western Strait of Juan de Fuca, one major problem is the lack of large woody debris. Phase III proposes to install ELJs into the riparian area and the floodplain, which will aid in restoring natural instream processes. Implementation of ELJ's promotes habitat complexity that is essential to sustaining salmonid populations in all life history phases while in freshwater. They will restore the river and floodplain interactions which have been altered and degraded for various anthropogenic uses. Another significant limiting factor cited in the LFA is the conversion of a conifer riparian forest, leading to a lack of future large woody debris and high water temperatures. It is not certain whether future zoning will protect riparian functions that are still relatively intact. Conservation easements and acquisition by a local Land Trust are the only way to guarantee habitat protection in perpetuity.</p> <p><b><u>Project's Spatial-Temporal Scale of Influence:</u></b></p> <p>This is part of a multi-phase, multi-year vision to protect from the Pysht River's estuary which is protected by a Forterra easement, to river mile 9.9. This project also furthers the goal of conserving the highest priority parcels in the WRIA 19, as identified in the Western Straits Conservation Plan.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p> <p>Phases I and II are already complete. Phase III, ELJ implementation, has funding for design, and simply lacks funding for implementation. Implementation could be complete within a year of funding being received. Phase IV and other future phases will involve negotiations with landowners along the river, followed by acquisition fee simple or conservation easement. Landowners along the river have already expressed an interest in working with NOLT. NOLT has been working to conserve this area since 2003.</p> <p><b><u>Range of Estimated Cost:</u></b></p> <p>Engineering designs for Phase III will be provided by the Makah Tribe. They are underway. A rough estimate for implementation of Phase III is \$200,000. The design is currently funded by Makah Tribe and will likely cost about \$115,000. The Tribe is also contributing \$30,000 in large wood for the ELJs. For Phase IV, land is approximately \$6,000-\$8,000/acre if purchased fee simple, and \$3,000-\$6,000 for a conservation easement. This is what previous acquisitions on the Pysht have reflected. Depending on how much land is purchased, and what method of conservation is used (conservation easement or fee simple), the estimate will vary.</p> <p><b><u>Watershed priority &amp; watershed area or which WRIA Nearshore project is located in:</u></b></p> <p>WRIA 19. This is a high priority in the Western Straits Conservation Plan because it has a significant amount of large river floodplain habitat, including in-channel, estuary, and floodplain/riparian acres.</p> <p><b><u>Other Key Information (especially any relationship to previous or current projects):</u></b></p> <p>NOLT recently completed Phase I (09-1528) and Phase II (10-1509) of the project, using SRFB grant funds to purchase 58 acres of nearby Pysht River floodplain, and conserve 68 acres through conservation easement. The Pysht is also a priority in the Western Straits Conservation Plan (09-1518).</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/19262">http://waconnect.paladinpanoramic.com/Project/180/19262</a></p>	
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09009.1	<b>Pysht River Salt Marsh Estuary Restoration Project</b>	LEKT/ Merrill & Ring/ Cascade Land Conservancy
	<p><b><u>Project Description:</u></b>  The Pysht River estuary was historically utilized for the marine transport of logs between 1915-1975. In order to operate and maintain this log transport facility, the lower river was channelized and periodically dredged. Dredge materials were typically discharged into salt marsh or placed along channel margins in piles. As a result, significant areas of the Pysht River estuary have been disconnected from the river. Suction dredge deposits first appear in the 1951 aerial photograph series and form a series of interconnected, large mounds on what was formerly tidal marsh in the southwest portion of the estuary. Removal options for this deposit have been explored in the recently completed <i>Pysht River Estuary Restoration Feasibility Study</i>. This project involves the removal of suction and clamshell dredge deposits placed on a 20.5 acre area of historic salt marsh in the Pysht River estuary. Dredged material would be removed to restore tidal elevations and channels so that the area would be regularly inundated by tidal cycles. Dredged materials (~138,500 yds<sup>3</sup>) would be removed and transported to upland disposal sites and stabilized. A series of tidal channels would be constructed and natural recolonization of salt tolerant native plants would be used to revegetate the site.</p> <p><b><u>Limiting Factors Addressed:</u></b>  Suction dredge deposits effectively raised the elevation of the marsh plain and converted tidally inundated marsh area to upland vegetation sites with no value for rearing salmonids and other estuary dependent species. This project would result in the direct restoration of 20.5 acres of salt marsh and tidal channels. A historic analysis of the Pysht River Estuary found that over half the historically accessible estuary had been disconnected and was no longer accessible for rearing by salmonids (Todd et al. 2006). This proposal is the largest actions identified to date that will recovery that habitat loses. Salt marsh habitats provide both rearing habitat for juvenile salmon and rich sources of food for life histories making the transition from freshwater to saltwater.</p> <p><b><u>Benefits to Salmon:</u></b>  The removal of dredge spoils over 20.5 acres will result in the reestablishment of salt marsh and associated tidal channels that drain directly into the Indian Creek slough complex. The estimated density of tidal channels created is 483 feet/acre. Tidal channels are of critical importance to salt marsh ecology and salmonid life histories. Tidal slough geometry controls physical processes such as sediment transport/storage, hydrodynamics and vegetation patterns. Several species of salmonids are known to rear in tidal changes including Chinook, chum, coho and pink salmon. A native population of chinook is thought to be extirpated (or nearly so). The Pysht River supports one of the larger populations of chum salmon in the SJF region, however its numbers are declining. Coho numbers in the Pysht are highly variable, with recent escapements ranging from 1000-7,500 adults. All three of these species could benefit by improvements in estuary habitat.</p> <p><b><u>Recovery Plan Objectives:</u></b>  The Pysht River supports no currently federally listed stocks of salmon, however listed stocks of chinook salmon from Puget Sound and the Columbia River have been found in the Pysht River estuary (Shaeffer et al. 2009). Other species of salmon from the Pysht (ie. Olympic Peninsula Coho) have been included within the larger and more numerous populations along the Washington coho and therefore not included with listings from Puget Sound. Two watershed analyses (Todd et al. 2006; Haggerty et al. 2006) recommend restoration of ecosystem processes in the Pysht Estuary as critical to recovering native Pysht River salmon populations.</p> <p><b><u>Restoration or Protection of Ecosystem Function:</u></b>  This project is a restoration of ecosystem function project. However it should be noted that the entire 700 acre Pysht Estuary complex has been placed in a conservation easement</p>	

	<p>negotiated by the Cascade Conservancy with Merrill and Ring. The easement does not allow for any future development activities but does allow for habitat restoration actions.</p> <p><b><u>Spatial/Temporal Influence:</u></b> This is the first of several large scale estuary restoration projects that might be undertaken with the approval of the landowner (Merrill and Ring) in the Pysht River estuary. Project proponents hope to build on this project and over time restore much of the ecological processes in the area that were disrupted by historic channelization necessary to maintain the log dump. Other future projects might include the removal of driven log piling lining the lower river, further dredge deposit removals and removal of road surfaces constructed adjacent to the lower river and estuary. Projects conducted in the estuary build upon a number of projects conducted in the riverine portions of the Pysht since 1994.</p> <p><b><u>Project Readiness:</u></b> A 30% engineering design has been completed for the project. Final engineering and permitting are a necessary next step and might logically be the next step in project implementation. The high cost of this project make it likely that project proponents will need to “bank” several grant sources as SRFB funding alone will likely not be adequate in any single grant application.</p> <p><b><u>Cost:</u></b> \$4,000,000.</p> <p><b><u>Watershed Priority:</u></b> The Pysht River estuary is located within the WRIA 19 nearshore and has a normalized score of 4.02 (4<sup>th</sup> ranked), while the Pysht River has a normalized score of 2.93 (ranked 9<sup>th</sup>).</p> <p><b><u>Miscellaneous:</u></b> The Pysht River estuary contains the second largest areas of salt marsh remaining in the Strait of Juan de Fuca area. Restoration of the salt marsh will result in benefits to many other species including invertebrates, non-salmonid fishes and birds. This project is similar to other similar estuary restoration projects that have been completed in Puget Sound including local projects at Jimmycomelately Creek and Discovery Bay.</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/10988">http://waconnect.paladinpanoramic.com/Project/180/10988</a></p>	
09010.1	<p><b>IMW Restoration Treatments</b></p> <p><b>Project Description:</b> The Intensively Monitored Watershed (IMW) program has been adopted by the SRFB as a key part of its validation monitoring program. The IMW program is designed to assess the effects of watershed scale restoration on fish production. The IMW study plan identifies clusters of watersheds around the state where watershed scale restoration is or will occur as well as watershed where no restoration will occur (control). There are currently 4 IMW study watersheds in Washington: 1) lower Columbia, 2) Hood Canal, 3) Strait of Juan de Fuca (SJF), and 4) Skagit estuary. The SJF complex includes two treatment (East Twin and Deep Creek) and one control (West Twin) watershed. This cluster of watersheds is arguably the most important to the overall project because of the commitment of project partners to science based restoration and long term fish production monitoring.</p> <p>In 2014, the SRFB established a stand alone grant procedure for funding restoration actions in the IMW watersheds. That process encourages IMW restoration projects to apply for funding within the structure of the regions</p>	Lower Elwha Klallam Tribe

lead entity. The project will be ranked and scored within that lead entity and forwarded to the SRFB for potential funding. A total of up to 2 million dollars has been reserved to fund those restoration projects from IMW watershed in any given year.

**Limiting Factors Addressed:** Extensive restoration has been conducted in both treatment watersheds dating to 1997 in Deep Creek and 2002 in East Twin. These projects include LWD additions, barrier corrections, road abandonment, riparian revegetation and off-channel development. A review of restoration treatments to date has been conducted and concludes that additional restoration efforts need to be made in order to complete the goal of achieving watershed scale restoration. Specifically these include additional LWD additions in Deep Creek and the East Twin River in the lowermost reaches of both channels. For both sites, access issues dictate that helicopter placement be the preferred method for importing wood into these low gradient and unconstrained reaches.

**Benefit to Salmon:** Deep Creek and East Twin River provides spawning and rearing habitat for coho, steelhead, chum and cutthroat trout. Chronic deficiencies in large wood have been identified for streams throughout WRIA 19 including the East Twin River and Deep Creek (Haggerty 2012). Large wood is necessary to offset the lack of wood currently being contributed by riparian forests and to promote habitat forming processes in stream, floodplain and riparian habitats. Restoration of riparian forests will provide future sources of large woody debris to support habitat forming processes in those watersheds. However, until those forests have reached their desired future potential, it will be necessary to augment channels with added LWD. LWD positively affects habitat favored by salmon by slowing stream velocities and by increasing channel roughness. This builds habitat complexity and diversity and results in higher pool frequencies, better floodplain connectivity, higher diversity of habitat types (alcoves, backwaters, and side-channels), and well sorted, stable gravel deposits for spawning. This project builds on previous efforts to achieve watershed scale restoration. Additive LWD restoration supports multiple habitat forming processes in channel as well as in floodplain and riparian habitats.

**Recovery Plan Objectives:** There are currently no listed species of salmon in WRIA 19 (and only 1 on the entire Washington Coast). A recovery plan for WRIA 19 has been drafted (Haggerty 2012) and it generally recognizes that WRIA 19 salmon populations have declined to well below their historic potential. The chum salmon population of Deep Creek has declined from an escapement of over 2,000 fish to only a few individuals in less than thirty years. Habitat conditions are thought to be a major cause of the decline of salmon populations throughout WRIA 19 and especially prevalent is the chronic loss of large wood over time (Haggerty 2012). A restoration plan for Deep Creek and East Twin River has been prepared (LEKT 2000) and includes the following elements: 1) reduction in human caused rates of land sliding/mass wasting, 2) restoration of late successional riparian forests, 3) additions of large wood throughout the channel network, and 4) long term monitoring to assess results and refine treatments. Restoration goals are being synchronized with improvements in riparian buffers through implementation of the Forest and Fish Agreement on private lands, commitments through the WDNR Habitat Conservation Plan (HCP) on state land, and for federal lands the Presidents Forest Plan. However, recovery of

	<p>riparian forest conditions is a long, multi-decadal process that is really just underway.</p> <p><b>Recovery of Ecosystem Function:</b> This project restores ecosystem function by restoring in-channel fish habitat and improving floodplain connectivity. The primary land uses in Deep Creek and East Twin River are protection of natural processes (Olympic National Forest), industrial forestry (state and private timberlands) and rural residences (few). Ecosystem functions are near complete protection within ONF and partial protection on state and private forestlands through the Forests and Fish Agreement (FFA). Rural residency provides the lowest level of protection and relies on county zoning and development requirements. However, there are only a few residences (ETwin only) and located are well away from the river and generally respect the natural values it offers. Indeed many are thrilled by the return of salmon and look forward to their arrival in future years.</p> <p><b>Spatial &amp; Temporal Influence:</b> This project is the culmination of watershed scale restoration in two medium sized watersheds. Efforts to restore Deep Creek date to 1998 and include major road abandonment projects, cessation of logging on federal lands, creation of off-channel habitats, riparian revegetation and the addition of thousands of pieces of large wood to the channel. Restoration in East Twin dates to 2002 and includes similar elements, albeit at a lower frequency (due to its smaller size).</p> <p><b>Timing and Need:</b> Per the direction of the interagency science team this restoration proposal is considered the last in the SJF that will be undertaken. The current plan is to complete LWD restoration in 2015 and commence with post-project monitoring under the auspices of the IMW program. There is some urgency to complete restoration actions in the SJF region as other IMW's are well behind in terms of implementing watershed scale restoration.</p> <p><b>Range of Cost Estimates:</b> \$350,000-500,000.</p> <p><b>Watershed Priority:</b> This project will occur on Deep Creek and the East Twin River. Deep Creek has a normalized score of 2.2 and is the 17<sup>th</sup> priority in the NOPL Region. East Twin River also has a normalized score of 2.2 and is the 18<sup>th</sup> priority in the NOPL Region.</p> <p><b>Miscellaneous:</b> This project utilizes techniques used and tested in multiple north Olympic Peninsula watersheds over the last 15 years. Restoration is additive and linked to long term monitoring efforts. Costs are based on estimates derived from similar projects conducted in the last 5 years. Long term monitoring of the overall project and its effects on fish populations is being conducted through an interagency science team chaired by the WDOE and including representatives from Tribes, USFWS, WDFW, NOAA and Weyerhaeuser.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/10965">http://waconnect.paladinpanoramic.com/Project/180/10965</a></p>	
09011	<p><b>Nearshore Restoration Strategy for Twin Rivers</b></p> <p><b>Project Description:</b>  The project consists of both a land acquisition and restoration elements. The acquisition</p>	CWI, WDFW, WDNR, & LEKT

includes purchase of all or part of the LaFarge mine site, with particular focus on riparian corridor of both east and west Twins Rivers. The restoration includes 1) Reconnecting the historic Twins estuary of the two rivers and the connection of the estuary to the Strait shoreline, and 2) Removing rock and sheet pile surrounding a 3 acre pier (also called a 'mole') located entirely on WDNR leased tidelands, and cutting a channel along the base of the pier, thereby allowing the native material to feed to the nearshore naturally. Rock and sheet pile is to be disposed of upland. The 3 acre pier was constructed within Ordinary High Water Mark in the mid 1960's. The pier consists of steel and creosote treated sheet pile crib filled with native material from the adjacent bluff. The structure, built adjacent to a clay pit mine, was used as a landing for loading barges. The pier is approximately 465 feet long, 258 feet wide, and 16 feet high, which totals to 62,600 cy of fill. There is also an additional 13,000 cy of rip rap which is 2-3 man rock placed around much of the perimeter of the structure in a band approximately 25 yards wide. Assuming sheet/treated pile around the entire pier there may be approximately 1300 linear feet of shoreline with sheet and treated creosote pile.

**Limiting Factors, Benefit to Salmon, Project Success, Recovery Plans Timing & Other Key Information:**

Collectively the Twin Rivers (WRIA 19) are important for a number of salmon stocks including coho, cutthroat, and steelhead (Roni et al 2008; Haggerty in prep). Chinook use is cited for the Twins (Kramer 1952) and juvenile Chinook are theorized to use the nearshore. The nearshore of the Twins, prized by locals for its high resources and recreation value, supports a number of critical habitats including kelp beds, eelgrass beds, and surf smelt spawning beaches (Shaffer et al. 2003; Penttilla 1999). The area is an important migratory corridor for juvenile trout (including both cutthroat and steelhead), salmon, and forage fish (Shaffer 2004 Shaffer et al 2008).

Shaffer and Ritchie (2008) concluded that there are several impacts to the estuarine habitat occur near the East and West Twin Rivers and recommended the following list of restoration and aquisition priorities: 1. Acquisition of nearshore private properties along the Twins shoreline; 2. Restoration of the Twins nearshore by removal of the 2.5 acre fill structure in the Twins nearshore should be completed as soon as possible; 3. Additional study to define the ecological function of the Twins nearshore for Coho and Chinook, including the role lower river an shoreline alterations combined with apparently naturally occurring macroalgae blooms, may play in defining fish use in the nearshore Twins is a priority; 4. That habitat and fish management revises provisions to better protect trout and salmon species in the nearshore during later summer, fall, and winter months.

Restoration priorities for the Twin Rivers Watersheds are listed as a Tier 2 in the North Olympic Lead Entity Group (NOPLE) strategy (Barkhuis 2004). Nearshore is listed as Tier 1. For the Twins, LWD, riparian habitat, fish passage blockages, and estuarine impacts are listed as top limiting factors (Barkhuis 2004). Subsequently, a number of large scale restoration projects have been completed or are underway on the Twins. Along the east Twin, citizens and local groups, in partnership with the Tribe, have built off channel habitat for coho. Over half of the two miles of private lands have been placed in a conservation easement. In the last two years, the Lower Elwha Klallam Tribe has constructed large LWD jams, and placed key pieces of LWD in inaccessible reaches of the East Twin River and Sadie Creek leading to the capture of large amounts of sorted gravels and the creation of complex rearing habitat.

The East Twin River is a study watershed (along with West Twin and Deep Creek) under the SRFB's Intensively Monitored Watershed (IMW) Program. The IMW program is designed to assess changes in fish production and ecosystem response from habitat restoration. An ongoing NOAA study of juvenile salmonid survival and movement rates offers a unique opportunity to monitor the effectiveness of habitat improvements.

Designing and permitting would take place in 2010, with construction in 2011, estimated cost have been done and are within the range for completion.

	<p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/12716">http://waconnect.paladinpanoramic.com/Project/180/12716</a></p>	
10080.1	<p><b>Lyre River Estuary Protection and Restoration</b></p> <p><b><u>Project Description:</u></b>  This project will ensure protection in perpetuity of an intact river system from the mountains to the shore, including a vital estuary and critical nearshore salmon migration corridor along the Strait of Juan de Fuca for ESA-listed Puget Sound Chinook and other salmon species. This project would do so by purchasing 280 acres in Phase I to protect the Lyre River estuary, marine shoreline, Nelson Creek, and associated wetlands. Phase I would also include removal of a house currently located within the floodplain and removal of a few creosoted logs.</p> <p>Besides the estuary and nearshore, the property contains a relatively undisturbed mature conifer forest and remnant pockets of old-growth trees, as well as three active eagle nesting trees along the shoreline. The significant and intact riparian area is important to salmon for food chain support, thermal cover, bank stabilization, large woody debris, and the water quality protection it provides. The bulk of the watershed is in public ownership and the river's headwaters are in Lake Crescent, which is part of Olympic National Park. Protection of this estuary will ensure that the entire watershed remains intact and will protect needed habitat now and in the future. Much of the property contains intact functioning salmonid habitat, but there are a number of restoration opportunities that would be pursued in future phases of this project including undoing the channelization of the lower river and adding large wood to further improve existing salmon habitat, as well as acquisition through fee simple or conservation easement of the remaining privately-owned parcels along the Lyre River and Nelson Creek.</p> <p><b><u>Why the Project is Needed (limiting factors to be addressed):</u></b>  In terms of this project's technical merit, hydrology and sediment are the key limiting factors for the Lyre. Acquisition of this property provides protection for both and the ability to lessen future negative impacts. The purchase of this property and subsequent removal of a house currently located within the floodplain will benefit the hydrologic functions of Nelson Creek and the Lyre River while providing additional spawning and rearing habitat. Protection of the riparian areas will benefit the river's temperature, sediment and wood issues. Lack of LWD and channelization in the lower mile are also limiting factors and future restoration phases will include undoing the channelization of the lower river and adding wood complexity to improve these limiting factors. Additionally, parcels targeted for this acquisition are threatened by development.</p> <p><b><u>Benefit to Salmon:</u></b>  The marine shorelines are a very important part of the salmon migration corridor along the Strait and west of the Elwha River. Estuarine habitat for ESA-listed salmon and other salmon species is limited in the Western Strait of Juan de Fuca to small pocket estuaries and intertidal areas associated with small, independent tributaries. Fish biologists and restoration practitioners' analysis of these areas indicate that the Lyre River delta is a critical link in this chain, being the only estuarine habitat between Crescent Bay and the Salt Creek Estuary located 5 miles to the east, the Twin Creeks estuary located 6 miles to the west. Additionally, this property is only about 12 miles west of the Elwha estuary, where removal of the last of two major dams blocking ESA-listed Puget Sound Chinook is underway. The Western Strait of Juan de Fuca is part of an important migratory corridor, and the Lyre estuary is one of the critical links, providing valuable estuarine habitat.</p> <p>ESA-listed Puget Sound Chinook Salmon and other ESA salmon and steelhead species benefit from this project since this is part of the Strait of Juan de Fuca migratory nearshore</p>	NOLT



being used by those fish. The Lyre River mouth is a critical link used for feeding and resting for salmon moving through the area. Chinook and Pink salmon use the Lyre River. Cutthroat trout use the Lyre and Nelson Creek. It is also likely that Bull Trout may feed at the mouth and use the lower reaches of the Lyre River as well. The Lyre also has one of the most abundant chum populations in the Strait. They are unique in their late winter run timing. The chum are heavily estuary-dependent, so healthy estuarine conditions are critical and warrant protection. The chum population suffered a precipitous decline in the late 90s. The Lyre also has a significant coho population and a wild steelhead winter run population.

**Which Salmon Recovery Plan Objectives does this Project Meet & How?**

The area is identified in the draft WRIA 19 Salmon Recovery Plan and is priority #10 on the nearshore prioritization of the Western Straits Conservation Plan because of its importance for salmon and steelhead productivity and survival. If this property were converted for timber harvest, residential or resort development, then this critical habitat could be lost, followed by a serious reduction in salmonid productivity and survival.

**How Project supports Restoration or Protection of Ecosystem Functions?**

This project protects high quality fish habitat. The Lyre River is a fairly healthy riparian river system with minimum human encroachment. The significant and intact riparian area is important for food chain support, woody debris, thermal cover, bank stabilization and the water quality protection it provides. The proposed property to be protected also includes bluff-backed beach, barrier beach, and estuary, all of which are the likely to be used for forage fish spawning. Additionally, these habitats create and provide nearshore rearing habitat for juvenile salmonids. The continuous kelp beds just offshore are used by juvenile salmon for early marine rearing. The bluffs are a source of sediment, and transport is uninterrupted along this parcel and is part of the Whiskey Creek drift cell. There is documented surf smelt spawning in that drift cell, with this property providing the sediment for that forage fish spawning habitat.

This project also restores formerly productive habitat. The purchase of this property and subsequent removal of a house currently located within the floodplain will benefit the hydrologic functions of Nelson Creek and the Lyre River while providing additional spawning and rearing habitat. Protection of the riparian areas will benefit the river's temperature, sediment and wood issues. Lack of LWD and channelization in the lower mile are also limiting factors and future restoration phases will include undoing the channelization of the lower river and adding wood complexity to improve these limiting factors.

**Address the project's spatial-temporal scale of influence:**

This project is important for the watershed. The Lyre River is one of the few remaining rivers on the Olympic Peninsula with potential to maintain a protected corridor and intact ecosystem that would secure connectivity from the Olympic Mountains to the salt water shoreline of the Strait of Juan de Fuca. The Lyre River drainage consists of approximately 85% public lands, with the bulk of the watershed in public ownership. The Lyre River originates in Lake Crescent, crown jewel of Olympic National Park which is protected in perpetuity. The deep water Lake Crescent, whose water feeds the Lyre, is also the only place in the world where the famed *Beardsley crescent* can be found. Protection of this property, which includes the river mouth, will ensure that the watershed remains intact and will continue to provide needed habitat for salmon and other key species.

**Timing Needs & Sequencing Requirements (project readiness):**

In terms of readiness, the project can easily begin. This property is on the market and it is an opportune time for such purchases due to depressed land costs. Funding is the only known barrier to advancing this needed protection action. Following submittal of a pre-app, it was approved for submittal of a complete application for 2013 Estuary & Salmon Restoration Program (ESRP) funding. This project is also on the Puget Sound Partnership's 2012 PSAR Large Capital Project List, ranking #8 out of 30 projects in the Puget Sound. The

	<p>landowner needs to sell this property. If funding is not gained for this project soon, this significant shoreline property could be sold for timber harvest or development of large waterfront homes or resort area. There has already been additional housing development west of this property along the nearshore.</p> <p><b><u>Range of Estimated Cost:</u></b> \$4,000,000 for Phase I. If ESRP funds the full request, \$2.7 million, and the landowners provide \$575,000 donated land value, we would be requesting \$707,000 from PSAR.</p> <p><b><u>Watershed priority &amp; watershed area or which WRIA Nearshore project is located in:</u></b> WRIA 19 Nearshore; Lyre River watershed</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://hwsconnect.ekosystem.us/Project/180/10216">http://hwsconnect.ekosystem.us/Project/180/10216</a></p>	
09012	<p><b>Nelson Creek Fish Passage Barrier Removal Project</b> (Barrier Removal from the Route of the Former Lyre River Railroad Grade that is to be the Future Route of the Olympic Discovery Trail)</p> <p><b><u>Project Description:</u></b> This project is focused on removing fish passage barriers found on the main stem and a side stem of Nelson Creek which flows into the Lyre River. The fish passage barriers are two undersized culverts found at Nelson Creek ravine crossings along the route of the former Lyre River Railroad Grade. The Lyre River Railroad Grade has been planned for the last decade to be the permanent route of the regional multi-user trail system known as the Olympic Discovery Trail. This project would replace the existing undersized culverts with 6' to 8' culverts suitable for fish passage and restore the railroad grade fills for use as a part of the region serving multi-user trail system known as the Olympic Discovery Trail</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> Fish passage is blocked by undersized and deteriorated culverts that block passage to a half mile long reach of the main stem of Nelson Creek and also along a side stem of Nelson Creek that extends for another half mile. In total, one mile of stream could be opened to fish passage by this improvement project. (WRIA 19 LFA)</p> <p><b><u>Benefit to Salmon:</u></b> Salmon are entirely blocked from the upper reaches of Nelson Creek by the fish passage barrier culverts that would be replaced under this project. Additional valuable habitat and stream areas would open up to spawning at project completion.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> Nelson Creek is in WRIA 19 where the watershed plan is under development. Restoring stream miles to fish passage and removing fish passage barriers is a feature of every Salmon Recovery Plan/Watershed Analysis and Plan Objective and will be a part of the WRIA 19 plan when it is completed.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Nelson Creek was not blocked for fish passage prior to construction of the railroad grade. When this restoration project is complete, the new culverts will be fish friendly allowing unhindered passage. New habitat and a much fuller range of ecosystem functions will occur in the uppermost regions of Nelson Creek. Coho stocks, steelhead, Chum and Cutthroat will benefit from this habitat restoration project.</p> <p><b><u>Certainty of Project Success:</u></b></p>	CC & WDNR



	<p>There is 100% certainty of success that the fish passage barriers will be removed and that fish friendly culverts will allow fish passage to occur upon project completion.</p> <p><b><u>Address Timing Needs &amp; Sequencing Requirements:</u></b> Design and permitting will take place in 2010. Construction will occur in 2010. This work would occur prior to the railroad grade be converted to a regional trail facility.</p> <p><b><u>Cost Appropriateness:</u></b> Project costs are based on County experience with very similar salmon enhancement projects in the Joyce area.</p> <p><b><u>Other Key Information:</u></b> The County and DNR will be working together on this project to provide match funding. It is anticipated that DNR involvement in match may be to the level of fill and culvert removal for the culvert locations and assisting in reforestation of the area. County funding will cover a portion of the culvert replacement and fill replacement costs. SRFB funding is sought to provide a portion of the culvert replacement costs.</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/12718">http://waconnect.paladinpanoramic.com/Project/180/12718</a></p>	
09013	<p><b>Salt Creek Habitat Protection</b></p> <p><b><u>Description:</u></b> The goal of this project is to permanently protect, by means of conservation easements, the best existing functional spawning and rearing habitat for Coho salmon in the Salt Creek Watershed. Salt Creek historically had relatively high productivity and supported significant runs of Coho, steelhead and cutthroat as well as Chum and Chinook. Specific properties have already been identified in Appendix 1 of <i>Salt Creek Watershed: An Assessment of Habitat Conditions, Fish Populations and Opportunities for Restoration</i>, a report prepared by Mike McHenry and Randall McCoy of the Lower Elwha Klallam Tribe Fisheries. The Assessment identifies conversion as the greatest risk to salmon. Conversion is imminent in the Salt Creek watershed unless habitat preservation is addressed. The Land Trust will contact landowners identified in the Assessment as well as landowners with property adjacent to the estuary and Crescent Bay to discuss conservation easements. The Land Trust will negotiate with willing landowners to acquire development rights by purchase and/or donation. Habitat protection in perpetuity will ensure that the best existing habitat for salmon is not converted to development. Project partners include landowners who donate their development rights to the project and Clallam County. Additional partners include LEKT and WDFW as technical advisors.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> According to the Assessment, winter steelhead have declined to critically low levels, chum are teetering on the verge of extirpation, and coho are static or declining nor are showing signs of recovery. Increasing development is an ecosystem stressor and is partially responsible for the chronic lack of large woody debris, inadequate riparian forest conditions and low flow noted in the Assessment as limiting factors. Restricting development and other activities that are detrimental to salmon habitat through conservation easements will allow forests to regenerate that will create shady conditions for Salt Creek. Mature forest is also a source for large woody debris recruitment.</p> <p><b><u>Benefits to Salmon:</u></b> The best existing habitat for salmon would be preserved in perpetuity.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this project meet and how?</u></b> Salt Creek Watershed: An Assessment of Habitat Conditions, Fish Populations and</p>	NOLT

	<p>Opportunities for Restoration. Michael McHenry and Randall McCoy, Lower Elwha Klallam Tribe &amp; Michael Haggerty, fisheries/Hydrology Consultant. 2004.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Protection of existing functional habitat through acquisition and conservation easement is listed in the Assessment as a major action to protect and improve ecosystem function. It is not certain whether future zoning will protect ecosystem functions that are still intact. Conservation easements and acquisition by a local Land Trust are the only way to guarantee habitat protection in perpetuity.</p> <p><b><u>Certainty of Project Success:</u></b> The Assessment noted that an overwhelming majority of landowners in Salt Creek were supportive of salmon and salmon habitat. Through outreach the Land Trust can present conservation options to landowners that protect salmon habitat and the rural character of the area that is treasured by the community.</p> <p><b><u>Address Timing Needs and Sequencing Requirements:</u></b> Property ownership is rapidly changing and there are more opportunities to negotiate conservation easements and fee simple acquisition. The first year will require outreach with landowners with land adjacent to or encompassing Salt Creek's floodplain and estuary. The second and third year will involve negotiations to purchase development rights and land fee simple. We will prioritize habitat in the coastal/estuarine area first then work upstream prioritizing the best existing habitat and protecting those properties first.</p> <p><b><u>Cost Appropriateness:</u></b> Land values are low making now an opportune time to acquire the best existing habitat for salmon.</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/6664">http://waconnect.paladinpanoramic.com/Project/180/6664</a></p>	
09014	<p><b>Salt Creek Salt Marsh Reconnection</b></p> <p><b><u>Description:</u></b> <b><u>Project Goal:</u></b> To restore unobstructed tidal inundation and associated ecological processes to 22.5 acres of estuary and associated salt marsh currently isolated by a private dike road. <b><u>Project Objectives</u></b> are: 1) Provide fish access to 22.5 acres of obstructed salt marsh. 2) Improve tidal channel connectivity and decrease isolated pools in the marsh. 3) Improve salt marsh vegetation communities. 4) Maintain access to private property. 5) Do no harm to adjacent infrastructure.</p> <p>Currently the Salt Creek estuary is bisected by a 1,000' long earthen dike which was installed in the early 1920's. Within the 10' high, 50' wide dike, there are two failed wooden culverts which restrict tidal flows and fish access to over 22.5 acres of historically highly functioning salt marsh. The Salt Creek estuary is one of the only salt marsh complexes in the WRIA 19 watershed and is surpassed in scale only by the Pysht River estuary complex (Todd et al. 2006). The community is prepared for NOSC to take the lead. A critical part of the project is to assess landowner opportunities and constraints for several alternatives likely to include installation of a bridge or bridges, installation of a causeway, and road re-location. The project will include hydrologic, archaeology, geotechnical &amp; topographical studies to inform development of conceptual then final designs. The multiple community members are all key stakeholders and will be integral to selecting a project design that maximizes ecological function in a way that works for the community.</p> <p><b><u>Why the project is needed (limiting factors to be addressed):</u></b> The project addresses the following limiting factor: Loss of salt marsh habitat due to the</p>	NOSC

	<p>road bisecting the estuary. The road limits hydrologic connectivity including tidal and fresh water exchange, limits fish utilization and has been observed to lead to fish stranding on outgoing tides. (Haggarty 2009 Draft WRIA 19 Salmon Recovery Plan).</p> <p><b><u>Benefit to Salmon, how project addresses stock status &amp; trends and which ESA listed stock or non-listed stocks the project addresses:</u></b></p> <p><u>Stock Status and Trends:</u> The project addresses stock status and trends by increasing access to important nearshore habitat for numerous natal and non-natal salmonid populations in an effort to increase productivity for stocks using the system.</p> <p><u>Listed Stocks:</u> Non-natal, migrating ESA listed Puget Sound Chinook juveniles have been documented using the Salt Creek Salt Marsh by A. Schaffer. The Salt Creek estuary is one of the first non-natal estuarine refugia for Puget Sound chinook leaving the currently designated ESU.</p> <p><u>Other Stocks:</u> Salt Creek supports stocks of coho, winter steelhead, cutthroat and chum.</p> <p><b><u>Which Salmon Recovery Plan Objectives does this project meet and how?</u></b></p> <p>The project is identified in the North Olympic Peninsula Lead Entity (NOPLE) three-year work plan (#15) and the Draft WRIA 19 Salmon Restoration Plan (Haggerty, 2010) and the Salmon and Steelhead LFA for the area (Smith, 2000). The WRIA 19 Salmon Restoration Plan provides a nice summary: "The road alters estuarine hydrology and vegetation patterns in the west side of the estuary. Tidal exchange to the west marsh is greatly diminished by drainage of water upstream of the road through drainage ditches, and the presence of two under-sized decaying wooden culverts placed under the road... Juvenile fish, including salmon, have been observed "stranded" above this road during the spring, the road accommodates very limited fish passage." The NOPLE 2005 Strategy identifies the project as important to "Restore the connection between the Salt Marsh and the tidally influenced reaches of Salt Creek that were disconnected by a dike."</p> <p><b><u>How does the project support Restoration or Protection of Ecosystem Functions?</u></b></p> <p>The project restores formerly productive habitat through restoring hydrologic function. The project design will be sized to create a self-sustaining process whereby tidal and flood waters maintain habitat complexity and tidal channels.</p> <p><b><u>Spatial-temporal scale of influence:</u></b></p> <p>The project will restore 22.5 acres of salt marsh habitat. This is 1/3 of the existing salt marsh in the system. This action will improve feeding &amp; refuge for natal salmonids as well as for non-natal salmonids traveling from Puget Sound, and will be a self-sustaining design with a positive effect into the foreseeable future.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements - Project readiness:</u></b></p> <p>Since 1995, landowners, nonprofits, local tribes and governments have all tried varied avenues to address the dike road. No one has met with success yet, but significant progress has been made in this time. The informed community, partners, and project momentum that have resulted from this process makes the dike road and associated salt marsh ripe for restoration. Final consensus building in the community informed by hydrologic analysis, archaeological survey, geotechnical investigations, and engineered conceptual designs will lead to final engineering design and cost estimates, construction permitting and baseline monitoring on the project.</p> <p><b><u>Range of estimated cost:</u></b></p> <p>\$600,000-2,000,000</p> <p><b><u>Watershed priority &amp; watershed area:</u></b></p> <p>The project is located in WRIA 19 and the Salt Creek estuary is technically part of the nearshore. PSNERP defines nearshore as 'the area from the deepest part of the photic zone</p>	
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	<p>(approximately -20m below MLLW) landward to the top of shoreline bluffs, or in estuaries upstream to the head of tidal influence.” NOPLE watershed priority for nearshore projects is third on the ranked list of watershed scores in the 2009 update.</p> <p><b>Other Key information:</b> This project was brought forward for NOPLE funding in the 2009 grant round by the Coastal Watershed Institute. Significant strides were made in the development of the project at that time, and as a result the community is ready to move forward with NOSC as the project sponsor. NOSC believes, after multiple meetings with some of the community members, that the community understands the need to explore a range of restoration possibilities, including road re-location. An insurance stipulation by the community has held up past efforts to pursue a project. Through several meetings attended by community members, it has become evident that the majority of folks are ready to move past this stipulation and it is not likely to be a barrier to the project any longer.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/15292">http://waconnect.paladinpanoramic.com/Project/180/15292</a></p>	
09015	<p><b>Salt Creek Final Fish Passage Corrections Project</b></p> <p><b>Description &amp; Purpose:</b> Watershed analysis completed for Salt Creek in 2005 has identified the correction of human caused barriers as the highest priority for restoration in Salt Creek. Most of the barriers have been caused by culverts at road crossings. To date, significant progress has been made correcting these barriers. Of the 28 culvert barriers to fish passages identified in the watershed analysis, 15 have been or will be corrected by 2011. This proposal would treat the remaining culvert barriers with the goal of correcting all fish passage barriers in the watershed by 2015. Most of the remaining barriers are located on tributary I streams with undersized culverts on a mix of ownerships including privately owned roads, county roads and highway 112.</p> <p><b>Benefits to Salmon:</b> Salt Creek supports a productive coho salmon population as well as populations of steelhead, cutthroat and a remnant chum salmon population. Correction of human caused barriers allows access to historic habitats in Salt Creek. Following their correction with structures that meet state fish passage criteria natural recolonization would be the mechanism for fish to restore access.</p> <p><b>Restoration of Ecosystem Function:</b> Restoring access to historically used habitats has been identified as the highest priority for restoring ecosystem function in Pacific Northwest watershed supporting anadromous salmonids (Roni et al. 2005). This goal has been adopted for Salt Creek at the watershed scale. Correction of all barriers in Salt Creek will allow anadromous fish to access a total of 50 miles of streams.</p> <p><b>Certainty/Timing/Success:</b> Replacement of culvert barriers with new crossing structures that meet WDFW fish passage criteria has a high probability of success. The culverts identified in this proposal block access to low gradient stream channels (&lt;4%). Correction of barriers in Salt Creek has made tremendous progress in the last 5 years and this project will continue those efforts. Note: Planning necessary to correct some barriers, particularly those owned by WDOT may require time outside of the three-year window.</p> <p><b>Partners:</b> Lower Elwha Klallam Tribe, Clallam County, Washington Department of Transportation</p> <p><b>Photos and Graphics are available for viewing at:</b></p>	LEKT, CCD & CC

	<a href="http://waconnect.paladinpanoramic.com/Project/180/5496">http://waconnect.paladinpanoramic.com/Project/180/5496</a>	
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09015.1	<p><b>Kreaman Creek, Trib. to Salt Creek</b></p> <p><b><u>Project Description:</u></b>  The Camp Hayden Road is the main access to Salt Creek Recreation Area along with other local residence down to the mouth of Salt Creek, which is access to Crescent Beach along with beach access to Strait of Juan de Fuca at Salt Creek Recreation Area. Camp Hayden Road was part of the originally construction of access to the recreation area to defend the Straits during World War II. This project will remove the existing 36" dia. concrete culvert structure on Kreaman Creek, Trib. to Salt Creek and replace it with a stream simulation culvert structure that would allow access to approximately 2.5 miles of global habitat that is available.</p> <p><b><u>Limiting Factors Addressed:</u></b>  This project will restore historic access above the concrete pipe that is a barrier because of low flow depth and velocity at the high fish passage design flow exceeds that maximum allowed by WAC 220-110-070 as the main problem (Salt Creek Watershed: An Assessment of Habitat Conditions, Fish Populations and Opportunities for Restoration 2004). This barrier has been recognized by local habitat biologist for limiting anadromous fish access to Kreaman Creek upper watershed.</p> <p><b><u>Benefits to Salmon:</u></b>  This project will support Salt Creek productive of Coho Salmon population as well as populations of steelhead, cutthroat and a remnant chum salmon population. Correction of this long standing barrier would allow access to approximately 1 mile of low gradient habitat above the road crossing as well as allow fluvial transport of sediment and large wood in a 87% mixed riparian creek conditions. Correction of human caused barriers is a fundamental concept in salmon habitat restoration. In review of salmon restoration strategies in Pacific Northwest streams, Roni et al. (2006) considered these projects the highest priority for systematic watershed restoration.</p> <p><b><u>Recovery Plan Objectives:</u></b>  The Salt Creek drainage is not currently included in any federally listed fish stocks in Washington State. There is no formal recovery plan for the Kreaman Creek, Trib. to Salt Creek per se. However, several Salt Creek stocks are performing below their potential and are considered stocks of concern in which Kreaman Creek is part of.</p> <p><b><u>Restoration or Protection of Ecosystem Function:</u></b>  This project restores ecosystem function by restoring fish passage to historically accessible habitats in the upper reaches of Kreaman Creek Watershed. Kreaman Creek meanders through an older second-growth forest with many associated wetlands. The creek has good pool structure, moderate levels of LWD, and spawning gravels. At approximately river mile 1.0, the stream gradient increases to 1-2%, though habitat conditions remain similar.</p> <p><b><u>Spatial/Temporal Influence:</u></b>  This project represents a portion of Clallam County &amp; LEKT's ongoing efforts to correct habitat problems generated by this location, restore the Slat Creek ecosystem and it's historically productive of salmon populations. Additionally, WADNR, WSDOT have corrected numerous other culvert barriers in the Salt Creek watershed.</p> <p><b><u>Certainty/Timing/Success:</u></b>  Replacement of Kreaman Creek culvert barrier with new crossing structure that meets WDFW fish passage criteria has a high probability of success. The site identified in this proposal blocks access to low gradient stream channel (&lt;1%) in an unconfined valley. The channel is stable and well vegetated with associated wetlands. Correction of barriers in Salt Creek drainage which Kreaman Creek is part of has made tremendous progress in the last 8 years and this project will continue those effects.</p>	LEKT
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	<p><b>Project Readiness:</b> 60% Engineering design has been completed by WDFW and given to Clallam County road department. Additional engineering has been done to lay out right of way details and to lay the ground work for permitting along with trying all field work so it can be found later in time easily. Final permitting could begin following completion of the final engineering design by Clallam County if funded, this project could be implemented and all construction completed within 2 years of the award.</p> <p><b>Cost:</b> \$525,000</p> <p><b>Watershed Priority:</b> The Salt Creek watershed has a normalized score of 2.8, and is ranked 3<sup>rd</sup> as priority watershed.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/19257">http://waconnect.paladinpanoramic.com/Project/180/19257</a></p>	
14105	<p><b>Elwha River Push-up Dike Removal Project</b></p> <p><b>Project Description:</b> Removal of two hydroelectric dams on the Elwha River was initiated in 2011 as authorized by the Elwha River Ecosystem and Fisheries Act (PL102-495). At this time Elwha Dam has been completely removed and only 50' of Glines Canyon Dam remains. Complementary to this large scale ecosystem restoration project, efforts are being made by LEKT to restore floodplain habitat conditions in the lower Elwha River below River Mile 3.5. These efforts include the removal of older flood control dikes, reforestation, control of exotic plants, barrier corrections and additions of large wood as engineered logjams. This proposal identifies a legacy push up dike from a 1950's channelization effort by private citizens at that time. The ~2000' long dike is located on the eastern river floodplain between River mile 2.4-3.0 on lands owned by the Lower Elwha Klallam Tribe. The structure blocks access into what was once the mainstem of the Elwha River. We propose to remove that structure and establish the pre-impact topography of the site. This project would be complementary to efforts by LEKT to encourage lateral floodplain development using ELJ's in the project reach. This dike removal would be the fourth such project completed in the lower river.</p> <p><b>Limiting Factors Addressed:</b> This project will restore habitat for salmonids by affecting geomorphology in a large floodplain river at the reach scale. Removal of relict flood control efforts will restore natural habitat forming processes to this half mile reach of the Elwha floodplain. The Elwha from a geomorphological standpoint is considered to be an anastomosing or forested island stream. Large wood and trees provide roughness that promotes a multi-channel form. Forested islands by definition have mature trees that influence river morphology and habitat. These braids provide diverse spawning and rearing habitats for anadromous and resident fish. Removal of structures that retard lateral connectivity allows the river to reconnect with its historic floodplain. Such lateral connections promote overflow and side-channel development, particularly in areas occupied by large trees. This area of the floodplain is managed by the for river ecology values and has not been harvested in many decades.</p> <p><b>Benefits to Salmon:</b> This project will restore habitat and benefit Chinook as well as coho, steelhead, chum, pinks, bulltrout, resident rainbow trout and cutthroat trout. Dam removal will restore natural habitat forming processes (sediment and wood transport/restoration of natural flow regimes) in the lower river and contribute to recovering health of main-stem and estuarine areas and the nearshore migration corridor. An analysis of historic aerial photographs clearly depicts the loss of habitat diversity in the Lower River and estuary</p>	Lower Elwha Klallam Tribe

(Draut et al. 2009) consistent with river channelization and dam effects. Over time the lower river has lost large deposits of sediment (fewer islands and bars), has much lower diversity of channels, and less diversity of vegetation (age and species). These changes are attributed to the cumulative effects of dam construction which truncated sediment and wood sources and channelization. Dam removal has reversed these impacts in terms of dramatically increasing sediment supply, however historic dike construction still prevents connectivity in some areas of the Elwha floodplain.

**Recovery Plan Objectives:**

Elwha chinook are federally listed and part of the Puget Sound ESU. Dam removal is keystone for recovery of the ESU and arguable the single largest action planned in the near future. Elwha steelhead are also federally listed and part of the Puget Sound steelhead ESU, however a recovery plan has not been prepared to date for this species. However, implementation of the dam removal effort will likely be a cornerstone. Puget Sound bull trout are also a federally listed fish stocks in Washington State and the Elwha River is a core population area. Puget Sound coho, while not currently listed are a species of concern, and the Elwha population is currently supported almost entirely by hatchery production. Chum and pink populations in the Elwha are considered chronically depressed and have escapements less than 1000 and 200 adults per year, respectively. Recovery of fish resources is guided by the Elwha Fisheries Restoration Plan (Ward et al. 2008). In the habitat restoration section (chapter 8) removal of unnecessary flood control structures in the lower river is encouraged to restore habitat forming processes.

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by restoring fish habitat, improving riparian zones, and re-connecting floodplain in the lower reaches of the Elwha River. This project restores ecosystem function by accelerating the recovery of floodplain habitats that have been altered by dam construction and channelization. Ecosystem function is also permanently guaranteed within this area because the floodplain forest of the reservation is protected from development of any kind.

**Spatial/Temporal Influence:**

This project represents a portion of LEKT's ongoing efforts to restore the Elwha River ecosystem and its historically productive salmon populations. Floodplain restoration efforts in the lower river were initiated in 1995 and have scaled up progressively in scale and scope. In 2009, the Tribe received one of 50 NOAA habitat grants awarded nationwide under the Stimulus Act. This has allowed the Tribe to greatly advance a portion of its lower river restoration goals. While simultaneously pursuing implementation of the Elwha Act (Dam Removal), the tribe has actively pursued floodplain restoration in the lower river, development of reservoir revegetation plans, conservation of salmon genetics and ecosystem scale monitoring of the overall Elwha restoration effort.

**Project Readiness:**

This project is being systematically sequenced with ELJ installations, other dike removal and revegetation efforts on the lower River. The reach between river mile 1.5-2.5 has been completed and now has 33 ELJ's more than have constructed in any large river in Washington. This project is proposed to initiate in 2015-2016 and would result in an additional 10 ELJ's. The Tribe is in the process of updating its programmatic permits from the federal agencies to reflect the expansion of restoration efforts. It is anticipated that the Tribe will have all applicable permits prior to applying for funding for this project.

**Cost:** \$650,000

**Watershed Priority:**

Elwha River has a normalized score of 5.00, and is ranked 1<sup>st</sup> as priority watershed.

**Miscellaneous:**

The Elwha River has the largest productive potential of any river in the NOPLEG planning area and its productivity is intricately linked to the reestablishment of its forested floodplain. The most productive areas are located in unconstrained river valleys that have anastomosing or braided island morphology. In these areas forest features can attain sizes sufficient to form stable hard points within the floodplain. The interaction of river flows with these surfaces creates boundary conditions which promote a multi-thread channel. Multi thread channels may include surface-water, ground-water or combinations of the two that support diverse life histories of salmon.



	<p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/19258">http://waconnect.paladinpanoramic.com/Project/180/19258</a></p>	
14106	<p><b>Elwha Acquisition and Restoration Project</b></p> <p><b><u>Project Description:</u></b>  This is a multi-phase project. With this project, the Land Trust and the Lower Elwha Klallam Tribe will work to conserve priority parcels in the Elwha River, Little River and Indian Creek watersheds through conservation easements or fee simple acquisition, and restoration may also be pursued. Projects could be implemented as early as 2015. Phases will be guided by planning work being completed in 2014.</p> <p>By the end of 2014, North Olympic Land Trust and the Lower Elwha Klallam Tribe will have a prioritized individual parcel plan for the Elwha River, Little River and Indian Creek watersheds. The plan will identify properties that are most important to restore and maintain physical processes that form habitat. A geomorphic approach will be combined with landowner interviews to identify the most important parcels for long-term conservation. This Project will implement that plan.</p> <p><b><u>Why Project is Needed:</u></b>  Efforts to restore the Elwha watershed have necessarily centered around dam removal. While 83% of the Elwha watershed is protected inside Olympic National Park, critical floodplain areas and two large tributaries (Indian Creek and Little River) are in private ownership. The project partners believe that long-term conservation strategies for the Elwha River can be best addressed by protecting the best existing salmon habitat and ecosystem function while identifying and treating limiting factors on private land. Limiting factors include habitat degradation and loss, floodplain modification, channel conditions, riparian conditions, water quality, and biological processes (Habitat Limiting Factors for WRIA 18, p. 154-161)</p> <p><b><u>Benefits to Salmon:</u></b>  This project will implement a road map to protect and restore habitat for ESA listed species in the Elwha River, including Chinook, Steelhead and Bulltrout. Non-listed stocks of fish will also benefit, including Coho, Chum, Sockeye, Pink and Cutthroat.</p> <p><b><u>Which Salmon Recovery Plan Objective does this project meet and how?:</u></b></p> <ul style="list-style-type: none"> <li>• According to the 2012 Three Year Workplan Review by the RITT, "Salmon recovery efforts in the Elwha are ... largely driven by the Elwha River Fish Restoration Plan (NOAA Technical Memorandum NMFS-NWFSC-90, 2008)"(p.10). An excerpt from the Elwha River Fish Restoration Plan follows: "Restoring and maintaining physical processes that form habitat in the mainstem Elwha River is the highest priority following dam removal"(p.75), and an additional excerpt is listed under Spatial-Temporal Scale of Influence.</li> <li>• This project will help achieve NOPL's goal to restore and maintain ecosystem function on the North Olympic Peninsula.</li> <li>• According to the Puget Sound Recovery Plan, "any further reduction in habitat quality and quantity will require more restoration to achieve recovery goals...Protection is needed at the individual habitat site as well as the ecosystem scale to ensure the processes that create habitat to continue to function"(p.353). This is also mentioned in the 2012 Three Year Workplan Review by the RITT, in the Elwha – Dungeness Watershed section: "Protection of existing well-functioning intact habitat is an essential component of salmon recovery in Puget Sound. Adequate protection of salmon habitat in Puget Sound continues to be an issue in all watersheds and continued degradation is noted throughout the</li> </ul>	NOLT

	<p>area”(p.6).</p> <ul style="list-style-type: none"> <li>Salmon and Steelhead Habitat Limiting Factors of Juan de Fuca – Recommendation: “Acquisition/conservation easement”( p.162).</li> </ul> <p><b><u>How the Project advances Salmon Habitat Restoration/Protection &amp; recovery of Ecosystem Functions:</u></b></p> <p>The 2012 Three Year Workplan Review by the RITT shows “significant improvement” in the Elwha-Dungeness watershed, partly due to the multitude of Elwha projects that have been funded through NOPLE that “advance habitat restoration... for salmon recovery in the context of the larger ecosystem restoration effort”(p.17). This would advance that effort further. Acquiring properties with important habitat, and restoring formerly productive habitat has been a common theme in salmon recovery. This project has the potential to result in significant ecological benefits by conserving the private parcels with the best existing productive salmon habitat and ecosystem function on a landscape and watershed scale, and restoring the best formerly productive habitat.</p> <p><b><u>Address the Projects Spatial-Temporal Scale of Influence:</u></b></p> <p>According to the Elwha River Fish Restoration Plan, “It is conceivable that a corridor from the ONP boundary on the south to the LEKT reservation could be targeted for protection in cooperation with an appropriate partnership between landowners and conservation organizations. If successfully implemented, such a corridor would link floodplain and estuary habitats in the lower river with pristine habitats within ONP. The Elwha River could represent one of the largest, largely intact watersheds in the conterminous United States”(p.80-81). Implementation of the planning work will make significant strides towards the largest intact watershed in the conterminous US.</p> <p><b><u>Timing Needs and Sequencing Requirements:</u></b></p> <p>Timing for planning for acquisition is ideal since the planning and project development work is currently funded through Puget Sound Acquisition and Restoration. Implementation could occur as early as 2015.</p> <p>Additionally, dam removal is nearing completion and is scheduled to be complete by 2014. Salmon runs have already begun to return to areas above the former Elwha Dam site, much of which is in Olympic National Park. The next logical step is conservation and restoration of floodplain habitats that are not in the Park, identified by the prioritization that will be completed around the same time as dam removal.</p> <p><b><u>Range of Estimated Cost &amp; Reasonableness of Cost and Budget:</u></b></p> <p>This project will be completed over many years. With each phase, there will likely be multiple properties proposed for acquisition and/or restoration, totaling around \$500,000 for each phase. This is a very rough estimate. Better estimates will not be know until the planning work is completed at the end of 2014, and projects are developed for grant funding. If a conservation easement or fee simple acquisition is part of the phase, transactional costs per property, <i>excluding</i> the purchase of a conservation easement or fee simple acquisition, are about \$20,000. Fee simple and easement values will be determined by an appraisal. Land values may be around \$10,000/acre fee simple, and 40%-70% of that for a conservation easement.</p> <p><b><u>Watershed Priority &amp; Watershed Area or which WRIA Nearshore project is located in:</u></b></p> <p>All watersheds within NOPLE have been ranked and the Elwha River in WRIA 18 is the highest ranked watershed with a normalized score of 5.0.</p> <p><b><u>Other Key Information: Especially any relation to previous or current projects:</u></b></p> <ul style="list-style-type: none"> <li>This capital project implements the planning and project development work completed with the non-capital project 09054, Elwha Conservation Planning, funded by the Puget Sound Acquisition and Restoration fund in 2014 and 2015.</li> <li>This project will lead to voluntary conservation easements and land acquisitions that</li> </ul>	
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	<p>protect the best existing habitat and ecosystem function for salmon and steelhead. North Olympic Land Trust has already protected over 130 acres in the Elwha watershed and an additional 120 in the Little River Valley.</p> <ul style="list-style-type: none"> <li>This project will also lead to restoration, lead by the The Lower Elwha Klallam Tribe. The LEKT has a proven track record for restoration and has implemented numerous projects in the Elwha watershed, including engineered log jams in the lower river, dike removals, and re-vegetation of the dewatered reservoirs at Lake Mills and Lake Aldwell.</li> </ul> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/19259">http://waconnect.paladinpanoramic.com/Project/180/19259</a></p>	
09016.2	<p><b>Elwha River ELJ Project</b></p> <p><b><u>Project Description:</u></b>  Removal of two hydroelectric dams on the Elwha River was initiated in 2011 as authorized by the Elwha River Ecosystem and Fisheries Act (PL102-495). Elwha Dam was completely removed in the spring of 2012 and Glines Canyon Dam is expected to be removed during 2014. Complementary to this large scale ecosystem restoration project, efforts are being made by LEKT to restore floodplain habitat conditions in the lower Elwha River below River Mile 3.5. These efforts include the removal of older flood control dikes, reforestation, control of exotic plants, barrier corrections and additions of large wood. Between 1999 and 2013, 45 engineered logjams (ELJ) have been constructed in the reach between river mile 1-5-3.0. This is one of the largest scale projects of its kind anywhere in the world. ELJ's have proven effective at influencing physical habitat with documented benefits to salmonids. This proposal is focused on the construction of up to 20 additional ELJ's in the reaches between river mile 0-1.5 and from RM 3.0-4.0, both areas that have been previously untreated.</p> <p><b><u>Limiting Factors Addressed:</u></b>  This project will restore habitat for salmonids by affecting geomorphology in a large floodplain river at the reach scale. Construction of ELJ's will accelerate the recovery of forested islands which support floodplain riparian communities along 2.5 miles of the Elwha River including its estuary. Forested islands by definition have mature trees that influence river morphology and habitat. The Elwha from a morphological standpoint is considered to be an anastomosing or island braided stream. Large wood and trees provide roughness that promotes a multi-channel form. These braids provide diverse spawning and rearing habitats for anadromous and resident fish. Construction of ELJ's causing both scour and depositional processes. Scour results in pool development which are the preferred rearing areas for juvenile fish and holding areas for adult fish. Sediment deposition occurs in the lee of ELJ structures and may provide substrate for spawning and/or island development. Acceleration of forest development via planting and exotic plant control will assist in the development of forests that ultimately stabilizes river form and provides a source for new woody debris.</p> <p><b><u>Benefits to Salmon:</u></b>  This project will restore habitat and benefit Chinook as well as coho, steelhead, chum, pinks, bulltrout, resident rainbow trout and cutthroat trout. Dam removal will restore natural habitat forming processes (sediment and wood transport/restoration of natural flow regimes) in the lower river and contribute to recovering health of main-stem and estuarine areas and the nearshore migration corridor. An analysis of historic aerial photographs clearly depicts the loss of habitat diversity in the lower river and particularly its estuary (Draut et al. 2009). Over time the lower river has lost large deposits of sediment (fewer islands and bars), has much lower diversity of channels, and less diversity of vegetation (age and species). These changes are attributed to the cumulative effects of</p>	LEKT

dam construction which truncated sediment and wood sources and channelization.

**Recovery Plan Objectives:**

Elwha chinook are federally listed and part of the Puget Sound ESU. Dam removal is keystone for recovery of the ESU and arguable the single largest action planned in the near future. Elwha steelhead are also federally listed and part of the Puget Sound steelhead ESU, however a recovery plan has not been prepared to date for this species. However implementation of the dam removal effort will likely be a cornerstone. Puget Sound bull trout are also a federally listed fish stocks in Washington State and the Elwha River is a core population area. Puget Sound coho, while not currently listed are a species of concern, and the Elwha population is currently supported almost entirely by hatchery production. Chum and pink populations in the Elwha are considered chronically depressed and have escapements less than 1000 and 200 adults per year, respectively. Recovery of fish resources is guided by the Elwha Fisheries Restoration Plan (Ward et al. 2008). In the habitat restoration section (chapter 8) installation of ELJ's in the lower river is encouraged to restore habitat features.

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by restoring fish habitat, improving riparian zones, and re-connecting floodplain in the lower reaches of the Elwha River including its estuary. This project restores ecosystem function by accelerating the recovery of floodplain habitats that have been altered by dam construction and channelization. Ecosystem function is also permanently guaranteed within this area because the floodplain forest of the reservation is protected from development of any kind.

**Spatial/Temporal Influence:**

This project represents a portion of LEKT's ongoing efforts to restore the Elwha River ecosystem and its historically productive salmon populations. Floodplain restoration efforts in the lower river were initiated in 1995 and have scaled up progressively in scale and scope. In 2009, the Tribe received one of 50 NOAA habitat grants awarded nationwide under the Stimulus Act. This has allowed the Tribe to greatly advance a portion of its lower river restoration goals. While simultaneously pursuing implementation of the Elwha Act (Dam Removal), the tribe has actively pursued floodplain restoration in the lower river, development of reservoir revegetation plans, conservation of salmon genetics and ecosystem scale monitoring of the overall Elwha restoration effort.

**Project Readiness:**

This project is being systematically sequenced with other ELJ installations on the lower River. ELJ construction in the reach between river mile 1.5-3.0 has been completed and now has 45 ELJ's. This project is proposed to initiate in 2014-2016 and would result in an additional 20 ELJ's. The Tribe is in the process of updating its programmatic permits from the federal agencies to reflect the expansion of restoration efforts. It is anticipated that the Tribe will have all applicable permits prior to applying for funding for this project.

**Cost:** \$1,200,000

**Watershed Priority:**

Elwha River has a normalized score of 5.00, and is ranked 1<sup>st</sup> as priority watershed.

**Miscellaneous:**

The Elwha River has the largest productive potential of any river in the NOPLEG planning area and its productivity is intricately linked to the reestablishment of its forested floodplain. The most productive areas are located in unconstrained river valleys that have anastomosing or braided island morphology. In these areas forest features can attain sizes sufficient to form stable hard points within the floodplain. The interaction of river flows with these surfaces creates boundary conditions which promote a multi-thread channel. Multi thread channels may include surface-water, ground-water or combinations of the two that support diverse life histories of salmon.

	<b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/10635">http://waconnect.paladinpanoramic.com/Project/180/10635</a>	
11087	<p><b>Elwha River Revegetation Project</b></p> <p><b><u>Project Description:</u></b>  This project will support revegetation efforts associated with implementation of the Elwha Dam removals scheduled to begin in 2011. Under that project two hydroelectric dams will be removed on the Elwha River at River Mile 4.9 and 13.5. Dam removal will drain and expose two reservoir surfaces that have accumulated ~21.5 million yd<sup>3</sup> of fine sediment. A revegetation plan (Chenoweth et al. 2010) has been developed for the two reservoir surfaces, however due to limitations in project funding, only about half the monies necessary to achieve the project goals are provided. This project will supplement those efforts by funding a 4 person tribal revegetation crew to plant native vegetation in Aldwell reservoir following its draining in 2011-12 and to conduct control of exotic vegetation in the project area. The crew will be funded for seasonal revegetation activities in the calendar years 2012-2014, directly following reservoir dewatering. The crews activities will be guided by the goals of the Elwha Revegetation Plan (Chenoweth et al. 2010) and directly supervised by ecologists at the LEKT and ONP.</p> <p><b><u>Limiting Factors Addressed:</u></b>  This project will accelerate the recovery of forested floodplain riparian communities along 6 miles of the Elwha River. The Elwha River restoration project is the largest single salmon restoration project in Puget Sound and revegetation of the reservoirs is arguable the second most important action following dam removal. The Elwha has the largest productive potential of any river in the NOPLEG planning area and its productivity is intricately linked to the reestablishment of its forested floodplain. Both reservoirs were located in unconstrained, alluvial reaches of the river dominated by forested islands. Forested islands by definition have mature trees that influence river morphology and habitat. The Elwha from a geomorphological standpoint is considered to be an anastomosing or island braided stream. Large wood and trees provide roughness that promotes a multi-channel form. These braids provide diverse spawning and rearing habitats for anadromous and resident fish. Acceleration of forest development via planting and exotic plant control will assist in the development of these critical habitats</p> <p><b><u>Benefits to Salmon:</u></b>  This project will improve spawning and rearing for multiple species of salmon including Puget Sound chinook, Puget Sound coho ESU, Puget Sound steelhead ESU, Puget Sound chum, Puget Sound pink salmon as well as coastal cutthroat and bull trout which have all been documented to use the lower river and are expected to recolonize habitats above the dams. A sockeye salmon population has been extirpated from the Elwha River but may redevelop from the landlocked kokanee population in Lake Sutherland or from strays from other watersheds.</p> <p><b><u>Recovery Plan Objectives:</u></b>  Elwha chinook are federally listed and part of the Puget Sound ESU. Dam removal is keystone for recovery of the ESU and arguable the single largest action planned in the near future. Elwha steelhead are also federally listed and part of the Puget Sound steelhead ESU, however a recovery plan has not been prepared to date for this species. However implementation of the dam removal effort will likely be a cornerstone. Puget Sound bull trout are also a federally listed fish stocks in Washington State and the Elwha River is a core population area. Puget Sound coho, while not currently listed are a species of concern, and the Elwha population is currently supported almost entirely by hatchery production. Chum and pink populations in the Elwha are considered chronically depressed and have escapements less than 1000 and 200 adults per year, respectively.</p> <p><b><u>Restoration or Protection of Ecosystem Function:</u></b></p>	LEKT/ ONP

	<p>This project restores ecosystem function by accelerating the recovery of floodplain forests that support habitat forming processes. Ecosystem function is also permanently guaranteed in the former reservoir areas: the Mills surface is located within Olympic National Park, while the Aldwell surface will be protected by conservation easements.</p> <p><b><u>Spatial/Temporal Influence:</u></b> The Elwha restoration project represents the largest dam removal project conducted to date. The 308 million dollar project has been in planning for the better part of two decades and is by far the largest restoration effort conducted on the Olympic Peninsula. This project is technically supported by the Elwha Revegetation Plan (Chenoweth et al. 2010), which guides revegetation effort and is consistent with the Elwha Fisheries Restoration Plan (Ward et al. 2008). The project ties to efforts by LEKT to conduct large scale restoration of floodplain habitats in the lower river. The Elwha project as a whole is considered a watershed wide restoration effort.</p> <p><b><u>Project Readiness:</u></b> This project is ready to go in the sense that the Tribe has a trained crew that has been working on exotic plant control and revegetation for the past six years and is operating under a cooperative revegetation plan with ONP on the Elwha.</p> <p><b><u>Cost:</u></b> Estimated cost is \$150,000-200,000</p> <p><b><u>Watershed Priority:</u></b> The Elwha River has a normalized score of 5.0, and is ranked as the highest priority in the NOPLEG planning area.</p> <p><b><u>Miscellaneous:</u></b> Invasion of exotic plants on the newly exposed reservoir surfaces are the biggest threat to efforts to revegetation plans. Noxious weed source areas are targeted in the project area and include species such as knotweeds, thistles, reed canary grass, blackberries, St. Johns Wort and Herb Robert.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/16272">http://waconnect.paladinpanoramic.com/Project/180/16272</a></p>	
09018	<p><b>Elwha River Estuary Restoration</b></p> <p><b><u>Project Description:</u></b> The Elwha estuary provides critical habitat to numerous federally listed species and is a component of the nationally recognized dam removal restoration project that will begin in 2012. The project is listed in the Elwha chapter of the regional recovery plan. This project will develop and implement a short and long term strategy for ecosystem restoration focusing on property acquisition and conservation easement. Project will build on short term fish passage restoration of west levee currently underway. The project directly benefits numerous federally listed ESA species including Puget Sound (Elwha) and numerous listed Columbia river Chinook, Steelhead, Bull trout, and Eulachon.</p> <p><b><u>HWS Link:</u></b> <a href="http://waconnect.paladinpanoramic.com/Project/180/19263">http://waconnect.paladinpanoramic.com/Project/180/19263</a></p>	LEKT, CC, WDFW & TNC
09019	<p><b>Elwha Culvert Replacement</b></p> <p><b><u>Project Description:</u></b> We propose to restore Bull trout and anadromous salmonid refugia in the Elwha Watershed (OLYM) through the replacement of undersized barrier culverts on Olympic Hot</p>	ONP & LEKT

	<p>Springs Road at Griff Creek, Madison Creek, and two other unnamed tributaries to the Elwha River. This project needs to proceed dam removal on the Elwha River (scheduled to begin in 2012) as culvert replacement will provide access to more than 1500 meters of high quality riverine habitat, providing critical, clear-water refuge habitat for bull trout and other fish species during the period of removal of the Glines Canyon and Elwha dams (when the mainstem of the river will carry large loads of sediment). Culvert replacement will also restore access to important tributary spawning and rearing habitat for all anadromous fish species following dam removal. The existing culverts will be replaced with culverts sized according to Washington State guidelines. The existing culverts are complete or partial barriers to upstream migration of Bull trout (a threatened species), Rainbow trout, Cutthroat trout, other resident fish species in the Elwha watershed, as well as anadromous salmonids (including listed Puget Sound Steelhead and Chinook) following removal of the dams. This project would be implemented through a partnership between the Elwha Tribe and Olympic National Park.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/5153">http://waconnect.paladinpanoramic.com/Project/180/5153</a></p>	
13102	<p><b>Little River LWD Project</b></p> <p><b>Project Description:</b>  The Little River is a large, low to moderate gradient tributary to the Elwha River. The Little River flows into the Elwha River at the delta of the former Aldwell Reservoir and was one of the first locations colonized by salmon following the removal of Elwha Dam in 2012. Although the headwaters of Little River are protected in Olympic National Park, a significant proportion of the drainage has been historically affected by riparian logging, intentional wood removal from the channel and road construction impacts. As a result, salmon habitat has degraded over time. Reductions in large woody debris have led to increased channel incision and subsequent reductions in pool frequency and complexity. Increases in sheer stress on the channel bed associated with reductions of in-channel wood have led to a coarsening of the channel bed and increase in substrate dominated by cobble and small boulder size particles (loss of spawning gravels). This project will restore spawning and rearing habitat in Little River for multiple salmonid species. Using a combination of ground based and heavy lift helicopter techniques, a total of 150 large conifer logs with root wads attached will be placed into pre-selected sites in the lower reaches (river miles 0-1.5 in each creek) creating habitat complexity for sheltering spawning adults and rearing juveniles.</p> <p><b>Limiting Factors Addressed:</b>  This project will restore/improve spawning habitat for returning adults and provide rearing habitat for juvenile salmonids. Placed LWD will directly reduce stream velocities and result in the creation of gravel beds with well sorted, smaller particle sizes favored by salmonids for spawning sites. LWD placement will also result in the creation of large deep pools with complex cover favored as rearing sites by several species of juvenile salmonids. Treatment reaches are focused between river mile 0.0 and 1.5 and include pool-riffle, forced pool-riffle and plane bed habitat types. These types of channels are generally unconstrained by their valleys, have gradients less than 3%, and typically respond favorably to the additions of large wood (Montgomery and Buffington 1993).</p> <p><b>Benefits to Salmon:</b>  This project will restore habitat and potentially benefit Chinook, coho, steelhead, chum and pink salmon as well as cutthroat and bull trout. Elwha Chinook, steelhead and bull trout are all listed as threatened under the Endangered Species Act (Puget Sound Chinook ESU, Puget Sound Steelhead ESU and Puget Sound and Coastal Bull Trout ESU, respectively). Prior to dam removal the Little River was only utilized by populations of rainbow, cutthroat and bull trout. Less than one year following the removal of Elwha Dam, the Little River has</p>	LEKT



received 3 new arrivals: spawning populations of coho, winter steelhead and Chinook salmon.

**Recovery Plan Objectives:**

The Elwha River is the site of one of the largest salmon restoration projects attempted to date in the Pacific Northwest. Its restoration is guided by the Elwha River Fish Restoration Plan (NOAA 2008) which has been generally incorporated into the Puget Sound Chinook Recovery Plan. Restoration of in stream habitat using LWD on the Little River is cited in the habitat restoration section (Chapter 5) of the plan (NOAA 2008).

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by restoring in-channel fish habitat and improving floodplain connectivity. The primary land uses in the Little River Watershed are natural processes (Olympic National Park), industrial forestry (state and private timberlands) and rural residences. Ecosystem functions are afforded complete protection within ONP and partial protection on state and private forestlands through the Forests and Fish Agreement (FFA). Rural residency provides the lowest level of protection and relies on county zoning and development requirements. However, most residences are well away from the river and generally respect the natural values it offers. Indeed many are thrilled by the return of salmon and look forward to their arrival in future years.

**Spatial/Temporal Influence:**

This project would improve habitat conditions within a 1.5 mile reach of the Little River, one of the larger tributaries to the Elwha River. This project is complementary to the overall restoration of the Elwha watershed including dam removals, revegetation of the former reservoirs and floodplain restoration efforts such as dike removals and ELJ insertions in the lower river. The Little Rivers proximity to Elwha dam make it very important in the overall restoration effort as it is one of the first areas available for recolonization by salmon. It is also unaffected by accelerated sedimentation from dam removal itself and has clean, cool water that can serve as a refugia.

**Project Readiness:**

If funded, this project could be implemented within 2 years of award. Project layout/design would proceed permitting.

**Cost:** \$150,000-225,000

**Watershed Priority:**

The Elwha Watershed has a normalized score of 5.0, and is ranked as the top priority watershed within the NOPLEG strategy.

**Miscellaneous:**

This project is modeled after similar projects conducted by LEKT with support from Columbia Helicopter in Sadie Creek (2004), Salt Creek (2006 and 2010), East Fork Deep Creek (2007), West Fork Deep Creek (2009) and Ellis Creek (2008). These projects have focused on small to medium-sized, low gradient streams in forested settings. The Vertol Helicopter, which is a smaller version of the Chinook, is the perfect cost effective machine for these types of settings. It is fast and causes virtually none of environmental impacts associated with ground based LWD placements. Significant investments have been made in Little River by the Tribe and NOAA who are conducting long term monitoring of reconization by salmon. The Little River is intensively surveyed for adult spawners, outmigrating smolts (smolt trapping), and juvenile abundance.

**Photos and Graphics are available for viewing at:**

<http://hwsconnect.ekosystem.us/Project/180/18239>



<p><b>NEW!</b> 16103</p>	<p><b>Indian Creek Habitat Restoration Project</b></p> <p><b><u>Project Description:</u></b> Indian Creek is a large, low gradient tributary to the Elwha River that drains Lake Sutherland. The Indian Creek flows into the Elwha River at the delta of the former Aldwell Reservoir and was one of the first locations colonized by salmon following the removal of Elwha Dam in 2012. The Elwha Klallam Tribe proposes two discrete restoration actions to improve salmon habitat: 1) the rerouting of and restoration of lower Indian Creek to its original channel location, and 2) the removal of a push up dike and channel restoration on WDOT property at river mile 0.6. Indian Creek has been historically affected by forest management, road construction, wetland filling and draining and rural development. Additionally, following dam removal, the Elwha River head cut at least 20' vertically through the former Aldwell delta deposit. Head-cutting followed in an upstream direction through lower Indian Creek and this resulted in Indian Creek being captured through the former delta deposit and abandoning over one mile of its former route. We propose to reroute Indian Creek back into its former channel draining northeasterly across the former Aldwell reservoir and connect to the Elwha River and its floodplain. Prior to rerouting flows systematic channel restoration would be conducted throughout the reach. At RM 0.6 WDOT channelized a 0.1 mile reach of Indian Creek resulting in degraded habitat through this reach. We propose to remove a push up dike, restore habitat and reconnect Indian Creek to its floodplain within this reach to restore natural processes.</p> <p><b><u>Limiting Factors Addressed:</u></b> This project will restore/improve spawning habitat for returning adults and provide rearing habitat for juvenile salmonids by removing impediments to habitat forming processes. Rerouting lower Indian Creek into its historic channel will increase the habitat available by over one mile. This habitat will be further improved by placing LWD to reduce stream velocities and result in the creation of gravel beds with well sorted, smaller particle sizes favored by salmonids for spawning sites. LWD placement will also result in the creation of large deep pools with complex cover favored as rearing sites by several species of juvenile salmonids. At RM 0.6 we will remove an impediment to floodplain connectivity (push-up dike) and restore channel features for spawning and rearing salmonids. The channelized reach, which is currently an unnatural plain-bed will be restored to its pre-impact conditions.</p> <p><b><u>Benefits to Salmon:</u></b> This project will restore habitat and potentially benefit Chinook, coho, steelhead, chum and pink salmon as well as cutthroat and bull trout. Elwha Chinook, steelhead and bull trout are all listed as threatened under the Endangered Species Act (Puget Sound Chinook ESU, Puget Sound Steelhead ESU and Puget Sound and Coastal Bull Trout ESU, respectively). Prior to dam removal the Little River was only utilized by populations of rainbow, cutthroat, bull trout and non-native brook trout. Following the removal of Elwha Dam, Indian Creek is now supporting spawning populations of coho, chinook, and pink salmon, as well as winter steelhead and Pacific lamprey.</p> <p><b><u>Recovery Plan Objectives:</u></b> The Elwha River is the site of one of the largest salmon restoration projects attempted to date in the Pacific Northwest. Its restoration is guided by the Elwha River Fish Restoration Plan (NOAA 2008) which has been generally incorporated into the Puget Sound Chinook Recovery Plan. Restoration of in stream habitat on Indian Creek is cited in the habitat restoration section (Chapter 5) of the plan (NOAA 2008).</p> <p><b><u>Restoration or Protection of Ecosystem Function:</u></b> This project restores ecosystem function by restoring in-channel fish habitat and improving floodplain connectivity. The primary land uses in Indian Creek are industrial forestry (state and private timberlands) and rural residences. Ecosystem functions are afforded complete protection within project lands and partial protection on state and private forestlands</p>	LEKT
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	<p>through the Forests and Fish Agreement (FFA). Rural residency provides the lowest level of protection and relies on county zoning and development requirements. However, most residences are well away from the Creek and generally respect the natural values it offers. Indeed many are thrilled by the return of salmon and look forward to their arrival in future years.</p> <p><b><u>Spatial/Temporal Influence:</u></b> This project would improve habitat conditions within a 1.1 mile reach of Indian Creek, one of the larger tributaries to the Elwha River. This project is complementary to the overall restoration of the Elwha watershed including dam removals, revegetation of the former reservoirs and floodplain restoration efforts such as dike removals and ELJ insertions in the lower river. Indian Creeks proximity to Elwha dam make it very important in the overall restoration effort as it is one of the first areas available for recolonization by salmon. It is also unaffected by accelerated sedimentation from dam removal itself and has clean, cool water that can serve as a refugia.</p> <p><b><u>Project Readiness:</u></b> If funded, this project could be implemented within 1 year of award. Project layout/design would proceed permitting.</p> <p><b><u>Cost:</u></b> \$450,000.</p> <p><b><u>Watershed Priority: 5.0</u></b> The Elwha Watershed has a normalized score of 5.0, and is ranked as the top priority watershed within the NOPLEG strategy.</p> <p><b><u>Miscellaneous:</u></b> This project is modeled after similar projects conducted in Morse Creek (Morse Creek remeander) and will have a high benefit to all species of salmon. The preparation of the abandoned Indian Creek channel can be conducted while dry. Actual rerouting of flows will only require limited grading and wood placement. Significant investments have been made in Indian Creek by the Tribe and NOAA who are conducting long term monitoring of recolonization by salmon. Indian Creek is intensively surveyed for adult spawners, outmigrating smolts, and juvenile abundance. Rerouting Indian Creek will have an additional benefit in assisting to erode Aldwell delta deposits downstream. This action is recommended by the Elwha Sediment Management Team, a multi-agency group, charged with managing and monitoring sediment transport issues on the Elwha River</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/project/180/60407">http://waconnect.paladinpanoramic.com/project/180/60407</a></p>	
<b>NEW!</b> 16104	<p><b>Elwha Hot Springs Road Restoration</b></p> <p><b><u>Project Description:</u></b> Removal of two hydroelectric dams on the Elwha River was initiated in 2011 as authorized by the Elwha River Ecosystem and Fisheries Act (PL102-495). Elwha Dam was completely removed in the spring of 2012 and Glines Canyon Dam was removed during the fall of 2014. The management of sediment accumulated within the two reservoirs has been a major challenge or the overall project. An estimated 21 million cubic yards (+4 million) had accumulated in the two reservoirs during their operational life. The preferred alternative for managing this accumulated sediment was river transport, in which the Elwha River's natural hydrology was used to transport the sediment downstream. This has proven to be highly effective and an estimated 60% of the total stored sediment has evacuated the reservoirs. This material has dispersed widely and has been accumulating in the estuary,</p>	LEKT

nearshore and in floodplain habitats along the river since dam removal began in 2012. In 2014-2015, significant floods have occurred on the Elwha and the river is responding dynamically. In general, the river has widened, and reconnected with its historic floodplain. New floodplain channels are forming and these will provide important habitat for salmonids. Unfortunately, there is floodplain infrastructure in some locations on the Elwha that was built while the dams were in place. These areas are now being impacted by the river. The Hot Springs Road which provides the only access to the Elwha Valley in Olympic National Park (ONP) is one such location. Since dam removal the Hot Springs Road in the vicinity of the Elwha Campground, has been flooded multiple times. The road is washed out by an activated side channel to the Elwha River and the campground has been buried in sediment (Figure 1). The Hot Springs Road is currently permanently closed to public access at the ONP entrance. This proposal represents a long term solution to conflicts between the Elwha River and Hot Springs Road and would include two elements: 1) an engineering design element to relocated portions of the Hot Springs Road currently impacted by flooding within ONP, and 2) a construction phase to actually relocate the road to those preferred locations.

**Limiting Factors Addressed:**

This project will protect and restore habitat for salmonids by reestablishing natural processes and eliminating infrastructure currently threatened by a river re-expressing its historic floodplain connectivity. Historically, ONP when faced with conflicts between their road system and Olympic Peninsula River (Hoh, Quinault, Elwha) has taken a traditional engineering approach. This results in bank armoring projects that do not support natural habitat forming processes in the floodplain. A recent example can be found at the ONP entrance on the Hot Spring Road, where local erosion was addressed by bank armoring (Figure 2).

**Benefits to Salmon:**

This project will restore habitat and benefit Chinook as well as coho, steelhead, chum, pink, bulltrout, resident rainbow trout and cutthroat trout. Dam removal has largely restored natural habitat forming processes (sediment and wood transport/restoration of natural flow regimes) in the middle and lower river and contribute to recovering health of main-stem and estuarine areas and the nearshore migration corridor. This project seeks to remove road infrastructure that conflicts with habitat forming processes including channel migration, side-channel formation, and floodplain riparian forests.

**Recovery Plan Objectives:**

Elwha chinook are federally listed and part of the Puget Sound ESU. Dam removal is keystone for recovery of the ESU and arguable the single largest action planned in the near future. Elwha steelhead are also federally listed and part of the Puget Sound steelhead ESU, however a recovery plan has not been prepared to date for this species to date. Puget Sound bull trout are also a federally listed fish stocks in Washington State and the Elwha River is a core population area. Puget Sound coho, while not currently listed are a species of concern, and the Elwha population is currently supported almost entirely by hatchery production. Chum and pink populations in the Elwha are considered chronically depressed and have escapements less than 1000 and 200 adults per year, respectively. Recovery of fish resources is guided by the Elwha Fisheries Restoration Plan (Ward et al. 2008).

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by restoring fish habitat, improving riparian zones, and re-connecting floodplain in the middle reaches of the Elwha River on lands administered by ONP. This project restores ecosystem function by accelerating the recovery of floodplain habitats that have been altered by historic road construction. Ecosystem function is also permanently guaranteed within this area because the floodplain forest of the reservation is protected from development of any kind.

	<p><b><u>Spatial/Temporal Influence:</u></b> This project represents a portion of LEKT's ongoing efforts to restore the Elwha River ecosystem and its historically productive salmon populations. Floodplain restoration efforts in the lower river were initiated in 1995 and have scaled up progressively in scale and scope. In 2009, the Tribe received one of 50 NOAA habitat grants awarded nationwide under the Stimulus Act. This has allowed the Tribe to greatly advance a portion of its lower river restoration goals. While simultaneously pursuing implementation of the Elwha Act (Dam Removal), the tribe has actively pursued floodplain restoration in the lower river, development of reservoir revegetation plans, conservation of salmon genetics and ecosystem scale monitoring of the overall Elwha restoration effort.</p> <p><b><u>Project Readiness:</u></b> This project represents a new restoration opportunity. While the Hot Springs Road was generally recognized as potentially in conflict with habitat forming processes during dam removal, it was decided to defer that issue until after dam removal. We now have a situation where conflicts are real and the long-term future of the road needs to be addressed. ONP is open to relocation, however they have indicated that they would welcome financial assistance from restoration grant sources.</p> <p><b><u>Cost:</u></b> Phase 1 design estimated at \$750,000. Construction costs are unknown at this time.</p> <p><b><u>Watershed Priority: 5.0</u></b> Elwha River has a normalized score of 5.00, and is ranked 1st as priority watershed.</p> <p><b><u>Miscellaneous:</u></b> The Elwha River has the largest productive potential of any river in the NOPLEG planning area and its productivity is intricately linked to the reestablishment of its forested floodplain. The most productive areas are located in unconstrained river valleys that have anastomosing or braided island morphology. In these areas forest features can attain sizes sufficient to form stable hard points within the floodplain. The interaction of river flows with these surfaces creates boundary conditions which promote a multi-thread channel. Multi thread channels may include surface-water, ground-water or combinations of the two that support diverse life histories of salmon.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/project/180/60350">http://waconnect.paladinpanoramic.com/project/180/60350</a></p>	
13103	<p><b>Ediz Hook Restoration-Phase 3</b></p> <p><b><u>Project Description:</u></b> This project is a design-build proposal that is modeled and expands upon previous restoration projects constructed on the southern shore of Ediz Hook in the last decade. Phase 1 included restoration of 1500' of beach along central Ediz Hook as mitigation for the Port Angeles Graving Yard project. Phase 2 was the restoration of an adjacent (east) 900' of beach at the former "A-Frame" log dump site. This project would apply design principals from the later project to restore nearshore habitat to two discrete reaches of Ediz Hook. Reach one includes 2200' of shoreline immediately west of the Phase 1 restoration project. Reach 2 includes 3600' of shoreline immediately to the east of the Phase 2 project. Within this 1.1 mile reach, we would design restoration treatments to restore and enhance nearshore and beach habitats. Potential treatments include removal of hard armoring, removal of remnant creosote structures, removal of over-water structures, beach reconstruction, beach nourishment, LWD additions, limiting vehicular access, and revegetation. It is anticipated that engineering design principles from the recently</p>	LEKT, WDNR, City of Port Angeles

completed phase 2 restoration project could be directly applied to the areas proposed for future restoration on Ediz Hook.

**Limiting Factors Addressed:**

Port Angeles Harbor is formed by Ediz Hook, a natural sand spit that has been degraded by the truncation of sediment supplies from its historic drift cell (Elwha River and bluffs between Elwha and base of Ediz Hook). Loss of sediment supplies resulted in erosion and forced armoring on the north side of the hook. Extensive industrial development inside of Port Angeles harbor in the 20<sup>th</sup> century has resulted in extensive areas of filling and armoring of the shoreline. Armored marine shorelines impact salmonids migration patterns, harbor predators and reduce benthic abundance (food sources). They also affect forage fish populations by eliminating suitable habitats for beach spawning. This project will remove armoring and restore low slope beach habitats along a 1.1 mile reach of Ediz Hook. Restoration will improve salmon migration corridors, increase benthic diversity, increase forage fish spawning potential and reduce pollutants.

**Benefits to Salmon:**

Implementation of this project would complete systematic restoration of the southern shore of Ediz Hook between the Nippon Mill and Coast Guard Base entrance, a distance of 1.6 miles. Nearshore habitat conditions would be improved for forage fish as well as a number of salmon stocks that use the nearshore as a migratory corridor. This likely includes stocks from a number of Washington watersheds, including both local (Elwha/Dungeness) and distant (Puget Sound/Columbia River) sources. Monitoring by NOAA fisheries at Ediz Hook has documented the presence of pink, chum, Chinook and coho salmon and cutthroat trout. It is not known what watersheds these fish originated; however the probability that listed stocks such as Puget Sound Chinook use this migratory corridor is high.

**Recovery Plan Objectives:**

Port Angeles Harbor and Ediz Hook are not mentioned in the WRIA 18 limiting factors analysis or in the Chinook recovery plan. This appears to be an oversight as the harbor was likely one of the most important estuary habitats in the central Strait. Port Angeles Harbor is directly connected to the Elwha River (through the nearshore drift cell). Removal of two dams on the Elwha is expected to partially restore sediment supplies to Ediz Hook and the Harbor. The proposed project meets several goals for the NOPL strategy including: 1) achieving fish stocks that are robust to changing conditions, 2) implementation of recovery plans (Elwha), 3) restores and maintains ecosystem functions, and 4) instills ecosystem awareness.

**Restoration or Protection of Ecosystem Function:**

This project restores and maintains low slope beach habitat within Port Angeles Harbor. This habitat would be maintained by the partial restoration of sediment supplies to Ediz Hook through removal of Elwha River dams. A restored Ediz Hook would represent the longest contiguous portion of unarmored shoreline in Port Angeles Harbor. The draft amended Shoreline Management Plan for the city of Port Angeles designates the Ediz Hook shoreline as conservancy, the highest level of protection awarded.

**Spatial/Temporal Influence:**

Phase 3 restoration of Ediz Hook would result in a total of 1.6 miles of shoreline restoration within Port Angeles Harbor and complete the transformation of an industrialized shoreline to a natural low, slope beach with improved habitat and aesthetic values. As such it would represent an important beginning in a long chapter of undoing damages in the greater harbor resulting from over a hundred years of industrial development. The clean-up and restoration of Port Angeles Harbor is the now the highest restoration priority for the Lower Elwha Klallam Tribe. The city of Port Angeles also now recognizes that the Harbor could be managed for multiple uses and has moved forward on some significant projects that will improve water quality, habitat and human interactions. These include controlling stormwater overflows and de-armoring portions of the waterfront. Clean-up of the

	<p>Rayonier mill site and restoration of the entire former mill site is in the planning stages. The initial discussion of harbor wide clean up including chemical pollutants and wood waste has also begun.</p> <p><b><u>Project Readiness:</u></b> A final engineering design was completed for the Phase 2 restoration project and it is anticipated that portion of this design could be applied to portions of Ediz Hook proposed for restoration. Once designed necessary permits would be obtained. Construction could be completed during one season. We estimate the entire project could be completed in 2-3 years.</p> <p><b><u>Cost:</u></b> \$500,000.</p> <p><b><u>Watershed Priority:</u></b> Ediz Hook is located within the WRIA 18 nearshore and has a normalized score of 5.0. Nearshore projects in the region have the top ranking.</p> <p><b><u>Miscellaneous:</u></b> Ediz Hook is heavily used by the public for recreational uses including walking, running, bicycling, bird watching. Visible nearshore restoration projects such as those on Ediz Hook receive a great deal of public support and represent excellent opportunities for education.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://hwsconnect.ekosystem.us/Project/180/18241">http://hwsconnect.ekosystem.us/Project/180/18241</a></p>	
09023	<p><b>Ediz Hook Beach Nourishment</b></p> <p><b><u>Project Description:</u></b> This project will help restore &amp; maintain the inner spit. The outer spit is maintained by the Army Corps. This will also complement a project on the Three Year Workplan, Ediz Hook A-frame Site Shoreline Restoration.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> “Loss of shoreline sediment from the armoring of the water line”; and “need for supplemental beach nourishment” (Salmon And Steelhead Habitat Limiting Factors Water Resource Inventory Area 18).</p> <p><b><u>Benefit to Salmon:</u></b> Restoration of the inner spit will increase forage fish spawning areas, and improve salmonid habitat and the shallow water migration corridor.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> In the Nearshore Assessment’s Executive Summary: Nearshore function of the central Strait of Juan de Fuca for juvenile fish, including Puget Sound Chinook salmon, it specifies that “Restoration of the degraded Elwha drift cell, including the feeder bluffs and Ediz Hook is ... a top priority”.  In the Salmon And Steelhead Habitat Limiting Factors Water Resource Inventory Area 18, “Restore shoreline sediment transport from the Elwha River and the feeder bluff between the Elwha River and the west end of Ediz Hook” was the first restoration action recommended”.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> In the Salmon And Steelhead Habitat Limiting Factors Water Resource Inventory Area 18, it claims that “shoreline armoring is ... the greatest impact to the integrity of Ediz Hook. This armoring reduced the contribution of shoreline sediments in the shoreline drift cell that</p>	City of PA, Port of PA, WDNR & LEKT

	<p>extends from the mouth of the Elwha to the end of Ediz Hook, and increased shoreline energy. ...The loss of shoreline sediment from the armoring of the water line resulted in the loss of the beach on the outer side of Ediz Hook, putting the integrity of the hook at risk." The document also specifies the "need for supplemental beach nourishment".</p> <p><b><u>Certainty of Project Success:</u></b> The project is likely to succeed based on the success of similar SRFB-funded projects in Whatcom County.</p> <p><b><u>Address Timing Needs &amp; Sequencing Requirements:</u></b> The project should take two years total. In the first year, design and permitting will be completed.</p> <p><b><u>Cost Appropriateness:</u></b> The cost estimate is extrapolated from cost estimates in the Ediz Hook A-frame Site Shoreline Restoration, Project v#32 on the Three Year Workplan Narrative 2008.</p> <p><b><u>Other Key Information:</u></b> Project Partners may include The Lower Elwha Klallam Tribe, the City of Port Angeles, the Port of Port Angeles, &amp; the Washington State Department of Natural Resources.</p> <p><b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/12719">http://waconnect.paladinpanoramic.com/Project/180/12719</a></p>	
09021	<p><b>Valley Creek Restoration</b></p> <p><b><u>Project Description:</u></b> Valley Creek in the proposed project boundaries is located in an open channel on the southern end. The channel is straight with armoring on the west bank to protect the Valley Street road prism. Little variation in morphology exists. A 3 block section, from 9<sup>th</sup> Street to 6<sup>th</sup> Street, has a service road constructed on the east side of the creek, further emphasizing the channelization of the creek in this section. Recently, the replacement of the 8<sup>th</sup> Street bridge over the valley resulted in the creation of a large wetland under the bridge and adjacent to the Valley Creek channel.</p> <p>The northern portion of the project beginning at approximately the 6<sup>th</sup> Street right-of-way to the 2<sup>nd</sup> / 3<sup>rd</sup> alley places Valley Creek in a culvert. The culvert grade slopes anywhere from 1.19% to 1.69%.</p> <p>This project contains two parts.</p> <ol style="list-style-type: none"> <li>1. The southern portion, from approximately 9<sup>th</sup> Street to 6<sup>th</sup> Street is a re-meander of the existing open channel to move the floodway to the east, away from Valley Street, and creation of a wider riparian zone.</li> <li>2. Additionally, one block of culvert, between 5<sup>th</sup> Street and 6<sup>th</sup> Street, (approximately 200 feet) would be removed and that portion of the creek re-meandered with an enhanced riparian zone. A series of pool and riffle transitions would be created as part of the re-meandering. The entry to the culvert would be moved north and include a trash rack and a maintenance platform.</li> </ol> <p>Property acquisition for this portion has been completed with the City of Port Angeles owning the property.</p> <p>The section portion of the project would be the installation of four "fishways" or step-down weirs. These weirs would be located at intervals of 150 to 250 feet, and would have open grates at the street level. The fishways would be either 20 or 25 feet in length and contain 3 or 4 weirs.</p>	VCRC, COPA



	<p>The project would result in the removal of approximately 1,100 feet of the access road on the east side of the creek, daylighting and re-meander of approximately 200 feet of creek, widening of the floodway and riparian zone along approximately 1,700 feet of creek, and the enhancement of approximately 700 feet of culvert which is currently a restriction to fish passage.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/11924">http://waconnect.paladinpanoramic.com/Project/180/11924</a></p>	
11088.1	<p><b>Ennis Creek Road Double Culvert Replacement Project</b></p> <p><b><u>Project Description:</u></b></p> <p>This project will remove a fish passage barrier culvert at River Mile 0.5 on Ennis Creek. The existing double concrete culverts under Ennis Creek Road will be replaced with either a bridge or wide concrete box or arch culvert. Preliminary design work has been completed and the City of Port Angeles has recently become the underlying land owner. The Ennis Creek watershed was ranked as 14<sup>th</sup> priority watershed and the system priority is listed as Medium. Ennis Creek is located in WRIA 18.</p> <p>Ennis Creek is the one of the least disturbed of the 5 independent urban drainages. It has the largest undisturbed upper watershed with snow-fed headwaters in the Olympic National Park, the least development, a wide diversity of existing native fish stocks and a high potential for restoration.</p> <p><b><u>Addresses Limiting Factors:</u></b></p> <p>This project will improve fish passage by correcting a long standing barrier to fish migration in Ennis Creek. The lower Ennis Creek Road culverts are the first barrier to anadromous fish reaching the upper watershed. The proposed culvert replacement will resolve the first barrier to fish migration found on Ennis Creek. Two culverts remain above the subject culvert, one approximately 1,500 feet upstream crosses Ennis Cutoff Road and a second approximately 1,500 feet farther upstream where Ennis Creek crosses under Highway 101. Ennis Creek is widely recognized as having the highest potential for restoration amongst the urbanized streams in Port Angeles. Its headwaters are protected in Olympic National Park.</p> <p><b><u>Addresses Stock Status and Trends:</u></b></p> <p>Ennis Creek historically supported 5 individual salmonid stocks. The historic stocks included bull trout, cutthroat trout, fall chum salmon, winter steelhead, and coho salmon. Of these, bull trout, coho, steelhead and cutthroat remain in the upper reaches of the stream, albeit at critically low levels. Chum salmon have been extirpated. The replacement of the culverts on Ennis Creek Road will advance recovery of the watershed to potential productivity for those species.</p> <p>Ennis Creek steelhead are part of the Puget Sound steelhead ESU, although a steelhead recovery plan has not been completed, Ennis Creek has been established as critical habitat for steelhead. Puget Sound bull trout are a federally listed fish stock in Washington State and Ennis Creek is included in their recovery plan as rearing and migration area. Puget Sound coho, while not currently listed are a species of concern, and the Ennis Creek population is considered depressed (or below its potential). Monitoring conducted by LEKT indicates that migrations of less than 100 returning adults per year are producing annual smolt outmigrations of less than 1,000 coho smolts.</p> <p><b><u>Benefits an ESA listed stock:</u></b></p> <p>This project is the first step in improving access to high quality upstream habitats for multiple species of salmon including Puget Sound Coho ESU, Puget Sound winter steelhead ESU and cutthroat which have all been documented to use habitats in Ennis Creek. Ennis</p>	<p><b>City of Port Angeles with potential partnership with LEKT, NOSC</b></p>



	<p>Creek also support bull trout, but in critically low levels. A chum salmon population has been extirpated from Ennis Creek but is a candidate for reintroduction following planned restoration actions in lower Ennis Creek and its estuary and nearshore area.</p> <p><b><u>Benefits other stock:</u></b></p> <p>Historic fish stocks include chum (extirpated), coho (threatened), steelhead (threatened), and bull trout (near extirpation). The project will benefit all those species as well as cutthroat trout by improving access to spawning and rearing habitats in the system. Correction of human caused barriers has been recognized as the first step in conducting watershed scale restoration (Roni et al. 2008). This project is envisioned as the first of several restorative actions in Ennis Creek.</p> <p><b><u>Protects High-Quality Fish Habitat:</u></b></p> <p>No additional protective measures are included in the proposal beyond the culvert replacement. The lower Ennis Creek reaches that flow through the City are protected from further development through the City's Environmentally Sensitive Areas Protection Ordinance (PAMC 15.20).</p> <p><b><u>Protects High-Quality Fish Habitat:</u></b></p> <p>Upper Ennis Creek was historically accessible to anadromous fish. Approximately 5.4 miles of the Ennis drainage have become unavailable due to the 3 barrier culvert locations in Ennis Creek. This project will be the first step in restoring access to upper portions of the Ennis Creek watershed. It will also improve transport of sediment and wood to downstream reaches of Ennis Creek.</p> <p><b><u>Supports restoration and maintenance of ecosystem functions:</u></b></p> <p>Significant restoration by the Lower Elwha Tribe and long term conservation through the North Olympic Land Trust has already occurred on the 40 acre Mantooth property upstream of highway 101. A recent subdivision along Del Guzzi Drive created a large open space tract adjoining Ennis creek's west bank directly south of highway 101. Planned redevelopment of the Rayonier Mill site includes habitat restoration and improvements to the lower reach of Ennis Creek and the Ennis Creek estuary.</p> <p><b><u>Spatial temporal scale of influence:</u></b></p> <p>Ennis Creek has been significantly impacted by urbanization, stormwater runoff, channelization, and industrialization of its former estuary. The now abandoned Rayonier Mill site which was constructed on top of the historic lower stream and estuary has been dismantled and will be cleaned under a three way agreement between Rayonier, DOE, and LEKT. A conceptual plan for the restoration of the entire site is also being prepared between these parties (as well as WDNR). The plan identifies significant restoration opportunities not only on Rayonier's ownership but throughout the watershed. Correction of the fish passage barrier on Ennis Creek Road is a logical first step towards more comprehensive restoration in future years.</p> <p>This project represents a first step in initiating large scale restoration on Ennis Creek. A portion of the site has been purchased by the City of Port Angeles for the correction of combined sewer overflows (CSO) into the harbor. An old timber trestle crossing the lower creek has been replaced with a 100-foot clear span bridge. The Waterfront / Olympic Discovery Trail will utilize the bridge which was constructed to carry stormwater lines across the creek and is planned to be the only bridge crossing below Ennis Creek Road after site restoration is completed.</p> <p><b><u>Project readiness:</u></b></p> <p>Preliminary engineering design has been completed by the City of Port Angeles. Final design will be completed as funds become available and permitting has been completed. If funded this project could be implemented within 2 years of the award. Final design, contract documents, permitting, bidding and construction should be included in the grant</p>	
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	<p>project scope.</p> <p><b><u>Likelihood of success based on proposer's past success in implementation:</u></b></p> <p>The City of Port Angeles has a strong record of project success. Although not all are salmon restoration projects, some examples of successful completion of projects include the replacement of the 8<sup>th</sup> Street bridges that included wetland restoration in the valley floors, resolution of the CSO issues affecting the PA Harbor, construction of waterfront improvements in the downtown area, rehabilitation of Valley Creek estuary and the reach south of 12<sup>th</sup> Street to the Highway 101 culvert, and the construction of the Waterfront/Discovery Trail.</p> <p><b><u>Likelihood of success based on approach:</u></b></p> <p>Culvert replacement has been shown to be highly effective in opening inaccessible spawning areas that have been blocked by impassable culverts. This particular culvert is the first of 3 culverts blocking the majority of habitat available along Ennis Creek. The upstream culverts are not located within City jurisdiction. The first upstream culvert crosses Ennis Creek Road in Clallam County and the second crosses Highway 101 and is the responsibility of Washington State Department of Transportation. It is hoped that by correcting the first barrier that there will be increased incentive for the county and state to follow suit, thereby opening the entire drainage as functional habitat.</p> <p><b><u>Reasonableness of cost and budget:</u></b></p> <p>Estimated project cost is \$200,000 for construction. Design, permitting and construction management estimate is \$40,000 to \$60,000. The City will contribute a 15% match and possibly more as cost estimates are refined. The project proponent will be seeking opportunities to reduce the project costs.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16187">http://waconnect.paladinpanoramic.com/Project/180/16187</a></p>	
09020	<p><b>Ennis Creek Habitat Restoration &amp; Protection</b></p> <p><b><u>Project Description:</u></b></p> <p>1) Continue prior restoration, including addition of large woody debris and boulder placement on the approximately one-quarter mile of the stream that is directly south of Hwy. 101 and its fishway;</p> <p>2) Fence off the access point on the east side of the Ennis Creek ravine where it is so easy for thieves to haul out maple to sell that they have already cut down 6 maples, 75- to 100-years old, causing significant destruction of the forest canopy and erosion from their foot traffic and camps, as well as destruction from fires that could spread beyond their camps, and stream contamination from latrines they have dug and waste materials they have discarded;</p> <p>3) Decrease erosion from stormwater runoff created by new development along Del Guzzi Drive, on the west side of the Ennis Creek ravine, through enhancement of existing wetlands and better dispersal of water now flowing directly from City of PA outfall pipes and from land where native trees have been removed and impervious surfaces greatly increased;</p> <p>4) Continue the property owners' efforts to plant trees for erosion control and eventual replacement of the trees thieves removed, reducing the forest canopy and eventual supply of natural LWD. The property has been designated as a sensitive area by the City of Port Angeles and the WRIA 18 salmon recovery plan describes Ennis Creek as the Port Angeles urban independent stream with the greatest potential, based on its variety of stocks, its</p>	WFC, LEKT & NOLT

	<p>snow-fed origins, and its relatively pristine conditions. Stocks include coho, winter steelhead and cutthroat trout, and Dolly Varden have been documented there. Fall chum are believed to have been extirpated. Smolt counts by Bob Campbell, Feiro Marine Life Center Coordinator, indicate increasing numbers from 2004 to 2008, since LWD and boulder installations and improvements to the fishway under Hwy. 101, with coho increasing from 433 to 1,060; steelhead, 182 to 877; and cutthroat from 45 to 136.</p> <p>Ennis Creek's importance was also noted in the WRIA 18 Watershed Plan because of its accessible location for public education and outreach. The property is part of a 47-acre conservation easement upheld by North Olympic Land Trust. An adjacent part of the property is the site for the Land Trust's annual StreamFest, which provides guided walks as well as booths hosted by businesses, agencies and organizations to provide information about environmental restoration and protection. Restoration and protection described above could add to the event's educational potential through photos documenting the impacts for salmon habitat before and after the improvements.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/6670">http://waconnect.paladinpanoramic.com/Project/180/6670</a></p>	
09024	<p><b>Port Angeles Waterfront Property Acquisition</b></p> <p><b><u>Project Description:</u></b>  This project will acquire a 2-acre shoreline property in the City of Port Angeles for the purpose of estuary and nearshore protection and restoration for habitat, ecosystem function, and environmental education. The property includes .3 mi. of urban, heavily armored shoreline adjacent to the Valley Creek Estuary, the site of an estuary restoration project completed in 1998. Acquiring this property would give project partners the opportunity to further existing restoration efforts and preserve the site as a public park.</p> <p><b><u>Location of project &amp; stock status and trends:</u></b>  <b>From Salmon and Steelhead Limiting Factors for WRIA 18 (p. 44-45)</b>  "The Valley Creek watershed is 2.4 mi<sup>2</sup> in size, with headwaters in the lower foothills at the northern boundary of Olympic National Park (Economic and Engineering Services, Inc. 1996).  Sixty percent of the watershed is in urban land use, with 50% of that land in impervious surface (TetraTech 1988). Valley Creek has been significantly altered to accommodate urban and industrial development in Port Angeles, and is heavily impacted by stormwater runoff from the urban and industrial development. The level of habitat degradation has been great enough to extirpate all salmonid species except for cutthroat trout. Ironically, with the construction of an engineered 1.5 acre estuary in 1998, Valley Creek is now the primary focus of restoration efforts within the urban streams of Port Angeles. A conceptual restoration plan for the watershed has been developed (McHenry and Odenweller 1998)."</p> <p><b>From Salmon and Steelhead Limiting Factors, Estuarine (p.147)</b>  Valley Creek is the site of a well-publicized estuary restoration project completed in 1998. This project was actually a mitigation project for filling of a log pond by the Port of Port Angeles. The newly created estuary, although actually representing only a 1.5 acre opening in the otherwise heavily armored Port Angeles harbor shoreline, perhaps represents an important change in local shoreline management philosophies. Historically, the Valley Creek estuary was much different, likely discharging to the harbor over an intertidal flat shortly after passing through the bluffs.  This area has since been filled and culverted to accommodate urban waterfront development. The Valley and Tumwater Creek estuaries may have interacted because of their physical proximity (separated by a narrow bluff).</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b></p>	NOLT, COPA, LEKT & VCRC

	<p>LFA WRIA 18 - Habitat Loss, degraded nearshore and estuarine conditions.  PA Shoreline Plan - "Public access to the water along Railroad Avenue is limited and uninviting – an important potential exists." (p.2).  Opportunities exist to enhance previous restoration efforts that would benefit multiple stocks after the property is purchased.</p> <p><b><u>Benefits to Salmon:</u></b>  Acquire and protect land for restoration that will benefit Puget Sound Chinook, coho, and winter steelhead, and other species that use Valley Creek and the nearshore.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this project meet and how?</u></b>  Port Angeles Shoreline Rehabilitation Plan, 1982. "Reestablish shoreline edges" and "public access to the waterfront edge". (p. 9)  NOPLE Recovery Plan. Goals 2, 3, 4, 5  Puget Sound Partnership – Harbor cleanup goals</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b>  This project will expand Valley Creek's Estuary habitat and improve ecosystem function. Acquiring this property would fulfill NOPLE's goal to instill public awareness about salmon recovery because of its central location. Humans and the community of Port Angeles are also a part of this ecosystem and this project is congruous with the Port Angeles Shoreline plan which states, "Improvements of the waterfront area would strengthen the vitality of the Central Business District, and the city, create public amenity for local residents and create a positive image of this country..." (summary).</p> <p><b><u>Certainly of Project Success:</u></b>  The Landowner, owner of Olympic Lodge, LLC made a public statement explaining why he purchased the waterfront property. He did so to reduce the threat of competition of other hotels so he wishes to leave the property undeveloped. I am optimistic that the landowner would work with North Olympic Land Trust to keep the land undeveloped, make it available for restoration, and eventually make the resource available to the public for enjoyment and education.</p> <p><b><u>Address Timing Needs and Sequencing Requirements:</u></b>  The purpose of this project is to buy land for future restoration of the Valley Creek estuary and marine shoreline. The City or the Port owns most waterfront property in the Central Business District of Port Angeles. This property is one of the few remaining privately owned parcels of land that has not been developed. The property is for sale now and the landowner is willing.</p> <p><b><u>Cost Appropriateness:</u></b>  The property is on the market for 2.7 M. The landowner is interested in keeping this property undeveloped, as open space so might be interested in a bargain sale – since the development potential of the property makes up much of its value.</p> <p><b><u>HWS Link:</u></b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/12720">http://waconnect.paladinpanoramic.com/Project/180/12720</a></p>	
09026	<p><b>Morse Creek Property Acquisition</b></p> <p><b><u>Project Description:</u></b>  This project will acquire two desirable properties along Morse Creek at the upstream end of the Morse Creek Re-meander project. The properties were originally part of the larger property acquisition carried out by WDFW which resulted in the 100 acres purchased along Morse Creek. Unfortunately, funds ran out and the Cottonwood Lane properties were not</p>	WDFW

	<p>acquired as part of the larger purchase. Currently, WDFW is facing a need to purchase lands to compensate SRFB for the construction of chinook rearing ponds along Morse Creek and additional funds would facilitate the acquisition of these high priority properties adjacent to the future floodplain reconnection. (See related project in the work plan: Morse Creek Re-Meander)</p> <p><b><u>Limiting Factors Addressed:</u></b> The project will address limiting factors related to increasing stream length, complexity, riparian habitat, and floodplain connectivity to increase and improve spawning and rearing habitat for all salmonids historically and potentially using Morse Creek</p> <p><b><u>Stock Status and Trends:</u></b> Anadromous fish stocks have been in steady decline in Morse Creek, largely due to the channelization of the lower creek. This project is expected to assist in arresting that trend, and possibly even reversing it in time.</p> <p><b><u>Listed Stocks:</u></b> It is inhabited by bull trout, winter steelhead and ESA listed Strait of Juan De Fuca summer chum. Puget Sound Chinook are a historic resident but were recently extirpated in Morse Creek. A chinook rearing facility is planned for downstream of the project reach to preserve genetic stocks from the Elwha in preparation for dam removal.</p> <p><b><u>Other Stocks:</u></b> Pink salmon, coho salmon, summer steelhead, sea-run cutthroat trout</p> <p><b><u>Habitat Status:</u></b> The current alignment of Morse Creek is an artifact of intentional channelization that occurred during the 1950-1970's by previous landowners and likely in cooperation with the Washington Department of Transportation. Morse Creek was straightened and moved to the west side of its valley and forced through an artificially small bridge opening on Highway 101. Channelization below Highway 101 to the Strait of Juan de Fuca was also extensive. These activities have greatly changed the velocity conditions and therefore spawning and rearing habitat critical to support native anadromous salmon populations. The Lower 1.5 miles of Morse Creek are essentially a flume with very little spawning or rearing habitat. The channel has degraded to bedrock in most places. Habitat surveys conducted by the Tribe and Peninsula College show that in this reach only 14% of the total surface area is classified as pool habitat.</p> <p><b><u>Ecosystem Restoration:</u></b> The project will accomplish the reconnection of Morse Creek to its historic floodplain. Ecosystem function will be immediately restored. A canopy of mature alder and cottonwood, and undergrowth of some conifers exists and will remain intact which provides immediate improvement to creek conditions and habitat features for both stream, wetland and forest species.</p> <p><b><u>Partnerships:</u></b> This project is being conducted through a partnership with WDFW (project lead) and North Olympic Salmon Coalition (project support).</p> <p><b><u>HWS Link:</u></b> <a href="http://waconnect.paladinpanoramic.com/Project/180/16301">http://waconnect.paladinpanoramic.com/Project/180/16301</a></p>	
<b>NEW!</b> 16102	<p><b>Morse Creek Acquisition &amp; Restoration</b></p> <p><b><u>Project Description:</u></b> This project will conserve up to approximately 800 acres of high quality habitat in the</p>	NOLT/LEKT/ Govt Entities

Morse Creek watershed. Currently the City of Port Angeles owns several parcels along Morse Creek in the upper watershed that vary in size, but together total approximately 800 acres. The parcels start near RM 3.5 and extend up to near RM 9 where it meets the Olympic National Park boundary. Possible project sponsors include the North Olympic Land Trust, or tribal or other government entities.

The existing diversion dam was used for water supply and later to generate hydroelectric power. The diversion dam is 10 feet high, 25 feet wide, with a crest elevation of 675 feet. It has not been used for about a decade. The City has indicated that it wants to sell this land. This is a unique and urgent opportunity to acquire and protect this significant habitat. Besides acquisition for protection, a proposed restoration component includes removing the diversion dam. Removal of the diversion dam from Morse Creek will lead to hydrologic and woody debris recovery in the middle section of the watershed. In addition, there is a need for restoring riparian function by encouraging conifer regeneration in existing deciduous stands.

The Elwha Klallam Tribe reports that there is a resident rainbow population above the natural falls that they believe may be a unique population. Resident rainbow trout populations above natural barriers on the Olympic Peninsula are rare. This could be further investigated by collecting samples of the rainbow trout for analysis. Salmon use above the falls could be further researched through both looking in the field and eDNA samples.

**Why the Project is Needed (limiting factors addressed):**

The City of Port Angeles has been working on the issue of what to do with the diversion dam and land for a while and is now ready to sell these parcels, which makes it urgent to advance this important acquisition for protection and restoration. The Morse Creek watershed historically houses Chinook, coho, chum, pink, steelhead, Bull Trout and cutthroat. It continues to play home to multiple stocks of imperiled salmon. It is the largest independent drainage in WRIA 18 and its headwaters begin in Olympic National Park. As noted, there is potentially a unique and rare resident rainbow trout population as well. Limiting factors to be addressed include restoring hydrologic and channel complexity and restoring large woody debris recovery throughout the channel downstream of the natural falls. Various documents place those falls at either RM 4.9 or RM 5.5. There is the possibility of also improving riparian function by encouraging conifer revegetation as recommended in the WRIA 18 Limiting Factors Analysis.

Morse Creek is known to have produced a high diversity of salmon species for a river its size. It has shown significant increased fish use in the past six years after a large scale floodplain reconnection and construction of engineered log jams over a 1.2 mile stretch of Morse Creek was completed by the North Olympic Salmon Coalition just upstream of the Highway 101 Bridge. This restored a previously productive portion of the river that had been significantly modified and negatively impacted by a dike constructed in 1939.

**Benefit to Salmon (how does it address stock status & trends):**

The benefit to salmon comes from protecting intact habitat now and into the future, as well as removal of the diversion dam, returning the river to a more natural state and restoring ecosystem processes. All of this bodes well for salmon.

The City of Port Angeles owns several 20 acre parcels, some of which are below the falls. Acquiring the parcels for conservation, and removal of the diversion for hydroelectric generation at RM 7.2, would restore the hydrologic and woody debris flows to a more natural state which would improve the salmon habitat downstream of the "limiting" falls. Monitoring of other restoration efforts have shown that increased fish use occurs quickly following habitat improvements. Functioning habitat is one very important factor in helping stabilize and/or improve stock status and trends.

Much of upper Morse Creek above the diversion lies within the Olympic National Park, entering the Park at RM 9. This reach of Morse Creek is in generally excellent, near-pristine condition (Haring 1999, WRIA 18).

Currently between the diversion and "limiting" falls, flows are routed to a powerhouse at RM 5.0 and returned to the creek approximately ½ mile below the falls. Morse Creek extends 11.4 miles above its falls and, other than previous flow reductions and

infrastructure in the 2.2 miles of creek affected by hydro operations, this reach is also considered of high quality (Goin pers. comm. 2001).

**Specific Salmon and Char Stocks that will Benefit.**

**ESA-listed:** Puget Sound Chinook, Puget Sound Steelhead, Coastal-Puget Sound Bull Trout.

**Non-listed:** coho, pinks, chum, cutthroat and rainbow trout

**Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet & How?**

This project meets the following goals listed in the North Olympic Lead Entity for Salmon Strategy including: Restoring and Maintaining Ecosystem Function, Achieving Fish Stocks that are robust to changing conditions, self-sustaining over the long term, and capable of supporting harvests (ceremonial, subsistence, recreational, and commercial), Instilling Ecosystem Awareness and Integrating efforts with larger visions for overall salmon recovery and restoration of the Puget Sound ecosystem. It also is part of the Puget Sound Partnership's mandate to restore endangered and imperiled salmon and restore Puget Sound ecosystems, of which the North Olympic is part.

The project is located in the (Elwha-Dungeness Planning Unit [EDPU] 2005 and the Watershed Resource Inventory Area (WRIA) 18 and Morse Creek is part of the WRIA 18 Watershed Plan.

WRIA 18 has produced a Limiting Factors Analysis (LFA) to address habitat conditions limiting fish productivity. • "Restore large woody debris (LWD) presence throughout the channel downstream of the natural falls at RM 4.9; develop and implement a short term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored;" • "Restore riparian function by encouraging conifer regeneration in deciduous stands that historically had a conifer component."The WRIA 18 Watershed Plan indicates "below the Park boundary, logging has affected the composition of riparian vegetation.

**Conserves Unique and Productive Habitat:**

Morse Creek has a historical productivity rating of 4. Current productivity rating is 1, which is likely resulting from poor habitat caused by diversion dams, diking, historical riparian forest harvest, and large wood removal.

**Illustrate how Project supports Restoration or Protection of Ecosystem Functions:**

**Scale of influence:**

**Spatial** - The project will cover roughly between mainstem RM's 3.5 to 9. Above RM 9 is part of Olympic National Park and WDFW owns a portion of the downriver mainstem area.

**Temporal** – Acquisition for conservation and restoring hydrologic flows and movement of woody debris will benefit salmon in perpetuity.

**Certainty of Project Success:**

Given the opportunity to purchase this property and remove the diversion dam, the certainty of project success is quite high. Past efforts and studies have shown the significant benefits resulting from restoration and the multiple benefits of protecting intact habitat in perpetuity. Further investigation is needed about an area of upper Morse Creek reportedly used for artillery practice during World War II.

**Timing Needs & Sequencing Requirements (project readiness):**

As indicated earlier, there is an urgency to advancing this work given that the City of Port Angeles wants to sell this land. Previously it was reported that there was some interest in purchase and possible power generation by private investors. In addition, given the expected cost, this project would have to be proposed in a grant round where there are PSAR funds being allocated which is happening in 2016. Another such PSAR funding opportunity is not expected until 2018 and it is doubtful this opportunity would still be available then.



	<p><b>Cost Range and Appropriateness:</b> The project is estimated to cost between \$1 and \$2 million.</p> <p><b>Watershed Priority: 3.90</b> Morse Creek has a normalized score of 3.90, and is ranked as a High Priority watershed.</p> <p><b>Other Key Information especially any relationship to previous or current projects:</b> This project integrates with previous significant large-scale restoration work to reconnect the Morse Creek floodplain, construct logjams along the river, as well as conducting invasive weed control, and riparian conservation efforts.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/project/180/60353">http://waconnect.paladinpanoramic.com/project/180/60353</a></p>	
09027.1	<p><b>Siebert Creek Ecosystem Protection</b> (Phase I completed in 2007, Phase II funded in 2009)</p> <p><b>Project Description:</b> The goal of Phase III and IV is to conserve additional land along Siebert Creek through the following measures: (1) Extending the riparian buffer another river mile on the west side of the creek. The East side is already protected. The 200-acre property that contains the longest continuous reach of targeted riparian buffer is for sale and negotiations have started with a willing seller. If the land is not purchased for conservation it will be sold for development. Two marine feeder bluff properties will be protected with conservation easements in the project area. (2) Protection of another 1/3rd of a mile of the Creek, south of the existing protection accomplishments, working with another landowner who has been interested in conservation easements for quite some time.</p> <p>Siebert Creek is a significant independent drainage to salt water, entering the Strait of Juan de Fuca at Green Point. The Siebert Creek watershed includes 31.2 miles of mainstem stream and tributaries.</p> <p>Conservation easements are one of the most cost effective tools for the perpetual protection of land. This project will build upon the protection efforts completed and underway. Land in the Siebert Creek watershed is under the pressure of a growing population land conversion. We must seize the opportunity to protect the nearly pristine quality if the watershed while it is in good condition.</p> <p><b>Area Description:</b> (from SALMON AND STEELHEAD HABITAT LIMITING FACTORS FOR WATER RESOURCE INVENTORY AREA 18. p 42)</p> <p>The Siebert Creek drainage is included as part of the Dungeness Area Watershed. The following information provides additional information specific to Siebert Creek. Siebert Creek is located approximately midway between Port Angeles and Sequim, draining an area of 19.5 mi<sup>2</sup> (17,200 acres). The creek is 12.4 miles long, draining directly to the Strait of Juan de Fuca (Williams et al. 1975). Siebert Creek drains the low hills paralleling the Strait of Jan de Fuca, and the upper reaches of the watershed are typically steep and incised at elevations up to 3,800 feet. Land in the upper watershed is managed for commercial forestry, with the extreme headwaters located in the Olympic National Park. The lower reaches contain both moderate and low-gradient habitat, with land uses including commercial forestry, agriculture, and increasing levels of real estate development (McHenry et al. 1996).</p> <p><b>Why the Project is Needed (limiting factors addressed):</b></p>	NOLT



	<p>The Assessment describes factors limiting the function of the watershed as degraded channel conditions, lack of LWD, and fine sediment in some areas of the watershed however the lower reach, which this project aims to protect, flows through a wooded ravine that is well vegetated and undisturbed with a 1 mile corridor protected with conservation easements. To guarantee greater ecological benefits, the entire 2 miles of the lower reach must be protected on both sides of the creek. Ecosystem processes and habitats are still functional and intact and therefore should be protected now.</p> <p><b><u>Benefits to Salmon:</u></b> The project permanently protects habitat and ecosystem processes for multiple stocks including coho, cutthroat and steelhead.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this project meet and how?</u></b> Puget Sound Recovery Plan – Protect Existing Physical Habitat and Habitat Forming Processes WRIA 18 Watershed Plan – Protect the best habitat for multiple stocks Siebert Creek Watershed Assessment - Protect intact ecological processes through conservation easements and property acquisitions. NOPE Recovery Strategy – Protect the best and maintain ecosystem function Puget Sound Partnership – Protect habitat</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Lower Siebert Creek is in relatively good condition. This could quickly change according to current zoning. The area will rapidly become developed unless properties are protected now.</p> <p>Marine Feeder bluffs in the drift cell that this project will permanently protect through conservation easements are important for maintaining ecosystem processes by delivering sediment to Dungeness Spit.</p> <p><b><u>Project's Spatial-Temporal Scale of Influence:</u></b> Two contiguous River Miles have been conserved, but additional protection is needed on the west side of the Creek. We also have the opportunity to conserve an additional 1/3<sup>rd</sup> of a mile beyond the existing corridor. This is conservation on a landscape scale.</p> <p><b><u>Certainly of Project Success:</u></b> Landowners have expressed willingness. Successful funding will guarantee success. The County is interested in developing an Olympic Discovery Trail park on the 200-acre property and may contribute funding to this project.</p> <p><b><u>Address Timing Needs and Sequencing Requirements:</u></b> An assessment of Siebert Creek has been completed and habitat protection is a recommendation in the assessment which is consistent with Pacific Woodrush's vision which is to protect intact ecological processes of the Siebert Creek Corridor; in order to achieve this vision the following conditions and outcomes are desired: protection in perpetuity of naturally-functioning habitats through conservation easements and property acquisitions (Siebert Creek Watershed Assessment p. 8).</p> <p><b><u>Cost Appropriateness:</u></b> Cost is based on the listing price of the property to be acquired fee simple. Cost to acquire development rights through conservation easements is based on comparable values of recently appraised conservation easements.</p> <p><b><u>Watershed Priority and watershed area:</u></b> WRIA 18, Watershed Priority 2.20.</p> <p><b><u>Other Key Information (especially any relationship to previous or current projects):</u></b></p>	
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	<p>In 2002 an effort to protect the lower 2 miles of Siebert Creek was initiated by Pacific Woodrush and North Olympic Land Trust to protect the lower reach of the watershed from the estuary to Highway 101. Siebert Creek Ecosystem Protection started with Phase 1. One mile of Siebert Creek was protected with permanent conservation easements including the estuary. 50 acres were protected with conservation easements and a 33-acre property was purchased. With Phase II, 26 additional acres will be conserved along Siebert Creek, and 2 contiguous river miles will be protected.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/14262">http://waconnect.paladinpanoramic.com/Project/180/14262</a></p>	
09028.1	<p><b>Siebert Creek Hwy 101 Fish Passage Restoration</b></p> <p><b><u>Watershed Priority:</u></b> 2.20</p> <p><b><u>Project Description:</u></b>  The Hwy 101 box culvert at river mile 2.4 is a serious, partial barrier to 1) upstream fish passage and 2) the downstream transport of large wood. Fish passage and large wood transport will be restored by removing the culvert and replacing it with full-spanning bridge.</p> <p><b><u>Why the Project is needed (limiting factors addressed):</u></b>  Siebert Creek's anadromous length is approximately 10 miles, but fish passage is severely impaired at river mile 2.4 by the Hwy 101 box culvert. The culvert is equipped with a sub-standard fishway that provides, at best, partial fish passage. The culvert is too small to accommodate an efficient fishway, and the large amount of bedload transported by Siebert Creek makes fishway maintenance very problematic. The project will remove the box culvert and replace it with a bridge to restore unimpeded fish passage to prime spawning and rearing habitat upstream for Puget Sound steelhead, coho, and coastal cutthroat. Due to its small size, the culvert also hinders the downstream transport of large wood, thereby depriving the lower 2.4 miles of Siebert Creek of this important habitat-forming material.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>  Siebert Creek steelhead and coho stocks are both imperiled. The project addresses this condition by opening approximately 75% (7.6 miles) of the stream's anadromous habitat to unimpaired accessibility for both stocks. The project will also produce habitat benefits to the lower 2.4 miles of Siebert Creek by restoring the downstream transport of large wood. This culvert is the last anthropogenic impediment to fish passage in Siebert Creek.</p> <p><b><u>Specific Salmon and Char Stocks that will benefit.</u></b>  <b>ESA-listed:</b> Puget Sound steelhead. <b>Non-listed:</b> Coho, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b>  The Siebert Watershed Analysis calls for replacement of the culvert with a bridge (2004, Siebert Technical Advisory Group). WRIA 18 Watershed Report: Correct fish passage problems at Highway 101 by replacing the existing culvert crossing with a bridge, as recommended by WDFW.</p> <p><b><u>Restores Formerly Productive Habitat:</u></b>  The project restores unimpaired fish access to approximately 75% of the stream's anadromous habitat. The restoration of large wood transport will produce habitat benefits to Siebert Creek's lower 2.4 miles.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b>  Ecosystem functions are restored by: 1) Restoring unimpaired fish migration into approximately 75% of the stream's anadromous habitat. This will benefit the fish stocks</p>	JSKT/ WSDOT

	<p>and their predators, and the increased import of ocean carbon and other nutrients represented by increased numbers of fish carcasses will provide benefits to a large number of plants and animals. 2) Restoring large wood transport past Hwy 101 will improve aquatic habitat conditions in the stream's lower 2.4 miles. 3) The Hwy 101 road fill is a very significant barrier to the movement of mammals, reptiles, and amphibians. Replacement of the culvert and road fill with a full spanning bridge will restore the migration corridor for a multitude of creatures.</p> <p><b><u>Scale of influence:</u></b>  <b>Spatial-</b> The project will provide benefits throughout the entire 10 miles of anadromous habitat, especially the 7.6 miles upstream of Hwy 101. <b>Temporal -</b> Life span of the bridge would likely equal or exceed 70 years. It's unlikely that another structure that obstructs fish migration and large wood transport would ever be permitted in the future. Therefore, the project benefits can reasonably be considered permanent.</p> <p><b><u>Certainty of Project Success:</u></b>  The eastbound lanes of Hwy 101 currently cross Siebert Creek on a full-spanning bridge, which does not hinder the movement of large wood, fish, or other animals. Replacing the road fill and culvert on the westbound lanes with a similar bridge will unquestionable eliminate the existing impacts.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b>  The project will begin with a design project: conceptual bridge and site design to 10% engineering. Once the design is in place, then the project can be placed on the DOT project list.</p> <p><b><u>Cost Range and Appropriateness:</u></b>  Estimated cost range of the 10% design is \$75,000 to \$150,000. The full project will cost approximately \$12 to \$15 million. It is expected that most of the cost will be covered by the WSDOT as a highway improvement/maintenance or mitigation project.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b>  A similar culvert removal/bridge construction project was completed in the 1990's by Clallam County downstream at Old Olympic Highway. The Lower Elwha Tribe has placed numerous pieces of LWD below Old Olympic Highway, greatly improving habitat condition. The North Olympic Land Trust owns several properties and conservation easements on lower Siebert Creek.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/7023">http://waconnect.paladinpanoramic.com/Project/180/7023</a></p>	
11090.1	<p><b>Siebert Creek Large Wood Restoration: Old Olympic Highway to Highway 101</b>  <b>Watershed Priority:</b> 2.20</p> <p><b><u>Project Description:</u></b>  The project will restore healthy levels of functional large wood via engineered logjam (ELJ) construction in a severely disturbed reach of Siebert Creek between Old Olympic Highway (RM 1.5) and the SR (Highway) 101 box culvert at RM 2.65. Work will be accomplished in one or two construction phases occurring from 2015 to 2018. A combination of ground-based and helicopter placement techniques will be employed depending on access and landowner agreements.</p> <p><b><u>Why the Project is needed (limiting factors addressed):</u></b>  The WRIA 18 Limiting Factors Analysis reports Siebert Creek pool percentage ratings of fair to poor with critically low levels of LWD. Included in the LFA's Action Recommendations is the following measure, "Develop and implement a short-term LWD strategy in lower Siebert</p>	JS'KT

<p><i>Creek to restore LWD presence and pools, particularly from the mouth to Highway 101". In recent years, several LWD projects have been implemented downstream of Old Olympic Highway.</i></p> <p>Historically, Siebert Creek fish passage, salmon habitat and habitat-forming processes have been extremely impacted by badly undersized cement box culverts located at Old Olympic Highway (built in 1916) and SR 101 (built prior to 1956). The Old Olympic Highway culverts, which had 13-foot vertical drop at their outlets, were removed and replaced with a bridge in 1998. Although the culvert removal project provided excellent fish passage benefits, it also resulted in extensive channel down-cutting which has scoured down to bedrock in some areas. The SR 101 culvert remains an impediment to the transport of large wood and sediment. The WSDOT is currently designing a culvert removal project for Siebert Creek, and the SR 101 culverts will likely be replaced with a bridge by 2020. Removal of the culverts will release accumulated sediment and wood and allow the natural transport of these materials past Highway 101 for the first time in at least six decades. It is imperative that stable wood jams be located in the stream reach between the two highways to utilize the influx of sediment and wood to restore a complex, gravel-bedded, productive channel geomorphology.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b> The ELJs will return stable, complex salmon spawning and rearing habitat to Siebert Creek's RM 1.5 to RM 2.6 reach, by capturing gravel and wood, scouring pools, stabilizing spawning riffles, retaining salmon carcasses, providing cover, and encouraging the creek to access its floodplain. Besides the immediate benefits provided by the ELJ's, the project will recreate the channel structure necessary to allow the retention of naturally recruiting wood. Tribal survey data collected in 2003 and 2010 shows long plane-bed channel form reaches below the SR 101 culvert that are devoid of wood, scoured to bedrock or have large substrate not conducive to salmon spawning. Channel reaches downstream of Old Olympic Highway restored by the Lower Elwha Klallam Tribe in 2005 are showing signs of recovery based on survey data the tribes collected in 2010.</p> <p><b><u>Specific Salmon and Char Stocks that will benefit.</u></b> <b>ESA-listed:</b> Puget Sound steelhead <b>Non-listed:</b> Coho, cutthroat</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet and How?</u></b> The WRIA 18 LFA page 3.12-7, "Develop and implement a short-term LWD strategy in lower Siebert Creek to restore LWD presence and pools, particularly from the mouth to SR 101". Siebert Creek Watershed Assessment recommendations (2004) "Restore natural levels of instream large woody debris (LWD) by direct placement of LWD and restoration of mature riparian forest to provide long-term recruitment of LWD". NOPL 2011 Draft Strategy Table D: Restore habitat.</p> <p><b><u>Restores Formerly Productive Habitat:</u></b> Siebert Creek historically supported healthy populations of coho, chum, steelhead, cutthroat, rainbow and Dolly Varden. The 1956 air photo reveals a channel much richer in wood and gravel than exists today. According to the LFA, the loss of large wood is one of the primary limiting factors. Constructing ELJ's will provide a near-term restoration for the impaired reach downstream of the SR 101 culvert. It also serves as an immediate mechanism to reestablish habitat forming processes.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> The project restores nutrient retention by retaining salmon carcasses and other allochthonous nutrient inputs. Proper routing and storage of wood and sediment is restored. The ELJs will restore diverse habitat for the benefit of water birds, river otters, and aquatic vertebrates. Restoring gravel beds in areas now scoured to bedrock will create hyporheic habitat for invertebrates.</p> <p><b><u>Scale of influence:</u></b></p>	
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	<p><b>Spatial-</b> This project will cover 1.1 miles, from SR 101 downstream. Benefits will likely occur within the remaining 1.5 miles to the estuary. <b>Temporal</b> - The conifer wood used in the ELJs will last 20-50 years depending on the degree of submersion. Once the stream reach is stabilized with ELJs, newly recruited wood will eventually replace the ELJs.</p> <p><b><u>Certainty of Project Success:</u></b> A 50% design is complete (Natural Systems Design). The Jamestown S'Klallam Tribe completed a similar, successful log jam project on McDonald Creek downstream of Old Olympic Hwy. In the Dungeness River, we have successfully constructed numerous mainstem and side channel logjams.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b> A significant amount of large wood has already been obtained and is stored adjacent to the project site. It is important that the project be completed prior to or concurrent with the SR 101 culvert removal project.</p> <p><b><u>Cost Range and Appropriateness:</u></b> The project is estimated to cost between \$250,000 and \$350,000. ELJs are estimated to cost about \$25,000 each, which is relatively cost effective. A total of 30 ELJs have been located and designed, however final prioritization has not occurred yet.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b> Siebert Creek has been fairly well studied compared with other central straits drainages. Monitoring data has been compiled and analyzed with an eye to getting the most restoration benefit from conservation dollars. This project would complement the HWY 101 fish passage project by restoring the most heavily impacted areas of the creek below this barrier.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/16146">http://waconnect.paladinpanoramic.com/Project/180/16146</a></p>	
10078.1	<p><b>McDonald Creek Large Wood Restoration</b></p> <p><b><u>Watershed Priority:</u></b> 2.32</p> <p><b><u>Project Description:</u></b> Construct design/build logjams (DBLJ's) in McDonald Creek from the mouth to RM 5.2 at the confluence with Pederson Creek. Plant native conifers in project area where needed. Work will be accomplished in a series of construction phases occurring from 2011 to 2015. We are currently working on Phase II downstream of Old Olympic Hwy. Planning for Phase III just upstream of Old Olympic Hwy will begin shortly.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> The last habitat survey was over a decade ago and found that pool frequency and number of key pieces of LWD that would anchor logjams were in poor condition (Bernthal and Rot 2001). The WRIA 18 LFA recommended that LWD be restored from the mouth to RM 4.9 (Haring 1999). Haring 1999 lists the riparian condition as good condition, however the source he cited only surveyed the watershed above RM 4.9. The lower watershed has been logged several times and is dominated by young to mature red alder with very little conifer in the understory, or at best a mixed alder/conifer forest (Rot, personal observation).</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b> This project will return stable, complex salmonid spawning and rearing habitat to McDonald Creek, by scouring pools, stabilizing spawning riffles, retaining salmon carcasses, providing cover, and encouraging the access of the creek to its floodplain. Besides the immediate benefits provided by the DBLJ's, the project will recreate the channel structure</p>	JSKT

	<p>necessary to allow the retention of naturally recruiting wood. Future wood recruitment is being ensured by numerous completed and planned riparian habitat purchases and conservation easements, along with conifer under-planting with each restoration project.</p> <p><b><u>Specific Salmon and Char Stocks that will Benefit:</u></b>  <b>ESA-listed:</b> Puget Sound steelhead. <b>Non-listed:</b> coho, fall chum (likely extirpated), cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b>  NOPL 2011 Draft Strategy Table D: Restore habitat. While the recovery plan for steelhead is not available, it undoubtedly will include recover steelhead habitat by placing LWD. WRIA 18 LFA page 124, restore LWD presence and function from the mouth to Pederson Creek (RM 5.2).</p> <p><b><u>Restores Formerly Productive Habitat:</u></b>  McDonald Creek has a historical productivity rating of 3 (of a possible 5). Current productivity rating is 2. According to the LFA analysis, the loss of large wood is one of the primary limiting factors.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b>  Olympic Peninsula streams and rivers and their salmonid populations evolved with extremely high levels of instream large wood. Wood provides physical fish habitat, serves as a biological substrate, roughens stream channels to scour pools and stabilize spawning habitat, and aggrades channel beds so these systems interact with their floodplains. In McDonald Creek, channel grade in the lower 5 miles averages 1-2% (Bernthal and Rot 2001). Where wood is deficient, cobble sized substrate is common. By building stable logjams and replanting conifer riparian forest, the ecosystem processes of habitat formation and nutrient processing can resume at levels appropriate for salmon recovery.</p> <p><b><u>Scale of influence:</u></b>  <b>Spatial</b> - The project will cover approximately 5 miles, which is the entire anadromous zone. McDonald Creek is incised into the surrounding glacial till, the stream corridor is undeveloped with the exception of two road stream crossings and the Agnew irrigation outtake. <b>Temporal</b> – We can expect the conifer wood used in these logjams to last 20-50 years depending on whether they are mostly wet or wet/dry. The existing alder in the riparian forest will provide good habitat in the coming decades, however alder decays in a matter of a decade. A key element is conifer replanting and regrowth to create the type of riparian habitat that creates stable salmonid habitat.</p> <p><b><u>Certainty of Project Success:</u></b>  The Jamestown S’Klallam Tribe completed a successful DBLJ project downstream of Old Olympic Hwy (Phase I), building 8 logjams. We will build in 2011 a similar number of logjams in the ¼ downstream of Phase I. The McDonald stream corridor is virtually undeveloped, which removes a big hurdle with landowners. Our experience in other watershed supports a high certainty of success in McDonald Creek. We installed over 700 pieces of wood in the Jimmycomelately Creek restoration project in Sequim Bay. In the Dungeness River, we have constructed design/build logjams below Woodcock Bridge (RM 2.9), upriver of Hwy 101 in the main river (RM 6.6), in Dawley side channel (RM 6.7), and downstream of the Powerlines (RM 8.3).</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b>  We are in the midst of restoration. Phase II will be completed the summer of 2011 (already funded). Funding for Phase III is still needed, construction will occur in 2012.</p> <p><b><u>Cost Range and Appropriateness:</u></b>  To construct logjams in the entire lower 5 miles will cost between \$750,000 to \$1 million. This will recover habitat in the entire range of ESA listed winter steelhead.</p>	
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	<p><b>Other Key Information especially any relationship to previous or current projects:</b> As stated above, we have a plan for McDonald Creek recovery and are implementing the plan.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/14814">http://waconnect.paladinpanoramic.com/Project/180/14814</a></p>	
09039.2	<p><b>McDonald Creek Barrier Removal and Channel Restoration</b></p> <p><b>Watershed Priority:</b> 2.32</p> <p><b>Project Description:</b> The project will restore safe, unimpeded upstream and downstream fish passage conditions at the Agnew Irrigation District water diversion facility by simply removing the entire facility from the stream. Upstream of the facility, 4.5 miles of coho habitat and 6.1 miles of steelhead and cutthroat habitat will be made freely accessible. Concurrent with barrier removal, the adjacent 400 feet of degraded stream channel will be restored. The project will also result in the cessation of Dungeness River discharges into McDonald Creek, which will eliminate the potential for Dungeness River salmon to be attracted into McDonald Creek. The conveyance of stormwater into McDonald Creek via the Agnew Irrigation ditch system will also be eliminated. The project will be accomplished by 1) constructing a new upland ditch/pipeline system to replace the existing instream irrigation facility, 2) removing from McDonald Creek the Agnew diversion dam, head gate, canal, bypass, and fish screen, and 3) restoring the degraded channel and floodplain downstream of the diversion dam and under the Hwy 101 bridge.</p> <p><b>Why the Project is Needed (limiting factors addressed):</b> A 5-foot high irrigation diversion dam, equipped with a small and intermittently functional steep-pass fishway, spans McDonald Creek. An irrigation canal, water and fish bypasses, and a fish screen occupy the Creek's floodway, severely constricting the channel. This irrigation facility causes numerous fish passage, habitat, and biological problems:</p> <ul style="list-style-type: none"> <li>• The fishway only functions when 1) it's free of debris, 2) conveys the proper amount of water, and 3) discharges into a suitable attraction area. During much of the year these conditions are not met, and upstream adult and juvenile fish migration is blocked. 4.5 Miles of coho habitat and 6.1 miles of steelhead and cutthroat habitat can be inaccessible to fish. Even when technically functioning, the fishway provides little attraction flow and adult fish can harm themselves leaping at the dam.</li> <li>• Fish cannot migrate safely downstream through the facility. Fish migrating over the dam or through the water diversion will fall onto riprap. The fish bypass cannot safely convey adult steelhead and an unknown percentage of fry will invariably pass through the fish screens and be lost.</li> <li>• Currently the Agnew Irrigation District uses McDonald Creek as a part of its irrigation water conveyance system. Water diverted from the Dungeness River is discharged into McDonald Creek at RM 5 and then at RM 3.2 an approximately equal of water is withdrawn from the Creek. Mixing Dungeness River water into McDonald Creek creates the potential that Dungeness River fish will be attracted into McDonald Creek for spawning, thereby harming fish populations from both streams.</li> <li>• Before discharging into McDonald Creek, the Agnew Irrigation District's ditch traverses about 6 miles of hillsides on its way from the Dungeness River. In various locations the ditch intercepts stormwater, which is then conveyed to McDonald Creek. By ceasing discharges into the Creek, this stormwater impact will be eliminated.</li> <li>• The irrigation facility's constricting of the channel has caused the stream to</li> </ul>	JSKT, WDFW, WSDOT, Agnew Ditch Co.



	<p>down-cut 3 feet and become heavily armored with cobbles, boulders, and riprap migrating from the dam. These 400 feet of stream are very habitat poor and fish-unfriendly.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b> Some of McDonald Creek's best fish habitat - 4.5 miles for coho and 6.1 miles for steelhead and cutthroat - is found upstream of the diversion dam. These fish spawn and rear both upstream and downstream of the diversion dam. Fish are often blocked from migrating upstream and fish can migrate downstream only by falling onto riprap or sliding through a small-diameter, steep pipe. Both can potentially injure or kill fish. The fully implemented project will 1) remedy fish passage problems, 2) restore habitat and habitat forming processes in the adjacent stream channel, 3) eliminate the attraction of Dungeness River fish into McDonald Creek and 4) eliminate irrigation ditch stormwater impacts to McDonald Creek. Overall, stock status will be significantly improved by this work.</p> <p><b><u>Specific Salmon and Char Stocks that will Benefit:</u></b> <b>ESA-listed:</b> Puget Sound steelhead. <b>Non-listed:</b> coho, fall chum (likely extirpated), cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> NOPE 2011 Draft Strategy Table D: Restore habitat. While the recovery plan for steelhead is not available, it undoubtedly will include measures to recover steelhead habitat by removing the diversion dam and the influence of Dungeness River water. WRIA 18 LFA page 124, "identify options to reduce/eliminate the influence of Dungeness River water, conveyed through the irrigation system, on homing ability of Dungeness and McDonald origin salmonids".</p> <p><b><u>Restores Formerly Productive Habitat:</u></b> McDonald Creek has a historical productivity rating of 3 (of a possible 5). Human impacts have driven its productivity rating down to 2. The diversion dam and instream irrigation facility are one of the primary anthropogenic stressors responsible for the decrease in productivity. Upstream of the diversion dam, instream habitat is very intact and the project will restore unimpeded fish access into this prime habitat and also provide safe migration conditions for adult and juvenile fish moving downstream. The project also eliminates the mixing of Dungeness River water into McDonald Creek and removes the irrigation system as a source of stormwater runoff entering the stream. In some downstream areas large wood depletion is another stressor. The Jamestown S'Klallam Tribe is addressing this problem with one large wood recovery project complete and another being planned and already funded.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Restoring unimpeded fish passage to a large percentage of the anadromous watershed is crucial and elemental to restoring ecosystem functions. Restoring instream habitat, reducing stormwater impacts, and eliminating the potential for attracting Dungeness River salmon into McDonald Creek also improve ecosystem functions in this stream.</p> <p><b><u>Scale of influence:</u></b> <b>Spatial</b> – The project's spatial scale of influence is extremely large. The project is located at roughly RM 3.2. Upstream, unimpeded fish passage will be restored to 4.5 miles of coho habitat and 6.1 miles of steelhead and cutthroat habitat. <b>Temporal</b> – The project's benefits are perpetual.</p> <p><b><u>Certainty of Project Success:</u></b> Certainty of success is very high. The offending impacts will be fully removed from the stream. Design work is underway and expected to be completed by early 2013.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p>	
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	<p>The project is expected to be poised for construction beginning in 2013 or 2014, depending upon the availability of funding and approval from Agnew Irrigation District. First, the upland water conveyance system must be built to replace the instream facility. Next the instream facility can be removed, and then the adjacent stream channel can be restored.</p> <p><b><u>Cost Range and Appropriateness:</u></b> Cost estimates will be available in early 2013.</p> <p><b><u>Other Key Information especially any relationship to previous or current projects:</u></b> The project supports and integrates well with previously accomplished and currently planned large wood recovery projects in downstream areas.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://hwsconnect.ekosystem.us/Project/180/6666">http://hwsconnect.ekosystem.us/Project/180/6666</a></p>	
<p><b>UPDATED!</b></p> <p><b>13104.2</b> <b>(incorporates</b> <b>09041.1)</b></p>	<p><b>3 Crabs Nearshore and Estuarine Restoration</b></p> <p><b><u>Project Title and Description</u></b> 3 Crabs Nearshore and Estuarine Restoration. The project site is located on Dungeness Bay and contains Meadowbrook Creek, the last freshwater tributary to the Dungeness River. The goals of this project are to enhance salmon habitat by: removing anthropogenic stressors, recreating lost wetlands and improving connectivity among more than 80 acres of nearshore, river delta, estuarine, floodplain and riparian habitats. This project will eliminate a tidal and freshwater restriction, reconnect floodplain habitat, recreate historic estuarine wetlands, remove toxic creosote, restore natural sediment transport processes, increase public access, improve water quality, and reduce flooding. The nearshore site was filled and armored beginning in the 1950's, creating a "hard point" that has interfered with nearshore sediment transport. The 3 Crabs Restaurant was built on top of the nearshore fill and was in operation from 1958 until it was acquired by WDFW in 2012. Restaurant buildings were demolished and 2 Tons of beached creosote debris was removed in 2013.</p> <p>Restoration actions include: 1) removal of a commercial and residential septic system, 2) removal of dike and bank armoring from Meadowbrook Creek, 3) removal and re-contouring of ~5 acres of estuary fill to historic salt marsh, dune and intertidal elevations, 4) removal of a nearshore groin, 5) removal of nearshore armoring 5) rerouting of utilities underneath the project site to New Dungeness Light Station, 6) removal of an undersized creosote bridge, 7) removal of 9 building slab foundations 8) relocation of a road intersection ~750 feet away from the shoreline and onto historic sand spit surfaces that have remained above sea level since the 1870's, 9) removal of road fill diking from the nearshore and Meadowbrook Creek Estuary, 10) realignment of Meadowbrook Creek to reconnect floodplain habitat, 11) construction of a new bridge to restore estuarine marsh processes and allow meandering of Meadowbrook Creek, 12) excavate and expand tidally connected lagoons and 13) improve riparian condition by removing invasive species and planting native trees and shrubs. When completed, the proposed restoration actions will restore sediment transport processes to the Dungeness Bay drift cell, in addition to restoring habitat and removing freshwater and tidal flow restrictions to improve connectivity to over 80 Acres of wetlands between Meadowbrook Creek and the Dungeness River Delta.</p> <p><b><u>2. Why the Project is Needed (limiting factors to be addressed)</u></b> Floodplain Modification, Channel Condition, Riparian Condition, Water Quality/Quantity, Biological Processes, Estuarine, Shoreline Armoring, Loss of Intertidal/Nearshore Vegetated Habitat identified in the WRIA 18 LFA as limiting factors.</p>	NOSC

**3. Benefit to Salmon (how does it address stock status & trends?)Which ESA-listed stock and/or non-listed stock does this project address?**

Meadowbrook Creek is the last freshwater tributary to out-migrating salmon species in the Dungeness River before entering Dungeness Bay. Estuarine areas in the vicinity of the project site are heavily used by juvenile chum and chinook salmon. This project will be of particular benefit to chinook and chum as connectivity and quality of preferred transitional rearing habitats are improved. This work is part of the continuing effort to restore the floodplain, estuarine and nearshore habitat of the lower Dungeness River and increase available migratory, rearing and transitional habitat for salmonids, including ESA-listed Puget Sound Chinook, Eastern Strait of Juan de Fuca-Hood Canal Summer Chum, Puget Sound Steelhead and Puget Sound Bull Trout.

**4. Which Salmon Recovery Plan Objectives does this Project Meet & How?**

Specific goals stated in the North Olympic Lead Entity for Salmon Strategy that the project will address include:

Goal 1: Achieve robust fish stocks - this project will contribute to greater juvenile production, especially for Chinook and chum

Goal 2: Implement recovery plans and protect and restore fish habitat - this project implements the following elements of the NOPL 2011 Dungeness Strategy and the Dungeness Chapter of the Puget Sound Chinook Recovery Plan.

1) Restoration of the lower river floodplain and delta to increase the quantity of essential rearing and salt/freshwater transition habitat, 2) Restoration of Functional Riparian and Riverine Habitat to improve the quality of riparian habitat and function, including temperature moderation, long-term recruitment of LWD, cover, food production, etc.

3) LWD Placement 4) Nearshore Habitat Protection and Restoration to improve the quantity and quality of estuarine and nearshore habitat and 5) Water Quality Improvement by removing a potentially contaminating commercial septic tank.

Goal 3: Restore and maintain ecosystem function and nearshore processes - Objective: Focus on protection and restoration of habitat forming process. This project restores ecosystem function to a nearly 40 acres of estuarine wetland and 500 LF of shoreline.

Goal 4: Instill ecosystem awareness: The project will occur at a WDFW wildlife viewing area and interpretive kiosks and educational programs will provide opportunities to inform ecosystem awareness with regard to restoration.

Goal 5: Integrate efforts: The project partners include NOSC, WDFW, WDNR, JSKT and CCD. The project will be shared through two statewide databases, the Habitat Work Schedule and Prism.

**Explain How the Project advances Salmon Habitat Restoration or Protection and recovery of Ecosystem Functions? (Does it protect and/or restore fish habitat? Does it support restoration and maintenance of ecosystem functions and advance ecosystem awareness?)**

The project will remove anthropogenic stressors and restore critical habitat by recreating lost wetlands and improving connectivity between nearshore, river delta, estuarine and riparian habitats. Following completion of this project estuarine and nearshore processes will be significantly less encumbered by infrastructure and will be more capable of dynamically adapting to change.

**Address the project's spatial-temporal scale of influence:**

Spatial: The project will remove fill and infrastructure to reduce flood hazards, improve habitat and increase resiliency of the site for potential effects of climate change. Ecological processes will be restored to long-shore drifting sediments in Dungeness Bay and more than 80 acres of coastal wetlands. This project will improve habitat connectivity for outmigrating salmon originating from the Dungeness River system and throughout the Salish Sea.

Temporal: Much of the project site is owned by WDFW and managed for wildlife habitat. The remaining portions of the project site (owned by Dungeness Farms) are protected by conservation easements. Therefore, the project benefits of habitat

	<p>restoration can reasonably be considered permanent.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b>  The project is ready to begin. The landowners (WDFW, Dungeness Farms, Clallam County) are eager for this project to proceed. Restoration elements are currently at 30% design level, funded by Washington Estuary &amp; Salmon Restoration Program. Construction funds of ~\$3.3M are soon to be contracted by Dept of Ecology.</p> <p><b><u>Range of Estimated Cost:</u></b>  Approximately \$3,000,000-4,000,000.</p> <p><b><u>Watershed priority &amp; watershed area or which WRIA:</u></b>  Nearshore project is located in WRIA 18. Dungeness River/Meadowbrook Creek.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b>  Over 550 Acres of the Lower Dungeness Watershed have been conserved. Multiple restoration actions are recently completed or currently underway by project partners in the Lower Dungeness including floodplain restoration, levee setback and estuarine restoration efforts. Now that WDFW has acquired the long sought after 3 Crabs Restaurant property, NOSC will manage the 3 Crabs Nearshore and Estuarine Restoration Project, in addition to receiving transfer of SRFB Grant #11-1343 (Meadowbrook Creek and Dungeness River Reconnection) from Clallam Conservation District to complement restoration approaches and achieve integrated watershed scale process-based restoration at the project site.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/19260">http://waconnect.paladinpanoramic.com/Project/180/19260</a></p>	
09029.1	<p><b>Dungeness River Large Wood Restoration</b></p> <p><b><u>Watershed Priority:</u></b> 4.76</p> <p><b><u>Project Description:</u></b>  Build approximately 50 engineered and design/build logjams (ELJ's and DBLJ's) in the Dungeness River from river mile (RM) 2.7 to 18.8 and in the Gray Wolf River from RM 0.0 to 2.0. Work will be accomplished in a series of design and construction phases occurring from 2010 to 2019.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b>  Dungeness River channel structure and complexity have been severely harmed by decades of extensive large wood removal projects. From the 1950's to 1982, the near annual "log drives" piled and burned river wood to keep the channel neat and tidy. Significant removal of wood ceased in 1982, but the channel still needs stable logjams to retain the size-classes of wood that recruit into the system today. Meanwhile, the system is extremely lacking in large deep pools and stable spawning habitat.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>  Return stable, complex salmonid spawning and rearing habitat to the mainstem Dungeness and lower Gray Wolf Rivers, by scouring pools, stabilizing spawning riffles, retaining salmon carcasses, providing cover, and engendering the formation of side channels. Besides the immediate benefits provided by the ELJ's and DBLJ's, the project will recreate the channel structure necessary to allow the retention of naturally recruiting wood. Future wood recruitment will be ensured by riparian habitat acquisition, conservation easements, and riparian restoration.</p> <p><b><u>Specific Salmon and Char Stocks that will Benefit.</u></b>  <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of</p>	JSKT/ CC

	<p>Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b></p> <p>NOPE 2011 Draft Strategy Table C: Recommended actions for Dungeness River - "LWD Placement". "Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored." WRIA 18 LFA page 105. Restore LWD from RM 0.9 to Hwy 101. Puget Sound Recovery Plan, page 325.</p> <p><b><u>Restores Formerly Productive Habitat:</u></b></p> <p>The Dungeness River has a historical productivity rating of 5 (of a possible 5). Current productivity rating is 2. According to the EDT analysis, the loss of large wood is one of the primary factors for the decline in productivity.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Olympic Peninsula rivers and their salmonid populations evolved with extremely high levels of instream large wood. Wood provides physical fish habitat, serves as a biological substrate, and roughens stream channels to scour pools and stabilize spawning habitat. Rivers damaged by serious loss of stable, large wood lose these beneficial attributes and also become unable to efficiently retain newly recruited wood and salmon carcasses. By providing stable logjams, the ecosystem processes of habitat formation and nutrient processing can resume at levels appropriate for salmon recovery.</p> <p><b><u>Scale of influence:</u></b></p> <p><b>Spatial -</b> The project will cover approximately 18 miles of mainstem river. <b>Temporal -</b> Although some DBLJ structures may move during floods, the engineered logjams will last 50 years or more. By capturing recruited wood, by stabilizing bars and channels to allow the creation of forested islands, and forcing flows into side channels, the benefits of the project will persist beyond the life of the individual wood jams.</p> <p><b><u>Certainty of Project Success:</u></b></p> <p>The Jamestown S'Klallam Tribe has completed a successful ELJ project near RR Bridge (RM 5.2 to 6.0). We have also constructed design/build logjams below Woodcock Bridge (RM 2.9), upriver of Hwy 101 in the main river (RM 6.6), in Dawley side channel (RM 6.7), and downstream of the Powerlines (RM 8.3).</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p> <p>Because of its large size and the numerous landowners involved, the project must be undertaken as a series of design and construction phases. Seven ELJ's have been built in the RM 5.2 to 6.0 reach. Several more ELJ's will be built when a SRFB-funded acquisition is completed. A habitat restoration/public outreach project for the Hwy 101 to the Fish Hatchery reach is underway. The Upper Dungeness and Lower Gray Wolf LWD project, which targets Chinook, Upper River pink and steelhead habitat, has been funded for design work. The project can be considered ongoing and eminently ready.</p> <p><b><u>Cost Range and Appropriateness:</u></b></p> <p>The entire project will cost about \$5 million. Lessons learned from the RM 5.2 to 6.0 ELJ projects will enable the Tribe to maximize the cost appropriateness of this project.</p> <p><b><u>Other Key Information especially any relationship to previous or current projects:</u></b></p> <p>The project integrates extremely well with numerous habitat protection and stream flow conservation projects previously completed on the Dungeness River.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16120">http://waconnect.paladinpanoramic.com/Project/180/16120</a></p>	
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09030.1	<p><b>Dungeness River Riparian Habitat Protection</b></p> <p><b><u>Watershed Priority:</u></b> 4.76</p> <p><b><u>Project Description:</u></b> The project will protect many previously identified Dungeness River riparian properties downstream of DNR ownership (approximately river mile 12.0) through the purchase of property and conservation easements. High quality riverine forest habitat, particularly those areas with side channels, is a priority for protection. Also included for acquisition are properties needed for flood plain restoration projects, an especially high priority on the Dungeness River. The project's goal is to purchase fee simple titles and conservation easements on approximately 160 acres and about 4 miles of river channel in 8 years. The project will be undertaken as a series of annual phases.</p> <p><b><u>Why the Project is needed (limiting factors addressed):</u></b> The project addresses four limiting factors: protecting functional side channels, preventing floodplain modifications, protecting water quality by maintaining off-channel habitat and functional floodplains, and protecting riparian forests. The lower Dungeness Valley is being rapidly developed for residential use. However, high quality riverine forests still exist and must be protected while the opportunity remains. Experience has shown that because of weak standards, non-compliance and the issuance of variances, land use regulations have not adequately protected Dungeness River fish habitat. Downstream of RM 12 dikes, levees and other attempts to control the river have degraded vital spawning, rearing, and foraging habitat for salmon and char. In the diked and armored sections, the natural process of stream channel movement, habitat formation, flood plain processes, and sediment transport are severely impaired or eliminated. Elsewhere, homes continue to be built within the channel migration zone and vegetation is sometimes cleared virtually to the riverbank. Relocating dikes and other infrastructure requires the purchase of affected properties or easements. The Ecoregional assessment by WDFW and the Nature Conservancy rated Dungeness highest for conservation value and vulnerability for both species and landscape weighted rankings (March 2004).</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b> The project will permanently protect and/or enable restoration on approximately 160 acres of high quality riverine forest and associated instream habitat and areas needed for flood plain restoration projects. These acres will include about 4 miles of river channel. Protection will far exceed the requirements of current land use regulations.</p> <p><b><u>Specific Salmon and Char Stocks that will benefit.</u></b> <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> Puget Sound Recovery Plan, pages 324, 325: "Restoration of Lower River floodplain and delta to River Mile 2.6, Protection of existing functional habitat through land purchase (RM 2.6 - 11.3), Protection of existing functional habitat within the watershed." WRIA 18 LFA: Channel structure and complexity, floodplain connectivity &amp; function, riparian areas &amp; LWD recruitment, water quality.</p> <p><b><u>Restores Formerly Productive Habitat:</u></b> Often, land purchases are the initial actions leading to major restoration accomplishments. For example, at Rivers End 15 properties, which boarder about 2,000' of river channel and includes about 55 acres of delta flood plain, have been purchased. Livestock have been permanently removed from 50 acres of former flood plain pasture. Numerous cabins and other structures have been removed and extensive reforestation has occurred. Flood plain</p>	JSKT, WDFW, NOLT
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	<p>processes are beginning to occur, the river channel is becoming increasingly sinuous, and levels of large wood are increasing. Similar land purchase, building removal, and reforestation activity is occurring adjacent to the Corps Dike in anticipation of dike setback and flood plain restoration. In many cases the land purchases are a crucial element of large restoration actions.</p> <p><b>Protects High Quality Fish Habitat:</b> The project targets the highest-quality remaining habitat and will provide protection far exceeding the requirements of current land use regulations.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Ecosystem functions are protected by 1) permanently protecting mature conifer/hardwood riverine forests for the benefit of fish, mammals, birds, amphibians, and reptiles and/or 2) enabling the restoration of flood plains along 4 miles of river.</p> <p><b><u>Scale of influence:</u></b> <b>Spatial-</b> The project will protect about 4 miles of mainstem river and side channels. <b>Temporal -</b> Protection will be permanent.</p> <p><b><u>Certainty of Project Success:</u></b> Numerous properties have already been purchased, including the Woods property which was funded in the 2010 SRFB round. Target properties routinely appear on the market, so certainty of success is very high.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b> Several properties must be acquired in the near-term to enable relocation of the Corps Dike on the lower river, an extremely high priority restoration action. Because the lower river is developing rapidly, the project should be initiated immediately before habitat protection and restoration opportunities are lost.</p> <p><b><u>Cost Range and Appropriateness:</u></b> Sales price are based on fair market value as determined by an appraisal. Land prices are currently favorable.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b> This is a highly successful, ongoing project with numerous purchases to date.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/19040">http://waconnect.paladinpanoramic.com/Project/180/19040</a></p>	
09031.1	<p><b>Dungeness River Riparian Restoration</b></p> <p><b><u>Watershed Priority:</u></b> 4.76</p> <p><b><u>Project Description:</u></b> In the lower Dungeness River corridor (from the mouth to RM 11), approximately 20% of riverbank riparian vegetation has been removed or significantly denuded. Problem areas are the Mouth to Hurd Creek, RR Bridge reach, and Hwy 101 to May Rd. In addition the entire lower river corridor is infested with Buddleia. This is a long-term investment in the river. Riparian restoration involves three interrelated actions: to eliminate or control noxious weeds, plant unproductive or non-forested sites with appropriate shrubs and trees, and maintain the site until the desired forest community is established (5 years or more).</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> The 1914 tax assessor's map described properties along the river corridor as "logged and burned", "brush", and "cleared," with the stumps per acre noted. The riparian forest has been logged twice throughout much of the river corridor. Loss of native riparian cover</p>	JSKT

	<p>allows colonization of invasive species, reduced filtering of sediments and pollutants (fine sediment and water quality), and depleted reserves for woody debris recruitment into the river (channel condition). Some of the riparian corridor is in fair shape, other portions are young and shrub/alder dominated. Buddleia is a present and prolific (noxious-weed) shrub along the entire river corridor. Buddleia displaces native trees and shrubs by forming dense thickets.</p> <p><b>Benefit to Salmon (how does it address stock status &amp; trends):</b> A functional, cottonwood and conifer-dominated forest is a key element to salmon habitat recovery. Large trees are needed as key pieces that anchor log jams and create deep pools for salmon. Large trees also slow down floods and force the river through stable-forested side channels instead of unstable gravel bars. Stable logjams are also a feedback loop to protect the growth and development of riparian forests downstream of the logjams.</p> <p><b><u>Specific Salmon and Char Stocks that will Benefit.</u></b>  <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b>  The NOPL 2011 Draft Strategy Table C: Recommended actions for Dungeness River, Dungeness WRIA 18 LFA (pg 105), and Chapter 5-Dungeness, Puget Sound Recovery Plan, page 325, all have very similar recommendations. "restore functional riparian and riverine habitat..to moderate temperatures, recruit LWD long-term, provide cover, and food production."</p> <p><b>Restores Formerly Productive Habitat:</b> The Dungeness River has a historical productivity rating of 5 (of a possible 5). Current productivity rating is 2, which is directly related to poor habitat caused by diking, riparian forest harvest, and large wood removal. A riparian forest of functional size and species composition is an essential element to salmonid recovery.</p> <p><b>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</b> Our strategy to recovery ecosystem function is three-fold. Recover floodplain to the greatest extent possible, improve salmon habitat in the near term with large wood recovery, and restore the riparian forest to a species composition and function that benefit salmonids. The riparian species composition would include black cottonwood since that species will grow to 3-4 ft diameter in less than 50 years, and conifers such as western red cedar and Douglas-fir. A restored riparian forest will shade the river and especially side channels, provide cover for fish and wildlife, and serve as a permanent source of wood for habitat.</p> <p><b><u>Scale of influence:</u></b>  <b>Spatial</b> - The project will cover approximately 11 miles of the lower river (we are controlling knotweed upriver of the hatchery). We have been engaged in noxious weed control for about four years (see map); while knotweed is under control, a concerted effort and more years is needed to control Buddleia. <b>Temporal</b> – while there are places currently with good riparian habitat, it will take time to re-grow a functional riparian forests in other parts of the river corridor; in the short-term we plan large wood projects to provide for improved salmon habitat now.</p> <p><b><u>Certainty of Project Success:</u></b>  We have multiple ongoing riparian restoration projects, some in partnership with Clallam County and WDFW. We have planted and are planting roughly 40 acres of riparian forest at Rivers End as the last step to floodplain recovery. Behind the Corps dike we have planted 46 acres (which we are maintaining) and have 15 acres remaining to plant. We are controlling Buddleia and replanting with western red cedar in about ¼ of the river corridor and need to expand that to the entire river corridor. We will build upon these projects and expand this effort to the lower 11 miles.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p>	
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	<p>Because of its large size and the numerous landowners involved, this is a multi-year effort with several funding sources. What is limiting our effort at this time is limited funding.</p> <p><b><u>Cost Range and Appropriateness:</u></b> The entire project to control invasive species, replant and maintain will cost \$350-500k over a period of 7 years.</p> <p><b><u>Other Key Information especially any relationship to previous or current projects:</u></b> The project integrates with previous and future work building logjams on the river, and setting back dikes or pulling out rock banks in favor of logjams. We view habitat recovery in the Dungeness as a three-legged stool: floodplain restoration to provide flood storage, new side-channels, and space to reduce channel grade, large-wood placement to provide habitat in the short-term, and riparian forest recovery for the longer term.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/5458">http://waconnect.paladinpanoramic.com/Project/180/5458</a></p>	
09032.1	<p><b>Dungeness Drift Cell Conservation</b></p> <p><b><u>Watershed Priority:</u></b> 4.27</p> <p><b><u>Project Description:</u></b> Dungeness Bay provides approximately 5,200 acres of critical spit and estuary habitat for a large variety of waterfowl, shorebirds, wading birds, marine and freshwater mammals, crustaceans, shellfish, forage fish, salmon and char. Dungeness Bay is wholly created by the fragile 5-mile long Dungeness Spit. The spit itself is entirely the product of enormous sediment recruitment, originating primarily from the 8.8-mile drift cell to the west. Any decrease in sediment supply resulting from the construction of shoreline armoring, jetties, groins, or other shoreline structures could cause Dungeness Spit, Dungeness Bay, and their associated nearshore habitats to quickly erode away. This project will provide long-term protection for Dungeness Spit and Dungeness Bay through the purchase of conservation easements and properties, and the relocation or decommission of structures and infrastructure along the entire Dungeness drift cell. The project will occur in the following phases: 1) measure bluff erosion rates, 2) develop a conservation plan, including public outreach 3) design conservation measures, 4) relocate infrastructure and buildings, and 5) purchase conservation easements and property.</p> <p><b><u>Why the Project is needed (limiting factors addressed):</u></b> Although upland areas are being developed adjacent to the Dungeness drift cell (DDC), no shoreline armoring has occurred to date. Spectacular erosion of the similar Ediz Hood in Port Angeles demonstrates the vulnerability of Strait of Juan de Fuca spits to the loss of recruited sediment. Any significant shorelines armoring within the DDC will seriously imperil the existence of Dungeness Spit and Dungeness Bay. Existing regulations do not provide protection from this potential devastating impact. In numerous locations structures and infrastructure are located near the bluff edge, requiring that either a) shoreline armoring must occur or b) improvements be relocated or decommissioned. LFA elements include: 1) ecosystem links between upland and nearshore habitats, 2) reduced sediment input from feeder bluffs to nearshore area causes degradation of the beach, resulting in loss of the shallow, nearshore migration corridors and eventual loss of the spits themselves, 3) loss of riparian vegetation that provides shade to the upper beach.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b> The project will permanently protect an enormous amount (approximately 5,200 acres) of 1) forage fish spawning habitat and 2) prime nearshore salmon and char rearing and migration habitat, especially for Coastal-Puget Sound bull trout, Puget Sound Chinook, pink, coho, and fall chum salmon, and summer chum originating in the Dungeness River, Jimmycomelately Creek and Discovery Bay.</p>	JSKT



	<p><b><u>Specific Salmon and Char Stocks that will benefit.</u></b>  <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b>  Puget Sound Salmon Recovery Plan (PSSRP), habitats and processes critical to support salmon recovery, "drift cell processes (including sediment supply, transport and deposition) that create and maintain nearshore habitat features such as spits, lagoons, bays and beaches" (page 368), PSSRP Dungeness Section, Key strategies and actions supporting the overall approach to recovery, "Nearshore habitat protection" (page 324). "Estuarine and marine nearshore areas of Discovery Bay, Sequim Bay and the Eastern Strait of Juan de Fuca provide valuable juvenile rearing and migration habitats as well as production of food resources for juveniles and adults." Summer Chum Salmon Recovery Plan – May 2007, pg 84. The project protects the above-reference habitat type. NOPL 2011 Draft Strategy Table A: Goals and Objectives, "Restore and maintain ecosystem function and nearshore processes - focus on protection and restoration of habitat-forming, watershed, and nearshore processes." The project's specific objectives, which will be accomplished as described above, are to protect habitat-forming and nearshore processes.</p> <p><b><u>Protects High Quality Fish Habitat:</u></b>  Dungeness Bay is by far the largest estuary on the Washington side of the Strait of Juan de Fuca (2nd - Pysht estuary, approx. 275 acres, 3rd - WA Harbor, 118 acres). The Bay is replete with superb, productive eelgrass beds (363 acres) and tidal marshes (161 acres).</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b>  The natural recruitment and transport of marine sediment is an elemental and crucial ecosystem function that creates and maintains complex shorelines features and associated habitat, in this case Dungeness Spit and Dungeness Bay. These are habitats of regional significance. The project is designed specifically to protect this ecosystem function, which in turn supports the entire Dungeness Bay ecosystem.</p> <p><b><u>Scale of influence:</u></b>  <b>Spatial</b> - the project seeks to conserve drift cell processes along 8.8 miles of marine feeder bluffs, leading to the protection of 5,200 acres of aquatic habitat at Dungeness Spit and Dungeness Bay. <b>Temporal</b> - Conservation measures will be designed to preserve drift cell processes for a period of 200 to 500 years.</p> <p><b><u>Certainty of Project Success:</u></b>  Landowner willingness is the crucial factor in project success. The number of landowners will increase as larger parcels are subdivided. Drift cell protection will be more difficult and expensive as homes are built near the edge of the bluff. Certainty of success is at its high point now and will diminish over time.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b>  Phase 1 (Measurement of bluff erosion rates) is underway and will be completed in early 2011. The remaining phases will then be ready to be undertaken in the order identified above, except that parts of Phases 4 and 5 might occur concurrently or in reverse order.</p> <p><b><u>Cost Range and Appropriateness:</u></b>  Cost range for Phase 2 is \$ 75,000 to \$150,000. Cost estimates for the remaining phases cannot be made until Phase 2 is complete, although a placeholder of \$7 million is being used. Easements and land purchases will be based on fair-market value appraisals.</p> <p><b>Photos and Graphics are available for viewing at:</b></p>	
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	<a href="http://waconnect.paladinpanoramic.com/Project/180/5145">http://waconnect.paladinpanoramic.com/Project/180/5145</a>	
09091 (Comb- ination of Projects 33, 34,38, 42, 43)	<p><b>Dungeness River Instream Flow Restoration – Irrigation Efficiencies</b></p> <p><b><u>Watershed Priority:</u></b> Dungeness – 4.76</p> <p><b><u>Project Description:</u></b> This suite of projects includes multiple interrelated strategies that restore stream flows in the Dungeness River. One strategy is irrigation water conservation – primarily, irrigation ditch piping. The specific projects proposed include the following:</p> <ul style="list-style-type: none"> <li>• Agnew Irrigation District – piping about 2 miles of ditch saving an estimated 1.0 cfs of water.</li> <li>• Dungeness Irrigation District – piping about 4.6 miles of ditch, preventing 1-1.5 cfs of conveyance losses and tailwater losses that exceed 1.0 cfs. This will complete the piping of the entire distribution system, eliminating all conveyance and tailwater losses.</li> <li>• Dungeness Irrigation Group – piping about 4 miles of ditch, preventing an estimated 1 cfs of conveyance losses and as much as 0.6 cfs of tailwater losses. These projects will complete the piping of the entire Dungeness Group distribution system, eliminating all system losses.</li> <li>• Highland Irrigation District – piping one to two miles of ditch (H10 Lateral), installing a well, or switching to City of Sequim re-use water resulting in in-river water savings of 1.1 cfs and eliminating tailwater discharges to Bell Creek.</li> <li>• Sequim Prairie-Tri Irrigation Association – piping approximately 1.5 miles of ditch (SP-5 &amp; EM-1) to conserve 1-1.5 cfs.</li> </ul> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> Low stream flow in the Dungeness River, particularly in late summer and early fall when flows may dip below 80 cubic feet per second (cfs), is a major habitat limiting factor (WRIA 18 LFA, Comprehensive Water Conservation Plan and EIS, Dungeness CIDMP). According to the USGS (CIDMP 2006), only five of 16 fish life history stages are supported in Dungeness River side channels when flows fall below 80 cfs. A minimum of 128 cfs is necessary to support 12 of the 16 life history stages. The US Fish &amp; Wildlife Service recommended minimum flows of 180 cfs during the latter third of the irrigation season (USF&amp;W 1993), although such flows are not achieved in most years. The NOAA Fisheries established a minimum flow target of 105 cfs through the Comprehensive Irrigation District Management Plan (CIDMP) process.</p> <p>The Dungeness River Agricultural Water Users Association (WUA), comprised of four irrigation districts and three irrigation companies have rights to withdraw water from the Dungeness River to supply irrigation water to approximately 7,000 acres of land in the Dungeness Valley. They maintain five diversion points on the Dungeness River and average approximately 50 cfs in withdrawals for the irrigation season running from April 15 to September 15. Water rights and certificates for the Dungeness River held by the WUA total 518.16 cfs. The WUA has agreed to limit water withdrawals to 156 cfs, and at no time take over 50 percent of the river's flow, thus alleviating catastrophic late season habitat conditions. However, irrigators frequently must sacrifice production to meet the 50 percent requirement and would have to make significant sacrifices to comply with the NOAA Fisheries recommendations.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b> Research indicates that when flows are below 100 cfs, each additional cfs of flow may result in a one percent increase in Chinook spawning habitat. A <i>Comprehensive Water Conservation Plan</i> was prepared for the Washington Department of Ecology in 1999 to identify and recommend irrigation water conservation projects that the WUA members</p>	CCD, WUA

	<p>could implement to reduce withdrawals "...from the Dungeness River to the minimum practicable, thus increasing streamflow in the Dungeness River itself and increasing the chances of survival of federally listed species of salmonids and other stocks of concern, such as pink salmon." A total of 113 ditch-piping projects are recommended in the plan for a total estimated water savings of over 38 cfs.</p> <p><b><u>Specific Salmon and Char Stocks that will:</u></b> Increasing flows in the Dungeness River benefits all salmonids and all life stages, particularly Chinook and pink salmon.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project meet and how?</u></b> Restoration of Dungeness River stream flows is identified in the following plans:</p> <ul style="list-style-type: none"> <li>○ Dungeness chapter of the Puget Sound Chinook Recovery Plan</li> <li>○ WRIA 18 Salmon &amp; Steelhead Habitat Limiting Factors Analysis</li> <li>○ WRIA 18 Watershed Plan</li> <li>○ Comprehensive Water Conservation Plan</li> <li>○ Comprehensive Irrigation District Management Plan</li> </ul> <p><b><u>Restores Formerly Productive Habitat:</u></b> Reducing water withdrawals from the Dungeness River will restore instream flows. Restoration of instream flows will result in increased habitat in the Dungeness River from the most upstream irrigation water diversion point at river mile 11.1 downstream to the mouth.</p> <p><b><u>Illustrate how Project Supports Restoration or Protection of Ecosystem Functions:</u></b> Restoring instream flows is basic to restoration of aquatic ecosystem functions. Without adequate flow in the Dungeness River, the value of other habitat restoration efforts is severely compromised.</p> <p><b><u>Certainty of Success:</u></b> Since the <i>Conservation Plan</i> was prepared in 1998, nearly 30 irrigation efficiencies projects have been implemented. Approximately 40 miles of irrigation ditches have been replaced with pipelines and nearly half of the water savings proposed in the <i>Conservation Plan</i> have been realized.</p> <p><b><u>Cost Range and Appropriateness:</u></b> Irrigation ditch piping costs are estimated to be \$3-4 million.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/18759">http://waconnect.paladinpanoramic.com/Project/180/18759</a></p>	
12098	<p><b>Dungeness River Instream Flow Restoration - Storage</b></p> <p><b><u>Watershed Priority:</u></b> Dungeness – 4.76</p> <p><b><u>Project Description:</u></b> This suite of projects includes interrelated water storage strategies that contribute to Dungeness River late season stream flow restoration. These strategies include water storage in small off-channel reservoirs and shallow aquifer recharge (SAR). The irrigation water conveyance infrastructure will be utilized to capture and convey Dungeness River flows during periods of high runoff. Capture and storage of runoff will decrease late season withdrawals from the Dungeness River when flows are critically low. In the case of reservoir storage, early season snowmelt will be stored for use later in the irrigation season when stream flows are critically low. In the case of SAR, water will be infiltrated into the ground during periods of high stream flows. Recharging the shallow aquifer early in the summer</p>	CCD, WUA, CC, WWT

	<p>will ameliorate low late season stream flows in the main stem and tributaries. Treated and reclaimed sewer water will also be infiltrated. The irrigation infrastructure, which includes five diversion points on the Dungeness River and approximately 170 miles of canals, laterals and pipelines, is ideally suited for diverting water and conveying it to areas suitable for SAR. And, there are many existing small reservoirs that could be improved and areas located along irrigation ditches that are suitable for construction of new reservoirs. Both SAR and reservoirs are integral components of comprehensive irrigation improvement projects.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b>  Low stream flow in the Dungeness River, particularly in late summer and early fall when flows may dip below 80 cubic feet per second (cfs), is a major habitat limiting factor (WRIA 18 LFA, Comprehensive Water Conservation Plan and EIS, Dungeness CIDMP). According to the USGS (CIDMP 2006), only five of 16 fish life history stages are supported in Dungeness River side channels when flows fall below 80 cfs. A minimum of 128 cfs is necessary to support 12 of the 16 life history stages. The US Fish &amp; Wildlife Service recommended minimum flows of 180 cfs during the latter third of the irrigation season (USF&amp;W 1993), although such flows are not achieved in most years. The NOAA Fisheries established a minimum flow target of 105 cfs through the Comprehensive Irrigation District Management Plan (CIDMP) process.</p> <p>Modeling suggest that less leaking from open irrigation ditches lowers the water table, thereby resulting in less stream recharge later in the season. Irrigation water withdrawals account for as much as 80 percent of stream flow losses, while natural losses to the aquifer can be as high as 20 percent (Bureau of Reclamation 2003). Achieving these targeted flows may in some years only be possible through a combination of reduced late season withdrawals from the Dungeness River and shallow aquifer recharge earlier in the summer.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>  Research indicates that when flows are below 100 cfs, each additional cfs of flow may result in a one percent increase in Chinook spawning habitat. A Dungeness groundwater model was developed to quantify stream flow benefits from SAR (PGG 2009); however, the benefits of small reservoir storage have not been quantified. There are limited opportunities to restore stream flows and keep agriculture in production in the Dungeness Valley. SAR and small storage represent solutions that to meet the water needs of fish and farms.</p> <p><b><u>Specific Salmon and Char Stocks that will:</u></b>  Increasing flows in the Dungeness River benefits all salmonids and all life stages. Chinook and pink salmon particularly benefit from increased flows in the summer.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project meet and how?</u></b>  Restoration of Dungeness River stream flows is identified in the following plans:</p> <ul style="list-style-type: none"> <li>○ Dungeness chapter of the Puget Sound Chinook Recovery Plan</li> <li>○ WRIA 18 Salmon &amp; Steelhead Habitat Limiting Factors Analysis</li> <li>○ WRIA 18 Watershed Plan</li> <li>○ Comprehensive Water Conservation Plan</li> <li>○ Comprehensive Irrigation District Management Plan</li> <li>○ Aquifer Recharge Feasibility Study for the Dungeness Peninsula</li> </ul> <p><b><u>Restores Formerly Productive Habitat:</u></b>  Reducing water withdrawals from the Dungeness River and mitigating the impacts of groundwater withdrawals will restore instream flows. Restoration of instream flows will result in increased habitat throughout the lower Dungeness River, particularly the water losing reaches.</p> <p><b><u>Illustrate how Project Supports Restoration or Protection of Ecosystem Functions:</u></b>  Restoring instream flows is basic to restoration of aquatic ecosystem functions. Without</p>	
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	<p>adequate flow in the Dungeness River, the value of other habitat restoration efforts is severely compromised.</p> <p><b><u>Certainty of Success:</u></b> Over the past century, small reservoirs have been constructed by individual landowners throughout the Dungeness Valley to ensure adequate supplies of irrigation water. Many of these reservoirs would greatly benefit from enlargement and enhancement. The largest reservoir in the valley was constructed in 2005-06 by the Sequim Prairie-Tri Irrigation Association as part of a highly successful comprehensive irrigation efficiencies project that also included piping over 3.5 miles of open ditches. A shallow aquifer recharge feasibility study completed in 2009 determined that SAR holds considerable promise for increasing late season stream flows.</p> <p><b><u>Cost Range and Appropriateness:</u></b> Anticipated costs for implementation of all the strategies identified here have not been determined.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/18072">http://waconnect.paladinpanoramic.com/Project/180/18072</a></p>	
<p><b>UPDATED!</b> <b>09092.1</b> (Combination of Projects 35 &amp; 36)</p>	<p><b>Dungeness River Floodplain Restoration</b></p> <p><b><u>Watershed Priority:</u></b> 4.76</p> <p><b><u>Project Description:</u></b> This project is floodplain restoration through the setback or reconfiguration of dikes or armored banks, from the mouth to Canyon Creek (RM 0 to 10.7). The productivity of salmon in this steep watershed is dependent on a functional floodplain and the river free to move. Where possible, floodplain restoration projects will be linked to riparian reforestation and placement of engineered logjam projects. Riparian reforestation and large wood restoration are covered under separate projects. Project phases for floodplain recovery include: Rivers End acquisition (RM 0.3-0.8), Army Corps dike setback and channel reconstruction (RM 0.2-2.7), Beebe Dike setback (RM 1.5 to 2.7), Ward Road reconfiguration (RM 3-3.3), RR dike setback (RM 5.8), Dungeness Meadows dike reconfiguration (RM 7.5 to 8.3), Robinson side channel restoration (RM 8.9-9.2), and Haller dike setback (RM 8.8-9.8).</p> <p>Army Corps dike setback is in planning and design. The Ward Rd reconfiguration would pull the road back from the river edge and setback the bank armoring that confines the river. The RR Bridge dike setback would open the floodplain to the east of the bridge to side channel development and flooding. The Dungeness Meadows dike reconfiguration would restore floodplain processes in a severely constrained reach. Robinson side channel restoration would setback an armored pinch point on the river to expand spawning and rearing area, and Haller dike setback would recover floodplain lost in the last several decades.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> The Dungeness watershed is very steep, likely the steepest fall per mile for a river of its size on the Peninsula. The river pattern is anastomosing, with channel avulsion creating multiple main channels or side channels. The river system is sensitive to the loss or confinement of floodplain through diking and bank armoring. Historically (1914 through 1960's, the start of diking in the river), the lower river accessed channels across a much wider floodplain area than present. It is likely the river bed has in places degraded (downcut) one to several feet from Old Olympic Hwy to Kinkade Island (RM 4-10). Further bed degradation was observed following diking and channel manipulation at the Dungeness Meadows dike reach (1980's). Salmon habitat recovery is tied to floodplain recovery in the Dungeness watershed.</p>	JSKT/CC/Army Corps

	<p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>          In the 1950's and 1960's, the river meandered across a wider floodplain area. The overall channel grade was less than present. The force of floodwater is driven by channel slope. Restoring floodplain, along with in-river wood placement and riparian forest recovery, will return stable, complex salmonid spawning and rearing habitat to the mainstem Dungeness. Above Old Olympic Hwy, median diameter of the bed is cobble sized at 100-170 mm (BOR 2002), much larger than preferred chinook spawning gravel size of 80 mm.</p> <p><b><u>Specific Salmon and Char Stocks that will Benefit.</u></b>  <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b>          The NOPL 2011 Draft Strategy Table C: Recommended actions for Dungeness River, Dungeness WRIA 18 LFA (pg 105), and Chapter 5-Dungeness, Puget Sound Recovery Plan, page 325, all have very similar recommendations. "Floodplain Restoration/Constriction Abatement (RM 2.6 - 11.3) to alleviate channel constrictions thereby increasing corresponding channel meanders, and reduce gradient, velocity, scour, and bank erosion."</p> <p><b><u>Restores Formerly Productive Habitat:</u></b>          The Dungeness River has a historical productivity rating of 5 (of a possible 5). Current productivity rating is 2, which is directly related to poor habitat caused by diking, riparian forest harvest, and large wood removal. Floodplain recovery is an essential element to salmonid recovery.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b>  <b>Scale of influence: Spatial</b> - The project will cover approximately 10 miles of mainstem river, this is virtually all of river corridor with a large and wide floodplain. <b>Temporal</b> – Restored floodplain will benefit salmon in perpetuity. This project will be combined with Large wood restoration and riparian reforestation where appropriate and allowed.</p> <p><b><u>Certainty of Project Success:</u></b>          Each project element has its own challenges to complete. Dungeness Corps dike setback is underway. Ward Rd reconfiguration will require some property acquisition and an agreement with Clallam County. Replacing the RR Bridge trestle with a floodplain-friendly structure requires funding. The remaining projects upriver of Hwy 101 will continue to evolve following community meetings with landowners. Jamestown S'Klallam Tribe, Clallam County, Washington Department of Fish and Wildlife have a strong partnership in moving towards floodplain recovery in the Dungeness watershed.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b>          Because of its large size and the numerous landowners involved, the project must be undertaken as a series of design and construction phases. One project is completed (Rivers End), another is in design (Corps dike setback), in the third we are looking for funding (RR Bridge trestle), and the others require more communication with partners and the community.</p> <p><b><u>Cost Range and Appropriateness:</u></b>          The entire project will cost between \$10 and \$15 million.</p> <p><b><u>Other Key Information especially any relationship to previous or current projects:</u></b>          The project integrates with previous and future work building logjams on the river, invasive weed control, and riparian reforestation. We view habitat recovery in the Dungeness as a three-legged stool: floodplain restoration to provide flood storage, new side-channels, and space to reduce channel grade, large-wood placement to provide habitat in the short-term,</p>	
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	and riparian forest recovery for the longer term.	
	<p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/3093">http://waconnect.paladinpanoramic.com/Project/180/3093</a></p>	
<b>NEW!</b> 16101	<p><b>Dungeness Drift Cell Protection: Toolbox Implementation, Pilot Project</b></p> <p><b><u>Project Description:</u></b>  In an active area of the Dungeness drift cell, three adjoining parcels with houses and out buildings located in a sensitive area along the bluffs east of Siebert Creek will be purchased and restored. Houses and outbuildings on the parcels, currently at risk of falling over the edge of the bluff and into the Strait of Juan de Fuca, will be moved away from the bluff edge and the area will be re-vegetated in native plants. One house currently is uninhabitable; one is 'yellow-tagged', which means that the occupant must vacate within a specified time frame; and outbuildings on the third parcel have been relocated to keep them from falling down the bluff. This project is a pilot project to implement the Dungeness Drift Cell: Conservation Toolbox (North Olympic Land Trust, 2015; report prepared by Erik Steffens).</p> <p>Dungeness Bay provides approximately 5,200 acres of critical spit and estuary habitat for a large variety of waterfowl, shorebirds, wading birds, marine and freshwater mammals, crustaceans, shellfish, forage fish, salmon and char. Dungeness Bay is wholly created by the fragile 5-mile long Dungeness Spit. The spit itself is entirely the product of enormous sediment recruitment, originating primarily from the 8.8-mile drift cell to the west. Any decrease in sediment supply resulting from the construction of shoreline armoring, jetties, groins, or other shoreline structures could cause Dungeness Spit, Dungeness Bay, and their associated nearshore habitats to quickly erode away.</p> <p>Tools in the Conservation Toolbox will provide long-term protection for Dungeness Spit and Dungeness Bay through the purchase of conservation easements and properties, and the relocation or decommission of structures and infrastructure along the entire Dungeness drift cell. This project was proposed by the Clallam County Department of Community Development. Anticipated partners included the North Olympic Land Trust and the Jamestown S'Klallam Tribe.</p> <p><b><u>Why the Project is needed (limiting factors addressed):</u></b>  At this time, structures on 3 adjoining parcels along the 218' high bluff are in danger of collapsing into the drift cell. The eroding character of the bluff in this area indicates that the most reasonable and cost-effective solution is to remove the structures and restore the sites. Restoration of the sites will allow drift cell processes to continue to work in an unarmored state.</p> <p>Although upland areas are being developed adjacent to the Dungeness drift cell (DDC), no shoreline armoring has occurred to date. Spectacular erosion of the similar Ediz Hood in Port Angeles demonstrates the vulnerability of Strait of Juan de Fuca spits to the loss of recruited sediment.</p> <p>In numerous locations structures and infrastructure are located near the bluff edge, requiring that either a) shoreline armoring must occur or b) improvements be relocated or decommissioned. LFA elements include: 1) ecosystem links between upland and nearshore habitats, 2) reduced sediment input from feeder bluffs to nearshore area causes degradation of the beach, resulting in loss of the shallow, nearshore migration corridors and eventual loss of the spits themselves, 3) loss of riparian vegetation that provides shade to the upper beach.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>  This project will make strides in the effort to permanently protect an enormous amount (approximately 5,200 acres) of 1) forage fish spawning habitat and 2) prime nearshore salmon and char rearing and migration habitat, especially for Coastal-Puget Sound bull trout, Puget Sound Chinook, pink, coho, and fall chum salmon, and summer chum</p>	Clallam County DCD



originating in the Dungeness River, Jimmycomelately Creek and Discovery Bay. Specific Salmon and Char Stocks that will benefit.  
 ESA-listed: Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. Non-listed: coho, pinks, fall chum, cutthroat.

**Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet & How?**

Puget Sound Salmon Recovery Plan (PSSRP), habitats and processes critical to support salmon recovery, "drift cell processes (including sediment supply, transport and deposition) that create and maintain nearshore habitat features such as spits, lagoons, bays and beaches" (page 368), PSSRP Dungeness Section, Key strategies and actions supporting the overall approach to recovery, "Nearshore habitat protection" (page 324). "Estuarine and marine nearshore areas of Discovery Bay, Sequim Bay and the Eastern Strait of Juan de Fuca provide valuable juvenile rearing and migration habitats as well as production of food resources for juveniles and adults." Summer Chum Salmon Recovery Plan – May 2007, pg 84. The project protects the above-reference habitat type. NOPL 2011 Draft Strategy Table A: Goals and Objectives, "Restore and maintain ecosystem function and nearshore processes." The project's specific objectives, which will be accomplished as described above, are to protect habitat-forming and nearshore processes.

**Protects High Quality Fish Habitat:**

Dungeness Bay is by far the largest estuary on the Washington side of the Strait of Juan de Fuca (2nd - Pysht estuary, approx. 275 acres, 3rd - WA Harbor, 118 acres). The Bay is replete with superb, productive eelgrass beds (363 acres) and tidal marshes (161 acres).

**Illustrate how Project supports Restoration or Protection of Ecosystem Functions:**

The relocation of structures and restoration of the three bluff-front parcels will help assure that drift cell processes will continue in this area. The natural recruitment and transport of marine sediment is an elemental and crucial ecosystem function that creates and maintains complex shorelines features and associated habitat, in this case Dungeness Spit and Dungeness Bay. These are habitats of regional significance. The project is designed specifically to protect this ecosystem function, which in turn supports the entire Dungeness Bay ecosystem.

**Scale of influence:**

Spatial – This phase of the project will prevent a potential input of infrastructure into the Dungeness drift cell, will prevent armoring, and will play a role in the effort to conserve drift cell processes along 8.8 miles of marine feeder bluffs, leading to the protection of 5,200 acres of aquatic habitat at Dungeness Spit and Dungeness Bay.

Temporal – Three substantial structures will be moved away from the bluff edge in the drift cell and the area will be restored, which will keep the entire drift cell intact and will prevent a cascade of shoreline armoring efforts. Conservation measures will be designed to preserve drift cell processes for the foreseeable future.

**Certainty of Project Success:**

Certainty of success is high. Landowner willingness is the crucial factor in project success, and the landowners are willing to sell or donate their property. Clallam County and its partners have experience with the purchase, relocation, and restoration of waterside parcels. Certainty of success is at its high point now and will diminish over time as structures begin to fail and the bluff erodes further.

**Timing Needs & Sequencing Requirements (project readiness):**

The project could start immediately. Three adjoining, vulnerable properties have been identified. Landowners are willing. Project partners are experienced in property purchase and restoration. The conservation toolbox has been developed for the entire drift cell, which will allow further progress to protect Dungeness Spit and Dungeness Bay.



	<p><b><u>Cost Range and Appropriateness:</u></b> Cost range is \$ 100,000 to \$150,000. Cost estimates for the remaining phases cannot be made at this time, although a placeholder of \$7 million is being used. Easements and land purchases will be based on fair-market value appraisals.</p> <p><b><u>Watershed Priority: 4.27</u></b></p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/project/180/60343">http://waconnect.paladinpanoramic.com/project/180/60343</a></p>	
09040	<p><b>Cassalery Creek Instream Flow Enhancement Project</b></p> <p><b><u>Project Description:</u></b> This project is located in a critical aquifer recharge area within the Dungeness River Watershed and WRIA 18 East. The project focuses on improving Cassalery Creek salmon habitat through the addition of between 0.1 and 0.2 CFS of Washington State Department of Ecology classified Class "A" reclaimed water to the stream, drinking water quality. This re-use water would be pumped through a buried pipeline from the SunLand Wastewater Treatment Plant to a series of cooling ponds prior to entering Cassalery Creek. This concept of re-use water for stream flow augmentation is not new or dissimilar to the Bell Creek Instream Flow Enhancement Project sponsored by the City of Sequim.</p> <p>The concept for this Salmon Habitat Improvement Project utilizing Beneficial Water Re-use in this location has been under discussion for more than eight years with many stakeholders, including SunLand Water District, Washington State Department of Health, Clallam County, Washington State Department of Fish and Wildlife, Washington State Department of Ecology, and the Jamestown S'Klallam Tribe.</p> <p>During those discussions, it was agreed that the project should reference a guaranteed supplemental instream flow, and due to the plants limited capacity, SunLand Water District can only guarantee 0.1-0.2 cfs of additional instream flow.</p> <p>Stocks benefiting from this project are Fall Chum, Winter Steelhead, Cutthroat, and Coho. Also, according to the WRIA 18 Watershed Plan, Bull Trout may occur in Cassalery Creek because they have been observed in Bell Creek.</p> <p>Clallam County State of the Streams (page 94, Greater Dungeness Watershed Study) refers to Cassalery Creek as a low velocity stream with limited flows, so there is limited ability for the stream to flush out any toxins that enter the stream. The Creek has highly impaired ratings for biological conditions and highly/critically impaired ratings for habitat integrity.</p> <p>Higher instream flows would improve the habitat for salmonid species and improve the overall biological viability of the Creek.</p> <p>In the WRIA 18 Limiting Factors Analysis, it states that "Instream flow recommendations, based on toe width measurements of 5.7 feet made at Woodcock Rd., have been made for Cassalery Creek. Recommended instream flows are 5.0 cfs for the period November-January (coho spawning), 3.0 cfs for February, 12.0 cfs for March-April (steelhead spawning), 8.0 cfs for May-June, and 2.0 cfs for the period July-October (steelhead rearing)(Beecher and Caldwell 1997). Toe-width is primarily influence by bank-full flows in winter months, however it may be additionally influenced in this watershed by irrigation groundwater returns and past land use. The limited flow data that is available for Cassalery Creek was not reviewed to ascertain consistency with recommended instream flows."</p> <p>In the WRIA 18 Watershed Plan (the Chapter on Water Quantity), Cassalery Creek is listed as one of the few creeks with high instantaneous water rights relative to their flows. There</p>	SWD

	<p>are 9.74 cfs of instantaneous water rights, and the average annual flow is 0.8 cfs.</p> <p>It's clear that there is a need for instream flow supplementation. With an average flow of 0.8 cfs, it is well below the levels recommended in the Limiting Factor Analysis. The low flow issue is compounded by the high allocation of water rights.</p> <p>The Puget Sound Chinook Recovery Plan (Chapter 6: Regional Salmon Recovery Strategies) references the importance of regulating instream flows, particularly for the Dungeness River Watershed. Additionally, low instream flows are also mentioned as a viability stressor in the Draft WRIA 18 Dungeness/Elwha/Morse Steelhead Limiting Factors.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16297">http://waconnect.paladinpanoramic.com/Project/180/16297</a></p>	
10077.1	<p><b>Gray's Marsh Restoration and Feasibility Design Phase 1</b></p> <p>Project Partners and point of contact: Gray's Marsh Landowners (Robin Berry), WDFW (Michael Blanton), NOSC (Rebecca Benjamin) and Dungeness Farms (Matt Heinz).</p> <p><b>Background:</b></p> <p>Graysmarsh is an approximately 140-acre freshwater/brackish water marsh located at the mouth of Gierin Creek (WRIA 18.), which enters the Strait of Juan de Fuca immediately east of Dungeness Bay. The stream presently drains through an undersized tide gate that limits the saltwater tidal prism. An approximately 30 acre brackish portion of Grays marsh is all that remains of the Gierin Creek estuary, which was once about 120 acres in size. The remainder of the marsh is now freshwater. Tide gating of Gierin Creek dates back to approximately 1910. In contemporary times, Graysmarsh has been managed exclusively for wildlife and fish habitat. Livestock are not allowed access to the marsh, nor do any agricultural practices occur within the marsh. The private owners of Graysmarsh diligently strive to maintain good waterfowl habitat through the practices of 1) growing barley specifically for duck forage on adjacent agricultural land, 2) annually mowing expansive areas of cattails and Reed's canary grass and 3) occasionally dredging certain channels within the marsh to maintain depth. Recently the piping of Dungeness Irrigation Canals to eliminate seeping and conserve Dungeness river water has resulted in reduced freshwater flows into Graysmarsh and subsequent loss of spawning habitat in the upper reaches of Gierin Creek. The Landowners are interested in learning what the available restoration alternatives are that would benefit this unique costal marsh estuary and riverine ecosystem while maintaining the various agricultural and recreational land uses.</p> <p><b>Project Scope and Purpose:</b></p> <p>This project is a restoration feasibility and conceptual design study, similar to the Discovery Bay Rail Road Grade Feasibility study; Washington Harbor feasibility study and Pysht Estuary Restoration feasibility and design study.</p> <p>We are seeking funds to develop a suit of various restoration design concepts and scenarios while working with Graysmarsh landowners to understand their land use desires and objectives. As with any restoration project occurring on private land, the land owners will have the ultimate decision as to what, if any, restoration activity will occur at Gray's Marsh. Likewise, any restoration design concept put forward seeking additional funding for engineering and construction through the Lead Entity and Salmon Recovery process will have to be vetted through that processes and compete with other restoration projects proposed. This estuary area is extremely unique and very limited within the Eastern Straits of Juan de Fuca. There is a range of possible restoration options that can occur at this site that will benefit salmon restoration and that can meet the needs of the land owners. As restoration practitioners know, an important aspect of habitat restoration for salmonids, is returning fish access to their historic fresh and saltwater estuaries. While, full restoration of natural fish access and estuary function to the entire site may need to be limited by the</p>	WDFW

land owners desire to manage the site for other uses. Meaningful restoration is achievable at this site. Other examples of nearshore restoration projects that have or will achieve great benefits to salmon despite the lack of full restoration of the site include Washington Harbor, Physt and Pitship Pocket Estuaries. At Washington Harbor, full removal of road prism was not achievable due to various land owner constraints. Likewise, at the Physt and Pitship pocket estuary, full restoration was not achievable due to land owner constraints. However, both the proposed restoration projects at the Washington Harbor and work done at the Physt and Pitship pocket estuary will have tremendous impact to the recovery of salmon. Likewise, full restoration of Graysmarsh to pre 1800 conditions is not achievable. What can be achieved? The ability to increase access of salt and freshwater marsh to salmonids for rearing and feeding is critical. Let's explore and understand what are the salmonid restoration opportunities that can be achievable at Graymarsh? This is a great opportunity and we look forward to your support for the first phase of this project.

**Why the Project is needed (limiting factors addressed):**

- "There is broad consensus that salmon require estuarine conditions that support production of prey organisms for juvenile outmigrants as well as for juvenile salmonid rearing and for returning adults. Estuaries, which provide critical rearing and transition habitat for salmonids have been physically altered at the mouth of many of the streams in WRIA 18, dramatically affecting the habitat and physical functions characteristic of natural estuaries."
- Inter-tidal water exchange is currently significantly restricted by the construction of a tide gate. In addition to impairment of fish passage, the primary effect of the tide gate is that salt water interchange with the historic estuary is severely limited.

WRIA 18 Limiting Factors Analysis Action Recommendations: The following ranked salmonid habitat restoration actions are recommended for Gierin Creek (taken from WRIA 18 LFA):

- Pursue removal of the tide gate and restoration of salt marsh habitat in the estuary, including returning Gierin Creek to its former meandering location, which essentially bisected the marsh (this option is not currently favored by the landowners -a more likely scenario may involve development of a pocket estuary, enlarging existing tide gate or relocating tide gate, or multiple tide gates and/or restoration enhancements to Gierin Creek . These types of scenarios and others will be considered)
- Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored
- Restore functional riparian zones throughout watershed, particularly upstream of Holland Rd., and identify and correct areas affected by unrestricted animal access

**Illustrate how Project supports Restoration or Protection of Ecosystem Functions:**

Increase salt and freshwater marsh connectivity. Enhancement of Gierin Creek will benefit all fish species.

**Certainty of Project Success:**

This feasibility study will help to determine restoration options and relatively likelihood of success.

**Address Timing Needs & Sequencing Requirements:** This is the first and most logical phase of the project.

**Cost Appropriateness:** \$60 – 100K

Full restoration costs will be able to be estimated once a restoration options has been made. This feasibility, restoration and design "report project" is the first step and funding will be in line with the scope of work... number of options consider, hydraulic modeling, and engineering design 30%.

	<p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/15528">http://waconnect.paladinpanoramic.com/Project/180/15528</a></p>	
09046	<p><b>Washington Harbor Habitat Protection Project</b></p> <p><u><b>Project Description:</b></u>  Washington Harbor is an approximately 118-acre estuarine system at the mouth of Bell Creek and is also located adjacent to the entrance of Sequim Bay. The estuary lies 5 miles along the marine migration corridor of Puget Sound Steelhead and Hood Canal/Strait of Juan de Fuca summer Chum salmon from Jimmycomelately Creek in Sequim Bay. Washington Harbor is also located just 7.5 miles from the Dungeness River mouth and therefore likely provides habitat for Dungeness Chinook, Bull trout, and summer Chum.</p> <p>The estuary is probably used by many populations of juvenile salmonids originating from Discovery Bay and other systems to the west. This habitat protection project will purchase conservation easements to permanently protect a 150 to 450-foot wide riparian buffer (approximately 75 acres) surrounding Washington Harbor. The bed of Washington Harbor is stateowned.</p> <p><u><b>Limiting Factors Addressed:</b></u>  1. "There is broad consensus that salmon require estuarine conditions that support production of prey organisms for juvenile outmigrants as well as for juvenile salmonid rearing and for returning adults.--- Estuaries, which provide critical rearing and transition habitat for salmonids (as they move as juveniles from fresh to salt water, and as adults from the marine environment back to fresh water), have been physically altered at the mouth of many of the streams in WRIA 18, dramatically affecting the habitat and physical functions characteristic of natural estuaries." (WRIA 18 LFA)</p> <p>2. "This marine estuary has long been recognized as providing very high quality fish and wildlife habitat. The Interagency Committee for Outdoor Recreation (IAC) has committed \$3.2 million towards acquisition of property in and immediately adjacent to Washington Harbor. Unfortunately, there has been a lack of willing sellers. Funds should be retained to utilize for any acquisition or conservation easement opportunities that may arise." (WRIA 18 LFA)</p> <p><u><b>Stock Status and Trends:</b></u>  The project addresses stock status and trends by maintaining expansive, important nearshore habitat for numerous salmonid populations and forage fish.</p> <p><u><b>Listed Stocks:</b></u>  Hood Canal/Strait of Juan de Fuca summer chum and Puget Sound steelhead: Jimmycomelately Creek (5 miles directly along the migration corridor), Salmon Creek and Snow Creek (16 miles east along the likely migration corridor), Dungeness River (7 miles west), Chimacum Creek (20 miles east). Puget Sound Chinook and Bull trout: Dungeness River (7 miles west). Dungeness Chinook marine distribution data suggest that this population most likely utilizes Travis Spit nearshore habitat.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/5202">http://waconnect.paladinpanoramic.com/Project/180/5202</a></p>	NOLT/ JSKT
14107	<p><b>Sequim Bay Shoreline Restoration</b></p> <p><u><b>Description:</b></u>  The project site encompasses the entirety of the shoreline and marine riparian corridor of Sequim Bay. The goal of this multi-phase project is to work with willing landowners to</p>	NOSC, JSKT

restore ecological processes and salmon habitat throughout Sequim Bay. Specific actions will include: removal of armoring, bulkheads, fill, septic systems and overwater structures. Shorelines will be re-contoured to blend into undisturbed adjacent beach faces and the marine riparian zone will be re-vegetated. This project will repair habitat sustaining shoreline processes and improve migration and survival of juvenile salmon, especially Jimmycomelately Creek summer chum. This project will also improve water quality within Sequim Bay by removing toxic creosoted pilings and septic systems.

**Why the Project is Needed:**

Nearshore Condition, riparian condition, water quality and sediment input, are identified in the WRIA 17 Limiting Factors Analysis. Sequim Bay contains approximately 29 docks and overwater structures and is approximately 11% armored with approximately 9,100 feet of bulkheaded shoreline (PNPTC, 2003). These anthropogenic features degrade nearshore habitat and the shallow-water marine migration corridor to the detriment of juvenile salmon. The Dawley Phase alone will remove approximately 18% of the bulkheading from the shoreline.

**Benefit to Salmon:**

Restoration of a contiguous upper intertidal shoreline migrational corridor will improve survival of nearshore dependent juvenile chum, pink and Chinook salmon. ESA-listed Eastern Strait of Juan de Fuca Hood Canal summer chum - especially those originating from Jimmycomelately Creek in Sequim Bay and Snow/Salmon Creeks in Discovery Bay. ESA-listed Puget Sound Chinook originating from Hood Canal and Puget Sound watersheds. Other species that will benefit include ESA-listed Puget Sound Steelhead and Puget Sound Bull Trout, in addition to coastal cutthroat, and pink salmon.

**Which Salmon Recovery Plan Objectives does this Project Meet & How?**

Specific goals stated in the North Olympic Lead Entity for Salmon Strategy that the project will address include:

Goal 1: Achieve robust fish stocks - this project will contribute to greater juvenile survival, especially for Chinook and chum

Goal 2: Implement recovery plans and protect and restore fish habitat - this project implements the following elements of the NOPL 2011 Dungeness Strategy and the Dungeness Chapter of the Puget Sound Chinook Recovery Plan.

- 1) Restoration of Functional Riparian Habitat to improve the quality of riparian habitat and function, including temperature moderation, long-term recruitment of LWD, cover, and food production.
- 2) LWD Placement
- 3) Nearshore Habitat Protection and Restoration to improve the quantity and quality of estuarine and nearshore habitat and
- 4) Water Quality Improvement by removing potentially contaminating septic tanks and creosote.

Goal 3: Restore and maintain ecosystem function and nearshore processes - Objective: Focus on protection and restoration of habitat forming process. This project will restore ecosystem function and habitat sustaining processes to the Sequim Bay shoreline.

Goal 4: Instill ecosystem awareness: A portion of the project will occur on US Fish and Wildlife Service property and educational programs will provide opportunities to inform ecosystem awareness with regard to restoration.

Goal 5: Integrate efforts: The project partners include NOSC, JSKT, NOLT, USFWS and WDNR. The project will be shared through two statewide databases, the Habitat Work Schedule and Prism.

**Explain How the Project advances Salmon Habitat Restoration or Protection and recovery of Ecosystem Functions?**

The project will remove anthropogenic stressors and restore critical habitat by removing impediments to habitat-sustaining sediment transport processes to improve nearshore habitat connectivity and function. Following completion of this project nearshore processes will be significantly less encumbered by infrastructure and will be more

capable of dynamically adapting to change.

**Address the project's spatial-temporal scale of influence:**

**Spatial:** The project will remove fill and infrastructure to improve habitat and increase resiliency of Sequim Bay for potential effects of climate change. Ecological processes will be restored to long-shore drifting sediments in Sequim Bay. This project will improve habitat connectivity for outmigrating salmon originating throughout the Salish Sea.

**Temporal:** In cases where projects occur on publicly owned properties, such as Dawley, benefits will be permanent. Conservation easements will be sought for all restored shorelines on private property if the property owner is willing. In the unlikely event that development occurs on restored shorelines, new impacts will be subject to current environmental standards that will be far more restrictive than when structures targeted for removal were installed. Mitigation actions associated with any new development will be expected to include LWD, transparent docks and beach nourishment. Therefore, the benefits of shoreline restoration can reasonably be considered permanent.

**Timing Needs & Sequencing Requirements (project readiness)**

NOSC has received funding for the USFWS/Dawley Phase of the project in Fall 2014 and anticipates 100% design completion by mid-2015. The current goal is to proceed with construction in 2016. Additional opportunities for restoration will be investigated as future phases.

**Range of Estimated Cost**

*USFWS/Dawley Phase Design:* \$75,000

*Dawley Phase Implementation:* \$350,000

Actions included in this phase:

- a. Remove a beach house, trailer and green house and associated septic systems. Revegetate areas of structure footprints as appropriate.
- b. Remove 1,600 LF of concrete bulkhead, riprap and tire bulkheads from the beach, along with any associated waste material from the bulkheads that has migrated onto the beach.
- c. Decommission the road to the beach house, stabilize the slope through re-contouring, address groundwater seepage needs as necessary, and establish a trail route along the former roadbed.
- d. Continue treatments to remove non-native vegetation and restore area with native vegetation.

*Other Phases:* Unknown

**Watershed priority & watershed area or which WRIA Nearshore project is located in**

WRIA 17 nearshore Watershed Priority 4.27.

**Other Key Information, especially any relationship to previous or current projects.**

This work will compliment recently completed efforts to restore the estuaries of Sequim Bay. Nearby projects include Washington Harbor (4.5 miles away), Jimmycomelately (0.5 miles) and Pitship Pocket (2.5 miles). Improved nearshore connectivity will provide safer and more productive migratory corridors for outmigrating salmon rearing in the estuaries of Sequim Bay. The Jimmycomelately stock of ESA-Listed Hood Canal/Eastern Strait of Juan de Fuca summer chum salmon has increased from a return of 7 spawners in 1999 to ~8,000 spawners in 2013. Restoration of migratory shorelines will contribute to the resiliency of this stock and their recovery efforts. Removal of the shoreline armoring at the USFWS/Dawley site will improve feeder bluff sediment transport along Western Sequim Bay to the estuaries for Jimmycomelately and Dean creeks, increasing resilience to the restoration areas at JCL and Dean Creek.

**Photos and Graphics are available for viewing at:**

<http://waconnect.paladinpanoramic.com/Project/180/19273>

<b>09093</b> (Combination of Projects 45 & 37)	<p><b>North Sequim Bay Drift Cell Conservation Project</b></p> <p><b><u>Watershed Priority:</u></b> 4.27</p> <p><b><u>Project Description:</u></b>          Permanent protection will be provided for Gibson, South, Travis and Paradise Cove Spits, all clustered near the entrances to WA Harbor and Sequim Bay, along with the 5.2 miles of coastal feeder bluffs that support the spits. Protection will be accomplished using conservation easements, property purchases, and state land management planning. Protected habitat includes 5.2 miles of feeder bluff shoreline, 23,560 feet of spit shoreline, 269 acres of marine shallow water and estuarine habitat, and the productive 10-mile shoreline of the 3,200-acre Sequim Bay. Preserving the health of these spits is essential for the continued existence of WA Harbor, Paradise Cove and the productive geomorphology of Sequim Bay. The project will occur in the following phases: 1) measure bluff erosion rates, 2) develop a conservation plan, including public outreach 3) design conservation measures, 4) relocate infrastructure and buildings, and 5) purchase conservation easements and property.</p> <p><b><u>Why the Project is needed (limiting factors addressed):</u></b>          Although upland areas are being developed adjacent to the North Sequim Bay drift cell (NSBDC), little shoreline armoring has occurred to date. Spectacular erosion of the similar Ediz Hood in Port Angeles demonstrates the vulnerability of Strait of Juan de Fuca spits to the loss of recruited sediment. Any significant shorelines armoring within the NSBDC will seriously imperil the existence of these spits, WA Harbor, Paradise Cove and the productive geomorphology of Sequim Bay. Existing regulations do not provide protection from this potential devastating impact. In some locations structures and infrastructure are located near the bluff edge, requiring that either a) shoreline armoring must occur or b) improvements be relocated or decommissioned. LFA elements include: 1) ecosystem links between upland and nearshore habitats, 2) reduced sediment input from feeder bluffs to nearshore area causes degradation of the beach, resulting in loss of the shallow, nearshore migration corridors and eventual loss of the spits themselves, 3) loss of riparian vegetation that provides shade to the upper beach.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>          On the spits themselves, the project will permanently protect an enormous amount (approximately 23,560 feet) of 1) forage fish spawning habitat and 2) prime nearshore salmon and char rearing and migration habitat, especially for Coastal-Puget Sound bull trout, Puget Sound Chinook, pink, coho, and fall chum salmon, and ESA-listed Hood Canal/Eastern Strait of Juan de Fuca summer chum originating in the Dungeness River, Jimmycomelately (JCL) Creek and Discovery Bay. In the embayments, over 11 miles of productive shorelines are protected by the spits. The project addresses stock status and trends by maintaining expansive, important nearshore habitat for numerous salmon, char, and forage fish populations. The project is especially important for summer chum salmon from JCL Creek, the site of a completed, highly successful \$7.5 million portfolio ecosystem restoration project. This stock has increased from a return of 7 spawners in 1999 to 4,027 spawners in 2010. The project will maintain much of the nearshore habitat that supports this spectacularly rebounding salmon stock during the early portion of its marine life history.</p> <p><b><u>Specific Salmon and Char Stocks that will benefit.</u></b>  <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b></p>	JS'KT
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	<p>Puget Sound Salmon Recovery Plan (PSSRP), habitats and processes critical to support salmon recovery, "drift cell processes (including sediment supply, transport and deposition) that create and maintain nearshore habitat features such as spits, lagoons, bays and beaches" (page 368), PSSRP Dungeness Section, Key strategies and actions supporting the overall approach to recovery, "Nearshore habitat protection" (page 324). "Estuarine and marine nearshore areas of Discovery Bay, Sequim Bay and the Eastern Strait of Juan de Fuca provide valuable juvenile rearing and migration habitats as well as production of food resources for juveniles and adults." Summer Chum Salmon Recovery Plan – May 2007, pg 84. The project protects the above-reference habitat type. NOPL 2011 Draft Strategy Table A: Goals and Objectives, "Restore and maintain ecosystem function and nearshore processes - focus on protection and restoration of habitat-forming, watershed, and nearshore processes." The project's specific objectives, which will be accomplished as described above, are to protect habitat forming and nearshore processes.</p> <p><b><u>Protects High Quality Fish Habitat:</u></b> Protected habitats include superb, productive eelgrass beds, tidal marshes, pocket estuary habitat, and low-gradient fine-grained beaches.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> The natural recruitment and transport of marine sediment is an elemental and crucial ecosystem function that creates and maintains complex shorelines features and associated habitat, in this case Gibson, South, Travis and Paradise Cove Spits and WA Harbor, Paradise Cove, and Sequim Bay. These are habitats of regional significance. The project is designed specifically to protect this ecosystem function, which in turn supports the entire WA Harbor and Sequim Bay ecosystems and their populations of fish, shellfish, mollusks, crustaceans, birds, and mammals.</p> <p><b><u>Scale of influence:</u></b> <b>Spatial-</b> enormous: 5.2 miles of coastal feeder bluffs, 23,560 of spits, 11+ miles of productive shorelines. <b>Temporal</b> - conservation measures will range from 100 years to permanent.</p> <p><b><u>Certainty of Project Success:</u></b> Landowner willingness is the crucial factor in project success. The number of landowners will increase as larger parcels are subdivided. Drift cell protection will be more difficult and expensive as homes are built near the edge of the bluff. Certainty of success is at its high point now and will diminish over time.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b> Phase 1 (Measurement of bluff erosion rates) is ready to begin. The remaining phases will then be ready to be undertaken in the order identified above, except that parts of Phases 4 and 5 might occur concurrently or in reverse order.</p> <p><b><u>Cost Range and Appropriateness:</u></b> Cost range for Phase 1 is \$50,000 to \$70,000; Phase 2 is \$ 75,000 to \$150,000. Cost estimates for the remaining phases cannot be made until Phase 2 is complete, although a placeholder of \$5 million is being used. Easements and land purchases will be based on fair-market value appraisals.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b> The project integrates well with the WA Harbor Restoration, Pitship Pocket Estuary, and JCL Ecosystem Restoration projects.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/16122">http://waconnect.paladinpanoramic.com/Project/180/16122</a></p>	
11094	<b>Chicken Coop Road Culvert Replacement Project</b>	CC



**Project Description:**

Clallam County Public Works proposes to replace a deteriorating non fish-passable culvert located at MP 1.4 of Chicken Coop Road with a fish-passable pipe, potentially opening up 1.4 miles of Chicken Coop Creek to coho and winter steelhead. The existing culvert is a 24" steel pipe, rusting at the bottom, and not adequately sized to pass flows. The resulting backwater has caused bedload to accumulate throughout the pipe, causing almost complete blockage. The backwater has also caused erosion of the road shoulder at the inlet, further adding to siltation of Chicken Coop Creek during storm flows. A second, 18" steel culvert, located 24" above the stream bed serves as an overflow, however his pipe does little to aid fish passage. The proposal is to replace both culverts with a single 6 foot culvert, meeting WDFW guidelines for road culverts (2003).

**Why the Project is Needed (limiting factors to be addressed):**

According to the WRIA 17 Salmon and Steelhead Limiting Factors (2002), this culvert is a total barrier. It is leaking through holes in the bottom and eroding away road fill. The Action Recommendation is to replace this culvert, addressing the factors of Access and Passage. If this is replaced in conjunction with the total culvert barriers at Highway 101 and Old Blyn Highway it will open up 2.7 miles of fish habitat. This recommendation is repeated in the Elwha-Dungeness Watershed Plan, WRIA 18 (2005).

**Benefit to Salmon:**

According to the WDFW Salmonscape mapping, Chicken Coop Creek has potential use by coho and winter steelhead, although the barriers at Old Blyn Highway and Highway 101 make this creek inaccessible at present. Trap surveys done by the Jamestown Tribe in 2008 show use by coho, cutthroat and steelhead/rainbow juveniles below Highway 101. If the barrier at Chicken Coop Rd. were to be removed, (along with the barriers at Old Blyn Highway and Hwy 101) approx. 4,200 linear feet of stream above Chicken Coop Rd. would become accessible to winter steelhead and 7,500 linear feet of stream accessible to coho.

**Which Salmon Recovery Plan Objectives does this Project Meet and How?**

At present a recovery plan for ESA-listed winter steelhead is being developed, however, many aspects of the Puget Sound Recovery Plan (2007) for Puget Sound Chinook can be applied to steelhead and coho, specifically:

- The Protection of Physical Habitat and Habitat-Forming Processes.
- Water Quality and Instream Flows
- Also:
  - Protect key fresh- and saltwater processes and habitats from physical or biological disruptions
  - Reduce the risk and damage from catastrophic events.

These goals would be met by re-establishing a natural flow to allow fish access to existing habitat. The larger culvert would be able to pass storm flows, reducing the input of sediment from road erosion and possible catastrophic failure (and resulting impacts to fish) of the road.

Additionally, the project attains two issues of the Draft Salmon Habitat and Ecosystem Conservation Plan (Clallam County 2000); specifically:

- Avoid stream crossings by roads wherever possible, and where one must be provided, minimize impacts through choice of mode, sizing and placement.
- Preserve the hydrologic capacity of any intermittent or permanent stream to pass peak flows.
- Prevent erosion and sediment runoff during construction.

By following the WDFW Design of Road Culverts for Fish Passage (2003), the new culvert will ensure passage of a 100-year peak flow and allow fish access. The project will be constructed by Clallam County Road Maintenance crews. Clallam County is a member of the Regional Road Maintenance Program and adheres to all elements of that agreement, including the incorporation of BMP's. Our work is approved under

the 4(d) Rule for Limit 10 (Routine Road Maintenance), and has received concurrence from the National Marine Fisheries Service. Crews have received training in BMP use and in-water work to prevent erosion and sedimentation runoff during construction.

**How Project supports Restoration or Protection of Ecosystem Functions?**

According to the Elwha-Dungeness Watershed Plan, WRIA 18 (2005):

“Chicken Coop experiences excess sedimentation and sporadic water quality violations. There are several fish passage blockages as well as degraded fish and wildlife habitat...Chicken Coop Creek is the second largest watershed in the Sequim Bay Basin. It suffers from the effects of numerous culverts throughout the watershed and has experienced various episodes of excessive sediment. These sediments may contribute to the occasionally intermittent presence of surface flow - a condition that has been identified as potentially the most significant limiting factor for restoration of anadromous stocks.”

Replacing this culvert will potentially open up 7,500 linear feet of former productive habitat for coho (4,200 linear feet for steelhead), restoring this function. The current deteriorated culvert is contributing to sedimentation from the road erosion, and a possible catastrophic event from a road failure. Replacement will reduce sedimentation which has been contributing to the intermittent surface flow.

**Address the Project’s spatial-temporal scale of influence:**

Replacing the culvert will lead to immediate fish accessibility for the portions of Chicken Coop Creek above the road. However, total use of Chicken Coop Creek depends on replacing the culverts at Old Blyn Highway and Highway 101. The Highway 101 culvert is reportedly scheduled for repair (Elwha-Dungeness Watershed Plan, WRIA 18, 2005). The crossing at Old Blyn Highway is proposed to be improved, as part of the Jamestown S’Klallam Tribe’s planned interchange with Highway 101 (if funded).

**Timing Needs and Sequencing Requirements (project readiness):**

There is no sequencing needed for this project. The culvert replacement could be done during the WDFW 2011 Allowable Work Window (July 16 – September 15). Since the project would be done by the County’s own road crew, there would be no advertisement period and no bid award. Construction drawings would be done in-house. Work could begin as soon as materials were delivered and would last 3-4 days. Since Chicken Coop Road is open at both ends, the road could be closed to traffic at the site, making the actual installation time considerably shorter than would be required with a partial closure.

**Range of estimated cost:** \$50,000 to \$75,000.

**Watershed Priority and watershed area project is located in:**

This is the Sequim Bay Subbasin of WRIA 17, Chicken Coop Creek Watershed is identified as WRIA 17.0278. This was given a score of 1.22 in the NOPL 2010 Work Plan Ranking. Watershed planning was done Under Elwha-Dungeness Watershed Plan, WRIA 18 (2005). Repairing the culvert is listed as recommendation #1 under “Habitat.” Controlling sedimentation is listed as recommendation #1 under “Water Quality.”

**Other Key Information:**

This culvert has been a barrier to fish for at least 15 years, in other words, fish have not been able to access the 1.4 miles of Chicken Coop Creek above the road for 15 years. Once the Highway 101 culvert and the Old Blyn Highway culverts are repaired, a potential 2.7 miles of stream would be useable for fish (Limiting Factors Analysis 2002).

**Photos and Graphics are available for viewing at:**

<http://waconnect.paladinpanoramic.com/Project/180/16186>

Non-Capital Projects		
HATCHERY		
09048	<p><b>Elwha River Native Steelhead Brood Development Project</b></p> <p><u>Likely Sponsors:</u> Lower Elwha Klallam Tribe</p> <p><u>Funding Request:</u> \$138,342</p> <p><u>Brief Description of Project:</u>            An alternate winter steelhead broodstock is being developed for use in the Elwha River. This new stock based upon the native wild steelhead found in the Elwha River will permit the phase-out of the use of the Chambers Creek winter steelhead salmon in the Elwha River. This project, initiated as a captive brood program (redd pumping employed to capture eyed eggs and pre-emergent fry) is now expanding to include a smolt production component. Currently 1,700 fish (age 0 to age 4) are being reared to maturity (age 4) at the hatchery. Upon reaching maturity, adults will be spawned and the resulting offspring will be reared to age 2 smolts for release. Fish will be released both from on-station and at remote release locations.</p> <p>This effort will permit discontinuance of the Chambers Creek stock and will result in the development of a new hatchery-based population that will be used to promote steelhead recovery and assist in achieving the goals of river restoration as identified in the Elwha River Fish Restoration Plan (NOAA Technical Memorandum NMFS-NWFSC-90).</p> <p><u>Project Description:</u>            The goal of the program is to develop a hatchery stock of winter steelhead salmon based upon a natural-origin late-timed winter steelhead (Elwha River). This stock is currently present in the river at critically-low levels. This program will permit the replacement of enhancement efforts currently supported by winter steelhead salmon of Chambers Creek origin (South Puget Sound) and will assist in the amplification of the depressed native population.</p> <p>The production methods employed and project goals have been developed in consultation with scientists from NOAA Fisheries, USFWS, NWIFC, WDFW, and NPS (Olympic National Park). This program will be dependent upon on-going annual program reviews – annual consultations/program reviews have proved to be an import component to ensuring the success of this effort and providing options to manage the project adaptively. Reviews/consultations will continue to be a critical component to the success of this production effort through its duration.</p> <p>This enhancement effort was begun in 2005 as a captive brood-based program and now includes individuals from four brood years (2005, 2006, 2007 and 2008). The program methods include: Capture of eggs and fry from redds (redd pumping), inserting a passive integrated transponder tag (PIT tag) into each fish being reared in captivity to adulthood to permit identification of individuals throughout their residency at the hatchery, conducting genetic analysis of each fish reared in captivity to adulthood to determine parental lineage and assist in the development of spawning matrices, rearing each captive brood fish to age 4, spawning of fish, incubation of eggs and rearing of offspring to age 2 smolts, on-station and off-station releases of smolts.</p> <p><u>Project Need:</u>            The project meets needs identified in areas critical to salmon recovery in the region: The target stock is currently present in the river at critically-low levels. This program will permit the replacement of enhancement efforts currently supported by winter steelhead salmon of Chambers Creek origin (South Puget Sound) and will assist in the amplification of the</p>	LEKT

	<p>depressed native population and will act to reduce the potential for negative genetic and ecological interactions between the native stock and the imported stock.</p> <p><b><u>Significance to Hatchery Reform Implementation:</u></b>  This project addresses a specific recommendation from a HSRG Regional Review. Review of the Eastern Straits region by the HSRG identified the winter steelhead stock currently used at the Lower Elwha Fish Hatchery (Chambers Creek origin) as being inappropriate for use in the recolonization of the upper watershed following dam removal, and that any stock conservation program developed by co-managers in the Elwha River Fish Restoration Plan (NOAA Technical Memorandum NMFS-NWFSC-90) should use a more appropriate stock of steelhead..</p> <p>The goal of this production effort is to use the late timed Elwha River origin winter steelhead stock to replace the existing Chambers Creek winter steelhead population. Once increasing returns of this new hatchery-origin stock is observed the use and production of the Chambers Creek population will be ramped-down and may be discontinued.</p> <p><b><u>Relevance to Salmon Recovery:</u></b>  This project will increase the abundance of a natural stock by selectively amplifying the total population and using this stock as the basis for a new hatchery-origin population. The Hatchery Reform effort in the state of Washington has recognized the importance of protecting genetically-unique threatened native winter steelhead stocks through importation into the hatchery and has funded similar protection and enhancement efforts in other Puget Sound watersheds. This program will help to protect a genetically unique and separate natural-origin stock that has declined to critically-low levels (less than 100 adults per season). Increases in the number of natural-origin steelhead and phase-out of the production of Chambers Creek origin fish will reduce the potential for harmful genetic and ecological competition between the native stock and the non-Elwha River origin winter steelhead in the system.</p> <p><b><u>Proposed Starting and Ending Dates:</u></b>  This is an ongoing project, initiated in 2005 and projected to continue through 2018. This funding is to support program efforts beginning August 2010 and continuing through June 30 2012.</p> <p><b><u>Certainty of Project Success:</u></b>  This project has a high degree probability of success. It is based upon utilization of existing hatchery methodologies/technologies and bolstered with routine semi-annual guidance consultations held with project cooperators (USFWS, NOAA Fisheries, NPS, and WDFW).</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16309">http://waconnect.paladinpanoramic.com/Project/180/16309</a></p>	
11095	<p><b>Elwha Fish Propagation</b></p> <p><b><u>Project Title:</u></b>  Maintenance of Elwha River Fish Populations During Removal of the Elwha River Dams</p> <p><b><u>Project Description:</u></b>  The two Elwha River Dams will be removed beginning in September 2011 and continuing for three years. Dam removal on the Elwha will restore access to over 70 miles of mainstem and tributary habitat. The project as a whole will also restore those processes which are necessary for a functioning ecosystem.</p> <p>The dam removal process is anticipated to result in episodic periods of high turbidity, often exceeding 1,000 ppm and occasionally exceeding 10,000 ppm. These levels are known to result in the direct mortality of fish. It is critical to protect the native populations of salmon</p>	LEKT/ WDFW/ ONP

	<p>in the Elwha River during these periods of high turbidity.</p> <p>In order to protect native fish populations during dam removal, two hatcheries on the river (WDFW Elwha Rearing Channel and the Elwha Tribal Hatchery) will be utilized as safe refuges. Chinook, coho, steelhead, chum, and pink salmon will all rely to some extent on hatchery supplementation. The Chinook and steelhead populations are currently listed as “threatened” under ESA. Details of the hatchery supplementation strategy for the Elwha Project are found in the Elwha Fish Restoration Plan (Ward et al, 2008). The hatchery program is intended to be an interim action (~10 years) to support fish through dam removal and the years following removal when colonization of the watershed is occurring.</p> <p>Funding has been secured through the Elwha Project and federal stimulus programs for construction of a new tribal hatchery. In addition, both Washington State and tribal funding is available for partial operations of the two hatchery facilities. However, additional funding is needed to fully implement the actions described in the Elwha Fish Restoration Plan. Approximately \$200,000 per year is needed for the program (not including the steelhead program which has been identified as a separate stand-alone project).</p> <p>The Elwha River has the highest ranking in the NOPE strategy (score of 5).</p> <p>Stock preservation has been rated as the highest priority task to be implemented in the Elwha River during dam removal.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16289">http://waconnect.paladinpanoramic.com/Project/180/16289</a></p>	
<b>HARVEST MANAGEMENT SUPPORT</b>		
09064	<p><b>Dungeness Improved Fisheries Enforcement</b></p> <p><u><b>Project Description:</b></u>  Harvest management calls for effective enforcement of harvest regulations and implementation of orderly fisheries. Currently fisheries are limited in the vicinity of the Dungeness watershed. However, control of the limited existing fisheries and protection against poaching to which Chinook are particularly vulnerable during the low flow summer months, requires enforcement personnel to patrol the river and proximal marine waters. Two additional officers are needed for effective enforcement of closures and to ensure orderly fisheries.</p> <p>Currently, enforcement personnel are spread thin and do not sufficiently cover enforcement needs. The addition of two officers would meet present requirements and help ensure that the harvest management provisions of the recovery plan are met. If the this program is not funded as part of the three year plan, the existing risk of illegal harvest of already small numbers of Dungeness Chinook will continue.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/7022">http://waconnect.paladinpanoramic.com/Project/180/7022</a></p>	WDFW/ JSKT
<b>FUTURE HABITAT PROJECT DEVELOPMENT</b>		
09054	<p><b>Elwha Conservation Planning</b></p> <p><u><b>Project Description:</b></u>  This non capital project follows the Elwha Fish Recovery Plan's recommendation to develop a long term strategy for purchase or development of conservation easements on floodplain &amp; estuary property outside of the ONP (p.80). The Plan states, “Restoring and maintaining</p>	NOLT, LEKT & CC

physical processes that form habitat in the mainstem Elwha River is the highest priority following dam removal (p.75). North Olympic Land Trust will work with willing private landowners to create plan to maintain physical processes on private land in the Elwha watershed, including Indian Creek and the Little River, specifically through conservation easements and in some cases fee simple acquisition of important lands. This project is a strategic planning process that identifies private properties in the Elwha watershed based the recommendations and system of prioritization set forth in the Elwha River Fish Restoration Plan's. This planning process will assess ecosystem function, market value, and landowner willingness on a parcel-by-parcel basis to develop a plan for land acquisition through permanent conservation easements and fee simple acquisition. The outcome of the project will be a prioritized list of properties to begin acquiring as early as 2011. This project will help achieve NOPL's goal to restore and maintain ecosystem function on the North Olympic Peninsula for the entire watershed through strategic planning designed to create the greatest ecological benefits for listed species.

All limiting factors listed for the Elwha River Protection can be address by protecting the best existing salmon habitat and ecosystem function on private land, which can only happen through voluntary conservation tools such as acquisition and conservation easements, non regulator conservation tools that this project addresses.

This project will create a road map to protect habitat for ESA listed species in the Elwha River in addition to multiple stocks of fish – all that depend on existing quality and quantity of habitat in marine and freshwater. According to the Puget Sound Recovery Plan, “any further reduction in habitat quality and quantity will require more restoration to achieve recovery goals...Protection is needed at the individual habitat site as well as the **ecosystem scale** to ensure the processes that create habitat to continue to function (p. 353). This is why it is paramount to follow the newly emerging tenet for species recovery - ‘**protect the best** and restore the rest’.

**Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this project meet and how?**

1. Puget Sound Recovery Plan – “protect existing environmental functions in both urban and rural areas using the array of protection tools available.” (357).
2. Puget Sound Partnership – Protect Existing Habitat: Land Acquisition/Protection Plan
3. NOPL Recovery Strategy 2008 – Goals 2 &3.
4. Salmon and Steelhead Habitat Limiting Factors of Juan de Fuca – Recommendation: “Acquisition/conservation easement access and set back of structures constructed within the channel migration zone( p.162).
5. Elwha River Fish Restoration Plan –  
“ Consideration should be given to developing a long-term strategy for purchase or development of conservation easements on floodplain and estuarine property outside ONP. Unconstrained reaches of the Elwha River where lateral migration can occur should be of the highest priority...significant parcels of floodplain are privately owned, some of which may not be adequately protected but local land use regulations to meet the goals of river restoration. These lands may be logged or converted to housing or other uses that are not compatibility with long term restoration. It is conceivable that a corridor from the ONP boundary on the south to the LEKT reservation could be targeted for protection in cooperation with an appropriate partnership between landowners and conservation organizations. If successfully implemented, such a corridor would link floodplain and estuary habitats in the lower river with pristine habitats within ONP. The Elwha River could represent one of the largest, largely intact watersheds in the conterminous United States (p80-81).

Acquiring properties with important habitat as opportunities arise has been a common trend in salmon recovery. Though worthy, this approach does not reap the same ecological

	<p>benefits as landscape scale conservation planning, which this project would accomplish.</p> <p>With funding, North Olympic Land Trust has the organizational capacity to complete this project within 2 years, has in house GIS capability, and will rely on its project partner, LEKT for technical review of priority habitats and GIS. This planning process will dovetail with North Olympic Land Trust's efforts to create a 100-year conservation plan for Clallam County by focusing on salmon and steelhead recovery in the Elwha watershed. The Land Trust is now building a constituency to support rapid implementation of conservation plans through partnerships and funding opportunities. This project will lead to voluntary conservation easements and land acquisitions that protect the best existing habitat and ecosystem function for salmon and steelhead. Non regulatory protection efforts – such as conservation easements and fee simple acquisitions negotiated by local land trusts - has a proven track record for protecting private land with important habitat and ecosystem function in perpetuity. North Olympic Land Trust has already protected over 90 acres in the Elwha watershed and will soon protect an additional 120 in the Little River Valley.</p> <p>Timing for planning for acquisition is ideal since the Elwha Recovery Plan and WRIA 18 plan are finalized and both recommend protecting habitat as a major priority for recovery. This project will develop an achievable plan for strategic acquisitions of parcels with the best existing habitat and ecosystem function through perpetual conservation easements and fee simple acquisition, which will lead to capital acquisition projects.</p> <p>The cost of the project covers staff time for 2 years of work doing outreach, GIS, coordinating appraisals, reviewing title, parcel prioritization, and compiling a final report. The cost of outreach material and postage for landowners is included, including preliminary appraisals and title review. The Lower Elwha Klallam Tribe is the major partner for this project and will provide GIS and technical review of prioritized habitat.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16311">http://waconnect.paladinpanoramic.com/Project/180/16311</a></p>	
09055	<p><b>The Elwha Nearshore Action Plan</b></p> <p><b><u>Project Description:</u></b>  The Elwha watershed consists of 321 square miles of watershed, 20 linear km of nearshore, and 90 acres of estuary habitat critical for numerous salmon species including ESA-listed Puget Sound and Columbia River Chinook, bull trout, and steel head, and Hood Canal/ Eastern Strait of Juan de Fuca summer chum. In-river damming, shoreline armoring, and lower river and estuary alterations have resulted in significant impact to the function of the nearshore Elwha. Eighty three percent of the Elwha River is within the Olympic National Park. In contrast, the majority of the Elwha nearshore is in private ownership, and experiencing a high development pressure. Dam removal through the Elwha Ecosystem Restoration project will reopen 70 miles of riverine habitat and reestablish river sediment processes but doesn't include any nearshore restoration. This project fills completes Elwha ecosystem restoration by developing and implementing a conservation easement and protection action plan for the Elwha nearshore with scientifically measurable outcomes and monitoring to do so.</p> <p><b><u>Limiting Factors, Benefit to Salmon, Project Success, Recovery Plans Timing &amp; Other Key Information:</u></b>  This proposal is consistent with, and builds upon, the goal of the federal Elwha Fisheries Restoration Act (1992) and associated Elwha river dam removal project by restoring and protecting riverine/ nearshore functional linkages. It is identified as a top priority in the NOPL three year strategy. Shared Strategy (2007), and the Olympic Peninsula Chapter of the Puget Sound Chinook recovery plan.</p>	CC & WDFW



	<p>Habitat function has been degraded, migratory and rearing habitat for both Puget Sound and Columbia River stocks of Chinook salmon, as well as steelhead, coho, and chum salmon, will continue to be degraded and inaccessible. Long term outcomes if not funded will be current habitat function within the Elwha drift cell will be at high risk due to development; and full ecosystem restoration in the Elwha system, due to degraded state of Elwha nearshore, will occur. Nearshore restoration from restored riverine sediment processes will be partial and competing immediately and continuingly with development pressures.</p> <p>The project addresses both priority need and opportunity. A number of landowners have expressed an interest in participating in conservation easements, property acquisition, and restoration projects, as well as a high interest in water quality monitoring. Resources have not been available to move forward effectively. Level of urgency is high; dam removal is slated to begin in 2012. Likelihood of success is high.</p> <p>The project will create and initiate the trajectory for substantive permanent protection and restoration of a critical component of Elwha ecosystem that is currently at risk, by providing comprehensive long term conservation, protection, and restoration of the Elwha nearshore, which is not currently addressed in the Elwha restoration project. It will provide baseline and resulting water quality monitoring data that indicate measurable and scientifically defensible environmental improvement, and does so while incorporating the concept of ecosystem services and collaborative stewardship mindset with local landowners.</p> <p>Also the project builds on the Elwha Nearshore Restoration Strategy, developed in 2005 which addresses both the before and after and control and treatment elements of assessing protection and restoration success (Shaffer et al 2008). The assessment has been developed to accommodate the high variability inherent in the Elwha nearshore. Primary elements for monitoring are standard fish use techniques to define basic ecological indices and fish metrics, and water quality metrics in the Elwha and comparative estuary and embayed shorelines. Sampling for fish use, will be conducted bi-monthly for fish use, and basic water quality using standard PSAT protocol. Data will be quantified to provide the baseline for both post dam removal, and post protective action assessment.</p> <p>The work will continue to be integrated with the Elwha Nearshore Consortium, a group of scientists, managers, and citizen groups and stakeholders that are dedicated to understanding and promoting the restoration associated with the upcoming dam removals. Ongoing collaborative work includes citizen outreach workshops (Elwha Conversations), annual newsletters (Elwha nearshore newsletter), and citizen science monitoring work with landowners and local college students.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/19264">http://waconnect.paladinpanoramic.com/Project/180/19264</a></p>	
09059	<p><b>Port Angeles Harbor Basin Program</b></p> <p><b><u>Project Description:</u></b>  This program sponsored by the North Olympic Peninsula Lead Entity and the Clallam Marine Resources Committee; will facilitate a planning process that brings stakeholders in the PA Basin area together to talk about the future of the PA nearshore, and explore the potential for restoration and protection. There are some planning and development activities underway, but not all of the critical stakeholders are always involved and there may also be visions for the greater region which need to be explored.</p> <p>There are many individual projects currently included on the N. Olympic Peninsula Lead Entity's 3 year workplan that are in the PA Basin, such as Ediz Hook A-Frame Site Shoreline</p>	NOPL & MRC



Restoration, Ennis Creek Habitat Restoration & Protection, and Valley Creek Estuary Restoration. There are also some new projects being proposed for the Lead Entity's 2009 Workplan. There are also longer term projects such as the restoration of the mouth of Ennis Creek. The Clallam MRC has its own workplan of proposed nearshore projects.

This program will help tie all these individual projects into the larger picture, with a stakeholder process that will look at a broader scale and coordinate the various activities into a grand visioning process for the greater Port Angeles harbor area ecosystem.

**Why The Project is Needed:**

WRIA 18 Limiting Factors Analysis: "The Port Angeles harbor historically functioned as a large estuary, providing high quality rearing areas for many salmonid species. The harbor has been extensively altered from a variety of cumulative physical effects... The following salmonid habitat restoration actions are recommended for nearshore and subtidal marine areas within WRIA 18:

- Restore shoreline sediment transport from the Elwha River and the feeder bluff between the Elwha River and the west end of Ediz Hook
- Restore the littoral drift from marine bluffs to the west of Morse Creek
- Minimize the growth of *Ulva (spp)* by eliminating point and non-point source nutrient delivery to shallow embayments with limited tidal flushing
- Evaluate the effects of shoreline armoring on shoreline sediment transport and nearshore sediment composition, and implement corrective actions, where appropriate
- Remove or reconfigure the Rayonier pier to provide unrestricted nearshore salmonid migration and longshore sediment transport."

Many of these restoration actions will be coordinated through the visioning process. This program would improve nearshore habitat for Puget Sound Chinook and other salmonids using this migration corridor. , It will also improve forage fish habitat and feeding and resting areas for juvenile salmonids.

**Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet & How?**

1. Chapter 2.11 STRAIT OF JUAN DE FUCA MARINE NEARSHORE ENVIRONMENT in the **Elwha-Dungeness Watershed Plan Water Resource Inventory Area 18 (WRIA 18) and Sequim Bay in West WRIA 17** describes the "extensive loss and impairment of nearshore and estuarine habitat has occurred within WRIA 18 and throughout the Puget Sound Estuary/Strait of Juan de Fuca region." This visioning would start the process of restoring the degraded marine shoreline.
2. **The Puget Sound Chinook Recovery Plan, Chapter 3 - Habitat Factors Affecting Puget Sound Chinook Salmon and Bull Trout** also references how habitat modifications have reduced the amount of salmon habitat that was historically available.

With a unified vision, the restoration of the Port Angeles Harbor Basin can restore a larger area by (1) identifying other projects that are needed, (2) helping connect the various projects and partners in the basin, (3) identifying areas of overlap between projects and partners, (4) helping to prioritize the projects already planned, (5) facilitate cost sharing, and (5) reduce the potential for tying things up in litigation.

Taking the basin-wide approach with stakeholder involvement increases the certainty of project success. Stakeholders will be working towards restoration of the Port Angeles Harbor Basin with one vision, and restoration will not be occurring in a piecemeal way.

We need to embark upon this visioning process soon because critical habitat has become available recently, and other activities are underway to make plans for how land could be utilized in that area. This visioning process will ensure that the restoration activities are embarked upon in a unified way.

	<p>Funding will be needed for a facilitator, food for participants, potential room rental, meeting supplies, and copying costs. Costs will be fairly low for the benefits that'll be reaped now and into the future.</p> <p>The N. Olympic Lead Entity for Salmon and Clallam Marine Resources Committee would be the program sponsors.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/16312">http://waconnect.paladinpanoramic.com/Project/180/16312</a></p>	
09063.1	<p><b>Dungeness River Habitat Resurvey</b></p> <p><b><u>Watershed Priority:</u></b> 4.76</p> <p><b><u>Project Description:</u></b>  Baseline habitat monitoring is a basic need to understanding whether habitat conditions are improving or degrading. In 1993, JKT along with Jack Orsborn and Steve Ralph completed a Dungeness watershed-wide habitat survey. Since 1998, the Tribe, County, CCD, and others have engaged in habitat restoration throughout the lower 10 miles of river. What is the habitat trend for the Dungeness? The purpose is to redo the habitat survey, to look at trends in habitat conditions at a watershed level, and additionally identify areas of concern.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b>  Since the report was written in 1993 (17 years ago), we have had one 25-50 year flood event, three 10 year flood events, two 5 year flood events, and ten 2 yr flood events (some years have more than one major flood). Each flood brings a change to habitat conditions and potentially channel location. With four ESA-listed salmonids, it is important to update our knowledge of habitat conditions in order to better plan restoration projects.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends):</u></b>  This is the habitat for the four ESA list salmonids in the Dungeness. In this survey, we will GPS habitat features for better ESA planning and discussion. Where should we target scarce restoration/protection resources? Where has habitat conditions significantly changed (better or worse) in the last 17 years?</p> <p><b><u>Specific Salmon and Char Stocks that will Benefit.</u></b>  <b>ESA-listed:</b> Puget Sound Chinook, Puget Sound steelhead, Hood Canal/Eastern Strait of Juan de Fuca summer chum, Coastal-Puget Sound bull trout. <b>Non-listed:</b> coho, pinks, fall chum, cutthroat.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b>  NOPL 2011 Draft Strategy Table C: Recommended actions for Dungeness River and the Puget Sound Recovery Plan, page 325. Both plans recommend "restoration of the lower river floodplain..." and "protect existing functional habitat within the watershed." We do a fine job of counting fish with two or three WDFW habitat biologists walking the river every day for 2½ months. This spawning survey effort has lasted over the past 18 years. But counting fish is just one "H." This is a funding request for one habitat survey of survey intensity equal to one year of spawning surveys.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b>  How can we understand whether the ecosystem is functioning if we do not monitor it? Tetra Tech is doing an intensive monitoring of the Engineered Logjam project in the vicinity of RR Bridge; their habitat survey covers about 2/3 of a mile (they have monitored 2005, 2006, 2008, 2010). The Forest Service is monitoring the Dungeness to Gold Creek and the Gray Wolf up to the Forest Service Boundary (about RM 5, 2010 and 2011). Their survey will start upriver of the Klink Bridge (roughly RM 11.7). The Forest Service will require their</p>	JSKT, US Forest Service, Tetra Tech

	<p>surveyors to GPS logjams. What is missing is most of the lower river corridor, where all of our restoration effort has been concentrated to date.</p> <p><b><u>Scale of influence:</u></b></p> <p><b>Spatial</b> - This survey will be GPS-based in order to create a habitat map of the river. The survey will run from the Dungeness River mouth to Klink bridge. With the Forest Service data, we will compare to the 1993 survey to track changes in habitat conditions in the watershed (see the large wood recovery map, this will be a similar spatial area). To the extent possible, data will be spatially mapped so that it can be presented to the Dungeness River Management Team, used for restoration planning, and other forums. <b>Temporal</b> – If funded, our survey will be the summer of 2012, one to two years following the Forest Service monitoring.</p> <p><b><u>Certainty of Project Success:</u></b></p> <p>Jamestown S’Klallam Tribe has completed several TFW habitat monitoring efforts. We now use a modified TFW survey protocol, and GPS logjams and pool/riffle boundaries. One of our technicians was on the survey crew with Steve Ralph. Another technician used to have his own business doing these kind of surveys. We expect to hire Steve to help with survey design and analyses, to provide continuity with the 1993 data collection. Steve Ralph wrote the original TFW habitat monitoring protocol.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p> <p>If funded, the project will be surveyed the summer of 2012. Data analysis will occur the fall and winter of 2012. The project is ready to go.</p> <p><b><u>Cost Range and Appropriateness:</u></b></p> <p>\$75,000 assuming 30 survey days with two crews of three. We will survey from the mouth to Klink Bridge.</p> <p><b><u>Other Key Information especially any relationship to previous or current projects:</u></b></p> <p>We will be using the Forest Service survey data for our analysis of habitat conditions and change since 1993.</p> <p><b>HWS Link:</b></p> <p><a href="http://waconnect.paladinpanoramic.com/Project/180/7025">http://waconnect.paladinpanoramic.com/Project/180/7025</a></p>	
13101	<p><b>Hoko River Remeander Engineering Feasibility Design</b></p> <p><b><u>Project Description:</u></b></p> <p>This project will provide an engineering, risk, and cost assessment of reactivating a historical meander of the Lower Hoko River in WRIA 19. A channel migration study (BOR in Preparation) has discovered previously unknown aerial photographs from the 1940’s and early 1950’s for the estuary and lower river. These photographs suggest strongly that the large meander just above the estuary was intentionally cut by bulldozer, possibly to facilitate log transport activities (also discussed in Todd et al). This has been the contention of local citizens from WRIA 19, however, until this evidence came to light there was not a technical basis to pursue specific restoration proposals. The major restoration sponsors in WRIA 19, including North Olympic Salmon Coalition, WDFW, Lower Elwha Klallam and Makah Tribes now believe there is compelling evidence to pursue restoration options in this area. This assessment will lead to a partial restoration design (30%) for either fully or partially activating (reconnecting) the meander to restore its historical habitat conditions in the lower river and estuary. The assessment will include an analysis of available information, hydrology and flood risks, cost and benefits. This information will be used to evaluate the technical and sociological potential of advancing the project to final design and eventual implementation.</p> <p><b><u>Limiting Factors Addressed:</u></b></p>	NOSC, LEKT, Makah

This project addresses multiple limiting factors. Habitat loss including, reduced mainstem rearing, and transitional areas for smolts and adults. Currently access into and out of the abandoned meander has been a factor limiting fish use. Within the backwatered meander water quality, specifically temperature and DO have been documented to be a problem. Correction of these conditions would address goals cited in the WRIA 19 Recovery Plan for Hoko River including: Protecting and restoring estuary and nearshore processes and habitat conditions, supporting natural process recovery, Introducing large-scale, channel-spanning wood complexes below historic meander inlet to improve flood flow connection to meander.

**Benefits to Salmon:**

This project could lead to the reactivation of a meander that was cut off by human activities in the early 1950's. The disconnection eventually led to the dewatering of 1450 meters of former mainstem, off-channel, and estuary. The project would help to restore habitat forming processes in the Lower River and increase rearing habitat including critical estuary areas. Multiple species of salmon will benefit from this project. Hoko Chinook, which are the largest remaining portion of the western SJF Chinook population (Olympic Peninsula ESU), coho (Olympic Peninsula ESU), Olympic Peninsula chum salmon, Olympic Peninsula steelhead ESU as well as coastal cutthroat have all been documented to use habitats in this reach of the river. Although none of these stocks are federally listed, Chinook are a regional stock of concern that has been suggested for federal protection. It is also conceivable that stocks of salmon from other watersheds utilize estuary and lower river habitats in the Hoko.

**Recovery Plan Objectives:**

The Hoko River is not currently included in any federally listed fish stocks in Washington State. There is however, a draft salmon restoration plan for WRIA 19 (NOPL in preparation) that discusses the disconnection of the lower river meander and its potential for restoration (see section 5.8.1). That analysis was made prior to the recently discovered older aerial photographs. However, several Hoko River stocks are performing below their potential and are considered a stock of concern within the NOPL planning area. Of particular note is the summer/fall Hoko River Chinook stock which is considered in a "depressed" status as it has been chronically below its escapement goal of 1,200 fish. Hoko steelhead and coho are currently considered healthy, meeting their modest escapement goals in most years. The Hoko River currently supports the largest amount of low gradient habitat of any watershed in the NOPL planning area and local biologists estimate that the Hoko has the necessary habitat characteristics to support a much larger population.

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by restoring the physical characteristics of the Lower Hoko River and its estuary. It restores natural habitat forming processes within largely protected habitat that is primarily managed by Washington State Parks. These lands are managed for recreational uses and natural values. This restoration action is complementary to those long-term management strategies.

**Spatial/Temporal Influence:**

This project potentially represents a significant restoration action in the largest watershed in WRIA 19. The Hoko Watershed is managed almost entirely for industrial timber production and has historically been degraded by those activities. Improved logging practices as a result of upgrades to Washington State Forest Practices Rules now provide riparian buffers, improvements to road management and reduction in landsliding (reductions in sediment delivery). Significant restoration actions over the last two decades such as state parks purchase of Cowan Ranch lands which led to the restoration of the Little Hoko River. More recently SRFB funded projects of note include floodplain and tributary restoration on the mainstem Hoko and Ellis Creek (Hoko-Ellis Project), the removal of culvert barriers including the largest remaining fish barrier in the Hoko River (9000 road crossing), and restoration of Brownes Creek.

	<p><b>Project Readiness:</b> This project would be modeled after the ongoing engineering assessment of restoration in the Pysht River estuary. A local technical advisory committee consisting of stakeholders would be formed to manage the project. This group would prepare bid documents and select the engineering firm to conduct the analysis. If funded this project could easily be completed within 2 years of the award.</p> <p><b>Cost:</b> Estimated cost is \$250,000-400,000.</p> <p><b>Watershed Priority:</b> The Hoko River has a normalized score of 2.93, and is ranked as 8<sup>th</sup> priority watershed (5<sup>th</sup> freshwater). However it is the largest watershed in WRIA 19 and the highest priority within that area. If this project leads to fruition it would also arguable improve estuary/nearshore conditions. Nearshore projects in WRIA 18 and 19 have a normalized score of 5.0 and are the top priorities in NOPLEG.</p> <p><b>Miscellaneous:</b> This project is complicated by the presence of a housing development constructed in the 1970's along the western beach of the Hoko River. Completion of a preliminary design supported with necessary topographic data and hydrologic modeling combined with risk and cost-benefit analysis will be absolutely crucial in order to advance the project. Several homeowners within the development are strong salmon advocates and could be a valuable resource to communicate with the community.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://hwsconnect.ekosystem.us/Project/180/18240">http://hwsconnect.ekosystem.us/Project/180/18240</a></p>	
12100	<p><b>Elwha River Estuary Restoration Engineering Feasibility Project</b></p> <p><b>Project Description (Why Needed):</b> This project will support assess the cost and feasibility of implementing large scale estuary restoration concepts on the Elwha River. In 2011 the Lower Elwha Klallam Tribe commissioned a conceptual analysis of potential restoration scenarios in the estuary on lands owned by the Tribe. Entrix (2011) assessed several estuary restoration concepts that could complement the Elwha Dam removals beginning in 2011. Under that project two hydroelectric dams will be removed on the Elwha River at River Mile 4.9 and 13.5. Dam removal will drain and expose two reservoirs surfaces that have accumulated ~21.5 million yd<sup>3</sup> of fine sediment. Sediments will be available for fluvial transport and retaining those sediments in the Elwha estuary and nearshore are critical to recovery of historic habitats. The Elwha estuary and nearshore are currently sediment starved and have been impacted by channel simplification. The engineering feasibility project would allow the tribe to perform a cost benefit analysis of several restoration concepts, including the 1) reactivation of historic distributary channels, 2) sediment retention devices, 3) abandonment of road features and 4) engineered logjams.</p> <p><b>Limiting Factors Addressed:</b> This project will assess possible restoration actions that could accelerate and maintain the recovery of estuary, nearshore and forested floodplain riparian communities in the Elwha River. The Elwha River restoration project is the largest single salmon restoration project in Puget Sound and estuary restoration is arguably the second most important action following dam removal. The Elwha has the largest productive potential of any river in the NOPLEG planning area and its productivity is intricately linked to the reestablishment of its forested floodplain. The estuary, nearshore and lower river have been dramatically impacted by both dam construction and historic channelization.</p> <p><b>Benefits to Salmon:</b> This project could result in restoration actions that improve rearing habitat for multiple</p>	LEKT

	<p>species of salmon including Puget Sound chinook, Puget Sound coho ESU, Puget Sound steelhead ESU, Puget Sound chum, Puget Sound pink salmon as well as coastal cutthroat and bull trout which have all been documented to use the lower river and are expected to recolonize habitats above the dams. In addition nearshore habitat conditions for a myriad of species could also be improved.</p> <p><b>Recovery Plan Objectives:</b> Elwha chinook are federally listed and part of the Puget Sound ESU. Dam removal is keystone for recovery of the ESU and arguable the single largest action planned in the near future. Elwha steelhead are also federally listed and part of the Puget Sound steelhead ESU, however a recovery plan has not been prepared to date for this species. However implementation of the dam removal effort will likely be a cornerstone. Puget Sound bull trout are also a federally listed fish stocks in Washington State and the Elwha River is a core population area. Puget Sound coho, while not currently listed are a species of concern, and the Elwha population is currently supported almost entirely by hatchery production. Chum and pink populations in the Elwha are considered chronically depressed and have escapements less than 1000 and 200 adults per year, respectively. Restoration of habitat and habitat forming processes in the estuary would complement overall recovery goals in the Elwha River.</p> <p><b>Restoration or Protection of Ecosystem Function:</b> This project restores ecosystem function by accelerating the recovery of estuary and nearshore processes that support habitat forming processes. Ecosystem function is also permanently guaranteed on these reservation lands as development activities have been prohibited.</p> <p><b>Spatial/Temporal Influence:</b> The Elwha restoration project represents the largest dam removal project conducted to date. The 308 million dollar project has been in planning for the better part of two decades and is by far the largest restoration effort conducted on the Olympic Peninsula. The project ties to efforts by LEKT to conduct large scale restoration of floodplain habitats in the lower river. The Elwha project as a whole is considered a watershed wide restoration effort.</p> <p><b>Project Readiness:</b> This project is ready to go in the sense that the Tribe has completed a conceptual planning document but needs additional information to advance costs and benefits to policy, permitting and funding venues</p> <p><b>Cost:</b> Estimated cost is \$200,000-250,000</p> <p><b>Watershed Priority:</b> The Elwha River has a normalized score of 5.0, and is ranked as the highest priority in the NOPLEG planning area.</p> <p><b>Miscellaneous:</b> Elwha River restoration is one of the few projects that is arguable being conducted at the watershed scale. This project addresses restoration of critical habitats in ways that have not been considered to date.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/5148">http://waconnect.paladinpanoramic.com/Project/180/5148</a></p>	
09050.1	<p><b>Clallam County Roads Culvert Inventory</b></p> <p><b>Projection Description:</b> The municipality of Clallam County encompasses an area of 1,752 square miles that is drained by thousands of miles of streams. It also maintains a road network that includes approximately 850 miles of asphalt and gravel roads. These roads cross numerous</p>	LEKT/ CC

drainages that support anadromous and resident trout populations. Many of these roads were built prior to the enactment of the Hydraulic Act and as a result their stream crossing structures do not meet modern fish passage criterion. This project will identify all stream crossings within county jurisdiction using GIS Tools by watershed. The stream network affected by the road system will also be classified by gradient and confinement criteria within each watershed. This analysis will produce a population of culvert sites and potential stream habitat upstream affected by those crossings. Individual culvert sites will then be field surveyed to assess their impacts to fish passage using the WDFW (2009) level A assessment. From these data a prioritized list of fish passage improvement projects will be generated by watershed and by county ownership. The over-all goal is to identify and replace barrier culverts and to restore unimpeded fish passage to historical spawning and rearing habitat upstream with structures that meet fish passage criteria. This project will help Clallam County and its partners identify those barriers and compete for the resources necessary to correct barriers over time.

**Limiting Factors Addressed:**

This project will result in a prioritized list of fish passage barriers on Clallam County road ownership. Currently Clallam County does not have such an inventory and its road culverts are replaced only when public safety is threatened or there is an engineering reason to do so. As a result, numerous migration barriers remain unidentified and are not being targeted for systematic correction. Barrier correction and the restoration of access is fundamental to salmon restoration. Indeed, in a recent review of watershed restoration priorities Roni et al. (2006) recommend the correction of human caused fish passage barriers as the first and greatest priority for restoring salmon habitat in Pacific Northwest watersheds.

**Benefits to Salmon:**

Because of the geographic scope of this project, numerous stocks of salmon ranging from Puget Sound coho to Olympic Peninsula chum would be positively affected. Restoring access to historically utilized habitats has perhaps the greatest cost-benefit of any salmon restoration project type. If barriers are not identified they will not be proactively repaired, except at the end of their life expectancy. Many municipalities of the state of Washington currently do not have the tools or fiscal resources to carry out such a fish passage correction program.

**Recovery Plan Objectives:**

Clallam County currently contains several listed species including: Ozette Lake Sockeye, Puget Sound Steelhead, Puget Sound Summer Chum, Puget Sound Chinook, and Puget Sound/WA Coastal Bull Trout. Recovery plans have been developed for all of these ESU's with the exception of Puget Sound Steelhead. Restoration of access to historically utilized areas is included in all these plans. However this project is more likely to benefit species such as coho and steelhead which utilize tributaries as opposed to chinook which primarily utilize mainstem and large river side channels.

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by leading to a process that restores access for anadromous and resident salmonids to habitats blocked by undersized, over-steepened, perched or velocity barrier culverts across Clallam County. Replacement of these structures over time will also restore ecosystem function by allowing unimpeded transport of sediment and large wood. Degraded channel conditions often occurs immediately downstream of undersized culverts and replacement of these structures will result in additional habitat recovery benefits

**Spatial/Temporal Influence:**

This project has a broad impact in terms of identifying barriers in multiple watershed in WRIA 17-19. It could (and should) be coupled with a similar effort in WRIA 20 which has a different lead entity group (NPCLE).



	<p><b>Project Readiness:</b> This project could be completed within 1-3 years of funding. It will require a considerable amount of GIS time and each culvert requires approximately half a day to locate and survey.</p> <p><b>Cost:</b> \$300,000--450,000</p> <p><b>Watershed Priority:</b> Due to the geographic scope of this project, which encompasses survey activities in multiple watersheds, it is impossible to assign a priority value according to the system adopted by NOPL.</p> <p><b>Miscellaneous:</b> This project is modeled after LEKT watershed analysis in Salt Creek (McHenry et al 2006). That project identified multiple culver barriers (31) that affected at least half of the historically affected habitat in the watershed. Seven barriers were identified on Clallam County ownership. Using state and federal grant sources, LEKT in partnership with Clallam County has corrected six of those barriers. The final barrier is currently being analyzed for correction during the summer of 2011.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/7024">http://waconnect.paladinpanoramic.com/Project/180/7024</a></p>	
<b>HABITAT PROTECTION</b>		
09053	<p><b>Clallam Watertype Inventory and Assessment</b></p> <p><b>Project Description:</b> Errors in Washington State water type maps result in the under-protection of 40-60% of the fish-bearing stream network. Work by the Wild Fish Conservancy, Tribes, and others have systematically documented streams mapped incorrectly or not at all, limiting the effectiveness of habitat protection on private lands under local government land use and state forest practice regulations. Though water typing errors have been documented as a problem on managed timberlands, problems on private developed/developing lands are less well known. Washington State local governments make frequent use of the WDNR water type maps but do not have resources to validate their accuracy in land use planning permitting.</p> <p>The correction and updating of these water type maps are pivotal to the full protection of streams from development impacts, since fish-bearing streams are frequently misrepresented as non-fish-bearing, mis-located, or even missing from regulatory maps. Using visual and electrofishing surveys, Wild Fish Conservancy will document and correct water type classifications using established state protocols in approximately 60 sq miles of at-risk lands around fast-developing urban fringe areas prioritized by the NOPL technical advisory committee. Using GPS and GIS, WFC will accurately map previously unmapped/incorrectly mapped water courses to ensure informed and responsible watershed management. WFC will incorporate assessment results in a web-based interactive GIS available to planners, landowners, and resource managers (see <a href="http://www.wildfishconservancy.org">www.wildfishconservancy.org</a>). WFC will also submit assessment results to WDNR for correction and update of state water type maps. In addition to corrected water type maps, this assessment will generate species-specific fish distribution data and identify restoration opportunities on lesser-known tributaries.</p> <p>The Clallam water type inventory and assessment “advances implementation of the recovery plan” (ii.) by improving local government information sources for the protection of critical areas under the GMA. The project would “advance habitat protection and restoration” (iii.) by improved on-the-ground resource protection for sensitive</p>	WFC



	<p>stream-riparian corridors, and by pinpointing small restoration opportunities on lesser known tributaries. The project would also “advance recovery of ecosystem function” (iv.) and “advance ecosystem awareness” (v.) through improved habitat protection and public awareness of the significance of individual stream segments passing through neighborhoods. Finally, the project</p> <p>Wild Fish Conservancy would “advance integration” (vi.) by linking habitat assessment with growth management policy implementation, and providing proactive assistance to private landowners seeking to protect fragile public resources on their land.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/7084">http://waconnect.paladinpanoramic.com/Project/180/7084</a></p>	
<b>WATERSHED PLAN IMPLEMENTATION &amp; COORDINATION</b>		
09057.1	<p><b>Elwha Watershed Adaptive Management Plan &amp; Monitoring</b></p> <p><b>Project Description:</b>  Removal of two hydroelectric dams on the Elwha River is scheduled to begin in the fall of 2011 as authorized by the Elwha River Ecosystem and Fisheries Act (PL102-495). Full removal will be completed by 2014 and for the first time in over a century, anadromous fish will have access to the upper watershed. Restoration of fish populations is guided by the Elwha Fish Restoration Plan (Ward et al. 2008) which documents strategies for population rebuilding by stock, hatchery utilization, habitat restoration and monitoring. Monitoring the population response of Elwha River fish populations is fundamental to understanding the effects of the overall project. Monitoring strategies for salmon response and recovery on the Elwha rely on a suite of testable hypotheses using the concept of Viable Salmon Populations (VSP). VSP includes parameters that describe individual stock health including: Abundance, population growth rate (productivity), population spatial structure and diversity (NOAA 2000). Unfortunately there are almost no project monies available to answer these critical long term question. Project partners have secured enough internal resources to answer some of the short term (pre dam removal) questions concerning salmon abundance, productivity, and life history strategies including estimation of adult abundance and productivity for some species. However, these efforts will need to be expanded over space and time in order to be effective. This proposal would support a portion of that effort beginning in 2014-2017 to spatially expand adult salmon surveys using a combination of survey techniques (weir, foot, aerial) combined with marking strategies to assess effectiveness. Additionally we propose to add three upstream smolt trapping sites to measure production from the upper watershed and two major tributaries.</p> <p><b>Limiting Factors Addressed:</b>  Dam removal on the Elwha will restore access to over 30 miles of mainstem and 70 miles of tributaries. Dam removal also restores physical processes and will result in improved spawning habitat for returning adults and rearing habitat for juvenile salmonids throughout the watershed. This non-capitol project proposes to measure that response over space and time for two purposes: 1) to provide information on salmon response to project managers so that adjustments to restoration strategies can be made using real data (adaptive management), and 2) to document ecosystem response of the largest controlled dam removal conducted to date in the United States.</p> <p><b>Benefits to Salmon:</b>  This project will restore habitat and benefit Chinook as well as coho, steelhead, chum, pinks, bulltrout, resident rainbow trout and cutthroat trout. Improvement of upland habitat conditions will contribute to recovering health of main-stem and estuarine areas and the nearshore migration corridor. Historic aerial photographs clearly depict the loss of habitat diversity in the lower river and particularly its estuary. Over time the lower river has lost large deposits of sediment (fewer islands and bars), has much lower diversity of channels, and less diversity of vegetation (age and species). These changes are attributed</p>	LEKT

to the cumulative effects of dam construction and channelization.

**Recovery Plan Objectives:**

Elwha chinook are federally listed and part of the Puget Sound ESU. Dam removal is keystone for recovery of the ESU and arguable the single largest action planned in the near future. Elwha steelhead are also federally listed and part of the Puget Sound steelhead ESU, however a recovery plan has not been prepared to date for this species. However, implementation of the dam removal effort will likely be a cornerstone of several ESU recovery plans. Puget Sound bull trout are also a federally listed fish stocks in Washington State and the Elwha River is a core population area. Puget Sound coho, while not currently listed are a species of concern, and the Elwha population is currently supported almost entirely by hatchery production. Chum and pink populations in the Elwha are considered chronically depressed and have escapements less than 1000 and 200 adults per year, respectively.

**Restoration or Protection of Ecosystem Function:**

This project restores ecosystem function by restoring access to fish habitats blocked for over a century. It also results in improved floodplain habitats as ecosystem processes such as sediment and wood transport are reestablished. Revegetation of reservoirs results in improved riparian zones while restored sediment flux re-connects floodplains in the lower reaches of the Elwha River including its estuary. This project restores ecosystem function by accelerating the recovery of floodplain habitats that have been altered by dam construction and channelization. Ecosystem function is also permanently guaranteed within this area because the floodplains of the watershed are largely protected under the management of Olympic National Park, Project lands and LEKT Reservation are protected from future development of any kind.

**Spatial/Temporal Influence:**

This proposal represents spatial and temporal monitoring efforts for salmon abundance and productivity that to date have focused almost exclusively on the lower river below Elwha Dam (RM 4.9). Monitoring would expand into upstream reaches below river mile 19.5 and focus on adult escapement, distribution and timing. Smolt outmigration would be measured at new sites below Glines Canyon Dam and from to large middle River tributaries (Indian Creek and Little River). An existing lower river site will continue to be monitored by LEKT.

**Project Readiness:**

This project is being sequenced with ongoing monitoring projects to provide expansion of monitoring efforts beginning in 2014, the year salmon will first have restored access to the upper river.

**Cost:** \$300-400,000 for three years beginning in 2014.

**Watershed Priority:**

Elwha River has a normalized score of 5.00, and is ranked 1<sup>st</sup> as priority watershed.

**Miscellaneous:**

The Elwha River has the largest productive potential of any river in the NOPL planning area and its productivity is intricately linked to the reestablishment of its forested floodplain. The most productive areas are located in unconstrained river valleys that have anastomosing or braided island morphology. In these areas forest features can attain sizes sufficient to form stable hard points within the floodplain. The interaction of river flows with these surfaces creates boundary conditions which promote a multi-thread channel. Multi thread channels may include surface-water, ground-water or combinations of the two that support diverse life histories of salmon.

**Photos and Graphics are available for viewing at:**

	<a href="http://waconnect.paladinpanoramic.com/Project/180/7480">http://waconnect.paladinpanoramic.com/Project/180/7480</a>	
09066.1	<p><b>12 River Channel Migration Zone Assessment and Delineation</b></p> <p><b>Project Description:</b>  The Channel Migration Zone assessment and delineation will outline the zone of historical channel migration and potential future channel migration over a timeframe of 100 years. The CMZ delineations will be used for land-use planning decisions; to inform Clallam County's Shoreline Master Plan and relevant updates to the Critical Areas Ordinance; and for restoration project planning. In all watersheds, the CMZ's are found in lower reaches, <i>which also are the most productive salmonid habitat and the first to develop. Floodplain modifications invariably follow floodplain development. Without CMZ delineations, the County cannot effectively protect this productive riverine habitat.</i> CMZ mapping and delineation would occur for McDonald Creek, Siebert Creek, Morse Creek, Elwha River, Salt Creek, Lyre River, East and West Twin Rivers, Deep Creek, Pysht River, Clallam River, and Sekiu River.</p> <p>This information will provide technical information to local officials and stakeholders to better inform their management decisions related to channel migration hazards along rivers. The project will also be important as an educational tool to increase public and landowner awareness of probable channel movements and erosion in the next five to ten decades.</p> <p>Methodology would follow Department of Ecology guidelines where aerial photos can identify channel patterns, and follow DNR Forest and Fish guidelines where mapping must occur on the ground. This project would provide the funding to conduct a CMZ delineation for each of these drainages and work with Clallam County Department of Community Development to incorporate those maps into the Critical Areas Ordinance.</p> <p><b><u>Why the Project is Needed (limiting factors to be addressed):</u></b>  An assessment of the channel migration zones will provide data that is critical to restoration planning. Clallam County has jurisdiction and authority to limit development within channel migration zones (CMZs) through Clallam County's Critical Areas Ordinance and is currently updating its Shoreline Master Program. Updated CMA information would be used to provide guidance and regulations that more closely fit the river systems.</p> <p>Limiting factors addressed include:  <u>Floodplain Modifications</u>  <u>Stormwater Runoff</u>  <u>Magnitude and Frequency of Peak Flows</u>  <u>Channel conditions</u>  <u>Riparian condition</u></p> <p>The limiting factors listed above either affect, or are affected by, river channels and their migration patterns. Understanding and accurate mapping of the river channels aids in assuring that river processes continue to provide their full range of ecosystem benefits.</p> <p><b><u>Benefit to Salmon (how does it address stock status &amp; trends?) Which ESA-listed stock and/or non-listed stock does this project address?</u></b>  ESA-listed stocks A functional floodplain is a key element to salmon habitat recovery. In all watersheds, the CMZ's are found in lower reaches, which also are the most productive salmonid habitat and the first to develop. Without CMZ delineations, the County cannot effectively protect this productive riverine habitat. Floodplain modifications invariably follow floodplain development.</p> <p><b><u>Which Salmon Recovery Plan Objectives does this Project Meet &amp; How?</u></b>  The NOPL 2011 Draft Strategy Appendix A, p. 35, Elements of the Action Agenda states</p>	CC/ NOPL/ JSKT/ LEKT/ Makah Tribe

	<p>that:</p> <ul style="list-style-type: none"> <li>• The amount, quality and location of marine, nearshore, freshwater and upland habitats sustain the diverse species and food webs of Puget Sound lands and waters.</li> <li>• The amount, quality and location of marine, nearshore, freshwater and upland habitats are formed and maintained by natural processes and human stewardship so that ecosystem functions are sustained.</li> </ul> <p>The CMZ study will provide information to help avoid future constriction of the river channels and will provide information for restoration in areas that are now constricted.</p> <p><b><u>How Project supports Restoration or Protection of Ecosystem Functions? (Does it protect high quality fish habitat or restore formerly productive habitat? Does it support restoration and maintenance of ecosystem functions?)</u></b></p> <p>The channel migration zone study provides information to help protect and maintain ecosystem functions. The study will provide information for land use decisions and for setting restoration priorities. Study results will be used as a protection tool and as a restoration tool.</p> <p><b><u>Address the project's spatial-temporal scale of influence:</u></b></p> <p>Spatially the CMZ assessment and delineation project ranges from the Sekiu River at the west end of the Strait of Juan de Fuca to the Dungeness River in the central-eastern Strait of Juan de Fuca. The information can be used for years once the report is complete.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p> <p>Project is ready to go. Channel migration zone delineation studies are underway in on the Hoko; Department of Ecology is conducting a Shoreline Master Program level CMZ study.</p> <p><b><u>Range of Estimated Cost:</u></b></p> <p>The project is estimated to cost \$250,000 – 450,000, based on the cost of the current Hoko channel migration zone study undertaken by the Bureau of Reclamation.</p> <p><b><u>Watershed priority &amp; watershed area or which WRIA Nearshore project is located in:</u></b></p> <p>The project is located in WRIAs 18 and 19, and includes priority watersheds such as the Dungeness.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b></p> <p>NOPL has contracted with the Bureau of Reclamation to conduct a channel migration zone study on the Hoko River, a priority river for identifying channel migration zones. Washington Department of Ecology, with EPA funding, is conducting a study to identify channel migration zones within Clallam County. Results of the Ecology study are expected to inform updates to Clallam County's Shoreline Master Program, but do not provide the detailed information required for restoration planning.</p> <p><b>HWS Link:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/7026">http://waconnect.paladinpanoramic.com/Project/180/7026</a></p>	
<b>OUTREACH &amp; EDUCATION</b>		
<b>STOCK MONITORING SUPPORT</b>		
09056	<p><b>Elwha River Nearshore Biodiversity Investigations</b></p> <p><b><u>Likely Sponsors:</u></b>          NOAA Fisheries, USGS, Lower Elwha Klallam Tribe, Battelle PNW Labs</p> <p><b><u>Funding Request:</u></b></p>	NOAA, USGS & LEKT

	<p>\$450,000</p> <p><b><u>Partnerships:</u></b> This project is an on-going partnership between NOAA Fisheries, USGS the Lower Elwha Klallam Tribe and Battelle Pacific Northwest Laboratory.</p> <p><b><u>Brief Description of Project:</u></b> Assess the current status of salmon, associated forage fish populations, and invertebrate communities in the nearshore environment adjacent to the Elwha River and compare fish use in non-impacted regions of the Strait of Juan de Fuca.</p> <p>The nearshore environment adjacent to the mouth of the Elwha River is severely degraded and has been impacted over time by restricted flow of sediment from the upper Elwha River watershed. Assessing the status of juvenile salmon and associated forage fish populations, determining their use of this habitat, quantifying the nearshore habitat types and analyzing food web will provide critical baseline information necessary to fully document and understand both the impacts of dams on the Elwha River and the effects that this removal has on the populations of concern.</p> <p>This assessment effort will consist of <i>7 primary assessment methods</i> and will provide a quantitative profile of habitat parameters, fish use in the inter-tidal, sub-tidal, and offshore deepwater areas and provide an analysis of the food web of juvenile salmonids encountered in the survey using stable isotopes methodologies.</p> <p>The project will include beach seining of juvenile salmon and forage fish, inter-tidal habitat surveys, SCUBA-based sub-tidal characterizations of habitat and fish use, profiling of kelp forests use by juvenile salmon and associated forage fish with lampara net sampling coupled with snorkel surveys, and deep water tow netting to sample fish use in deep-water transit corridors adjacent to the mouth of the Elwha River and the mouth of the Strait of Juan de Fuca.</p> <p><b><u>Limiting Factors Addressed:</u></b> The need to conduct biodiversity investigations of the Elwha Nearshore was identified as a priority activity in the proceedings of the Technical Workshop on Nearshore Restoration in the Central Strait of Juan de Fuca (Triangle Associates, INC. 2004. Technical Workshop on Nearshore Restoration in the Central Strait of Juan de Fuca. 59pp).</p> <p><b><u>Stock Status and Trends:</u></b> The project addresses stock status and trends by assessing the status of stocks in the nearshore and assessing their temporal and special usage of the nearshore.</p> <p><b><u>Listed Stocks:</u></b> Hood Canal/Strait of Juan de Fuca summer chum and Puget Sound steelhead, Puget Sound Chinook and bull trout.</p> <p><b><u>Other Stocks:</u></b> Non-listed stocks originating in nearby watersheds include coho and sea-run cutthroat, pink salmon. In addition, the nearshore is utilized by a number of forage fish populations.</p> <p><b><u>Benefit to Salmon:</u></b> <i>Implementation of Key Action Area Work Plan</i> Assessing the status of juvenile salmon and associated forage fish populations, determining their use of this habitat, quantifying the nearshore habitat types and analyzing food web will provide critical baseline information necessary to fully document and understand both the impacts of dams on the Elwha River and the effects that this removal has on the populations of concern. This project will benefit the Strait through implementation of a <i>Key Action Area Work Plan</i> – The assessment of juvenile fish use in all WRIAs in the region is noted as being an on-going project necessary to furthering the understanding of the use of the nearshore environment</p>	
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	<p>by juvenile fish.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objective Does This Project Meet and How?</u></b></p> <p>This project will fill an important data gap identified in the Technical Workshop on Nearshore Restoration in the Central Strait of Juan de Fuca (Triangle Associates, INC. 2004. Technical Workshop on Nearshore Restoration in the Central Strait of Juan de Fuca. 59pp).</p> <p><b><u>Project Support of Restoration or Protection of Ecosystem Functions:</u></b></p> <p>The Elwha River Nearshore Biodiversity Investigations will add to the on-going assessment and of juvenile fish use within the greater Puget Sound region and contribute to the understanding of fish use following entrance into the Strait of Juan de Fuca.</p> <p><b><u>Certainty of Project Success:</u></b></p> <p>The partners in this project have been actively involved with similar assessments of populations of salmon and associated forage fish populations in the greater Puget Sound region for a number of years. The project lead, Kurt Fresh is currently a member of the Puget Sound Nearshore Partnership and has helped to design and implement Guidance Strategies for the Protection and Restoration of the Nearshore Ecosystems of Puget Sound. This project will build upon and expand these past efforts and successes.</p> <p><b><u>Proposed Starting and Ending Dates:</u></b></p> <p>2012 to 2018</p> <p><b><u>Cost Appropriateness:</u></b></p> <p>Cost estimates are based upon expenses incurred in the past conducting similar assessments.</p> <p><b>HWS Link:</b></p> <p><a href="http://waconnect.paladinpanoramic.com/Project/180/16316">http://waconnect.paladinpanoramic.com/Project/180/16316</a></p>	
<b>HABITAT PROJECT MONITORING</b>		
09065	<p><b>Jimmycomelately Creek &amp; Dungeness River Habitat</b></p> <p><b><u>Project Description:</u></b></p> <p>Implementing conservation goals laid out in watershed recovery plans has resulted in about 300 acres of land conserved in acquisitions and easements by WDFW, Clallam County, Jamestown S'Klallam Tribe, and NOLT. There is a strong need for stewardship funding to assure that the conservation goals are met and the habitat remains in good condition. Stewardship will focus protecting the sites from improper use, noxious weed control, general site maintenance, and monitoring of land use. WDFW is very close to placing a moratorium on future land acquisition because they lack funds and personnel to maintain the portion of their land base purchased for salmon recovery. Habitat protection through acquisition and easement is a cornerstone for salmonid recovery. This is a critical issue that needs funding.</p> <p><b>HWS Link:</b></p> <p><a href="http://waconnect.paladinpanoramic.com/Project/180/7032">http://waconnect.paladinpanoramic.com/Project/180/7032</a></p>	WDFW, JSKT, NOLT & CC
09075	<p><b>NOPL Area wide Monitoring Program</b></p> <p><b><u>Project Description:</u></b></p> <p>This program will establish watershed- based programs to monitor for Viable Salmonid Populations parameters and will provide for intra-NOPL coordination to compile and report data/findings for EDT/AHA. The following present details on the Dungeness. As the</p>	NOPL, CC, COPA & COS

program develops, appropriate programs would be developed for other watersheds.

**Dungeness Chinook Population Analysis and Modeling to Support Harvest, Hatchery and Habitat Management and Planning**

This program would address the population analysis and modeling needs identified in the Dungeness Chinook recovery plan. Accomplishing the tasks under this program would help fill gaps identified by the TRT (see below) and would increase understanding and certainty in the management of Dungeness Chinook recovery. The program would support hiring an analyst proficient in population modeling and assessment to accomplish the following tasks:

- Chinook cohort analysis and run reconstruction of Dungeness Chinook Hatchery stock. Though data is currently limited, the layout and initiation of the analysis and could and should begin.
- Use run reconstruction results to estimate Chinook exploitation rates over time and provide historical modeling input for preseason fisheries planning.
- Estimate a rebuilding exploitation rate (RER) as defined in the Co-managers Chinook Harvest Management Plan; this would be the exploitation rate that controls protective measures incorporated in annual fisheries planning and management.
- Update the Dungeness Chinook EDT analysis and use it to reinforce and expand assessments of impacts on VSP parameters and effectiveness of recovery measures.
- Help prepare for 2009 PST negotiations of a new Chinook annex to offer improved protection from non-southern U.S. harvest impacts.

This is a high priority program because it addresses immediate needs for population analysis and modeling to help reduce uncertainties and close gaps in the Dungeness recovery plan, including those identified by the Puget Sound Technical Recovery Team (TRT)\*. The immediate need for improving the recovery plan and its ongoing and pending recovery measures is necessary for effective adaptive management. Accordingly this program should be put in place as soon as possible and operate at least over the next three years.

**Dungeness Chinook Biological Monitoring Project**

A biological monitoring project is proposed to augment the current biological monitoring of spawning escapements (that includes determining natural and hatchery origin of Chinook spawners), and juvenile out-migrant trapping on Matriotti Creek. This project is intended to collect life history and distribution information on Chinook in the watershed and Dungeness estuary, and also on other salmonids that may interact with the Chinook. Data collected over the long-term would provide for monitoring biological changes or trends in relation to recovery actions and to test assumptions made in recovery planning.

- Operate a screw trap on the Dungeness mainstem to determine juvenile abundance of Chinook, coho and steelhead, and timing of their migratory movements (Apr. – Sep.).
- Survey the Dungeness nearshore with beach seines and traps at a variety of tidal regimes to collect information on the distributions and life histories of all species (Apr. Sep.).
- Fence trap Canyon Creek (fish passage is being restored) and Bear Creek to determine juvenile distribution, abundance and migration patterns of all salmonid species (Apr. – Sep.).
- Help with Chinook and pink (in odd numbered years) salmon spawner surveys in late summer/early fall (Aug.-Oct.). Conduct coho salmon spawner surveys in late fall/early winter (Oct. – Dec.). Determine proportion of hatchery and wild origin coho salmon on spawning grounds.
- Conduct steelhead spawner surveys in April and May, as time permits (priority is with juvenile sampling of other species), to determine stock status.
- As time permits, snorkel survey index areas throughout the system to determine relative species abundance and rearing habitats.

The project was identified in the Dungeness recovery plan as a critical part of the hatchery and harvest components. The TRT stated that the most important way to improve certainty of an effective hatchery strategy was to improve adaptive management.\*



	<b>HWS Link:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/7481">http://waconnect.paladinpanoramic.com/Project/180/7481</a>	
<b>Completed Project Narratives</b>		
12097	<b>Clallam River Tributary Culvert Replacement</b>  <u><b>Description:</b></u> <p>Located on the 203 acre Sadilek property at approximately river mile 2 on the Clallam River, this project will result in removal of two undersized (24") culverts in a private road and replace them with a bridge. The culverts currently restrict the flow of water from a forested wetland into the unnamed tributary (Sadilek Creek for our purposes) of the Clallam River. In addition to simply being too small for winter flows, the problem at this site is exacerbated by the presence of some unknown critter that continually stuffs vegetative debris into the ends of the pipes. Weekly pipe cleaning is necessary during the winter to reduce flooding. Additionally, and most importantly from an ecosystem perspective, the pipes are perched the majority of the time and don't allow for consistent juvenile fish access to the almost 16 acre forested wetland upstream of the culverts. A bridge is needed to allow a more functional hydrologic connection between the wetland and the Sadilek Creek while maintaining property access for the landowners and restoring juvenile fish migration up into the forested wetland where there is prime off channel over wintering habitat for Clallam River coho and steelhead.</p> <u><b>Why the Project is Needed (limiting factors to be addressed):</b></u> <p>"Barriers to fish passage (culverts and dams)" and "poor off-stream rearing and overwintering habitat" are identified in the 2008 NOPL Strategy as limiting factors.</p> <u><b>Benefit to Salmon (how does it address stock status &amp; trends?)</b></u> <p>Which ESA-listed stock and/or non-listed stock does this project address?  The barrier removal project will open access to off channel rearing in a nearly 16 acre forested wetland. Coho, steelhead and cutthroat are expected to benefit by increased access to high quality off channel rearing habitat. No salmon or trout species in the Clallam River are currently listed under the ESA.</p> <u><b>Which Salmon Recovery Plan Objectives does this Project Meet &amp; How?</b></u> <p>This project meets goals and objectives of the NOPL 2008 Salmon Recovery Strategy. Specific goals stated in the Strategy that the project will address include:  Goal 1: Achieve robust fish stocks - this project will contribute to greater juvenile production, especially for coho, thereby likely contributing to greater harvest opportunities for this non-listed commercial and sport fish species.</p> <p>Goal 2: Implement recovery plans and protect and restore fish habitat - this project implements elements of the NOPL 2008 Salmon Recovery Strategy and the WRIA 19 Salmonid Recovery Plan related to the objective of 'Restoring Fish Passage' and will lead to one barrier removed.</p> <p>Goal 3: Restore and maintain ecosystem function and nearshore processes - Objective: Focus on protection and restoration of habitat forming process. This project restores ecosystem function to a nearly 16 acre forested wetland. This wetland is larger than any of those identified in the 2008 Clallam River Watershed Stream Habitat Inventory and Assessment as blocked by partial or full fish passage barriers. A larger opening will restore the habitat processes and hydrologic function between the forested wetland, the 0.13 miles of Sadilek Creek downstream of the barrier, and the Clallam River.</p> <p>Goal 4: Instill ecosystem awareness: The project has already led to communications with the family and local community members about the importance of the forested wetland for juvenile fish, has led to education of young field crew workers spending their time to keep</p>	NOSC



	<p>the culvert clear of debris, and will become part of the sponsors education and outreach program as we educate Clallam and Jefferson County residents about the project and its benefits.</p> <p>Goal 5: Integrate efforts: Objective: Already the project has 4 partners including NOSC, the landowner, local community members and the Pacific Coast Salmon Coalition. The project will be shared through two statewide databases, the Habitat Work Schedule and Prism.</p> <p><b><u>How Project supports Restoration or Protection of Ecosystem Functions? (Does it protect high quality fish habitat or restore formerly productive habitat? Does it support restoration and maintenance of ecosystem functions?)</u></b></p> <p>The project will restore fish access to nearly 16 acres of high quality forested wetlands and will restore hydrologic connectivity between the wetland, Sadilek Creek and the Clallam River improving juvenile fish migration between the Clallam River and the forested wetland. It is a simple fix that will dramatically improve ecosystem function of an area likely to have been productive juvenile rearing habitat.</p> <p><b><u>Address the project's spatial-temporal scale of influence:</u></b></p> <p>The project will result in the construction of a simple bridge that will likely have a 50 year life span, thereby improving habitat connectivity and ecosystem function to nearly 16 acres of wetland. The size of this forested wetland is far greater than any of the other's blocked by fish passage barriers as identified in the Clallam River Assessment (Haggerty 2008) which speaks to the projects substantial spatial scale.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b></p> <p>The project is ready. The landowner is ready for this project to happen and as soon as the sponsor has funding, the bridge can be designed, permitted and installed.</p> <p><b><u>Range of Estimated Cost:</u></b></p> <p>40,000-\$130,000 depending on length of opening, width of bridge and type of bridge.</p> <p><b><u>Watershed priority &amp; watershed area or which WRIA Nearshore project is located in:</u></b></p> <p>WRIA 19. Clallam River.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b></p> <p>The Sadilek family has undertake multiple restoration projects on their property. The landowners are recipients of a 2006 DOE 'Washington Conservation Farms Award - Farming for Clean Water' award and have completed livestock exclusion fencing, riparian planting and livestock watering projects as well as a culvert replacement on Pearson Creek with the Clallam CD as a partner. It is also important to note that this project was brought to the FFFPP program for funding and was denied because they require 'stream miles' to be opened up with their projects and this project opens forested wetland which doesn't qualify for FFFPP. The landowners are talking with NOLT about a conservation easement, which should be a high priority given the amount of restoration that has already taken place on this important parcel that has Clallam River and tributary habitats.</p>	
09047.1	<p><b>Washington Harbor Restoration Project</b></p> <p><b><u>Watershed Priority:</u></b> 4.27</p> <p><b><u>Project Description:</u></b></p> <p>WA Harbor is crossed by a 1,300-foot long road, equipped with just two 6-foot culverts, which disrupts habitat connectivity, tidal hydrology and habitat forming processes in the estuary's northern 37 acres. This area historically provided the finest tidal marsh and eelgrass habitat in the estuary. The road's impacts appear to have destroyed the eelgrass beds and evidence indicates that the estuarine marsh has been deprived of sediment and is eroding. Superb habitat still exists within the marsh, but fish access into this area is hindered by the culverts which are perched and discharge flood and ebb tides with</p>	JSKT

extremely high velocities. At no time in the tidal cycle can chum fry migrate into the northern 37 acres while remaining in their preferred shallow water habitat. During much of the tidal cycle velocities in the culverts are too high to allow fish passage. The movements of sediment and wood are blocked by the road. The culverts cause a 2-hour lag in tidal processes in the northern 37 acres, which has caused WA Harbor's main inlet to narrow by 28% since the road was constructed in the mid 1960's. The project will provide unrestricted fish access and restore tidal hydrology and habitat forming processes in WA Harbor's northern 37 acres by removing the 6-foot culverts and 600 feet of road and replacing them with a 600-foot bridge.

**Why the Project is needed (limiting factors addressed):**

From the WRIA 18 LFA: 1) *"Estuaries, which provide critical rearing and transition habitat for salmonids--- have been physically altered at the mouth of many of the streams in WRIA 18, dramatically affecting the habitat and physical functions characteristic of natural estuaries."* 2) *"Intertidal water exchange to the north end of the (WA) harbor was significantly restricted by the construction of a 650-foot long fill causeway across the tidelands to support the Sequim Wastewater Treatment Plant outfall. This fill resulted in the direct loss of approximately 13,000 ft.<sup>2</sup> of intertidal area under the road fill, assuming an average fill base width of 20 ft."* 3) *"In addition, approximately 10-12 acres of intertidal estuary in the north end of the bay was adversely affected by reduction of tidal flux and hypersalinity, which has also developed as a result of reduced tidal interchange."* 4) LFA recommendation: *"Restore unrestricted tidal flow and flushing to the north end of Washington Harbor."*

**Benefit to Salmon (how does it address stock status & trends):**

Pocket estuaries, such as WA Harbor, provide supremely valuable, productive nearshore habitat for juvenile salmon, especially chum and Chinook. WA Harbor lies 5 miles along the marine migration corridor of ESA-listed Hood Canal/Eastern Strait of Juan de Fuca summer chum salmon from Jimmycomelately Creek, the site of a completed, highly successful \$7.5 million portfolio ecosystem restoration project. This stock has increased from a return of 7 spawners in 1999 to 4,027 spawners in 2010. The project will provide a significant increase (37 acres) in pocket estuary habitat to support this spectacularly rebounding salmon stock. WA Harbor is also located just 7.5 miles from the Dungeness River mouth and is thought to provide habitat for Dungeness Chinook, summer and fall chum, and bull trout. Many other populations of juvenile salmon, including summer chum from Discovery Bay's Salmon and Snow Creeks (16 miles east) and fish originating from other systems farther east in Hood Canal and Puget Sound most likely use the estuary.

**Specific Salmon and Char Stocks that will benefit.**

**ESA-listed:** Hood Canal/Strait of Juan de Fuca summer chum, Puget Sound Chinook, Puget Sound steelhead, Coastal/Puget Sound bull trout. **Non-listed:** coho, pinks, fall chum, cutthroat.

**Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet & How?**

Puget Sound Salmon Recovery Plan Dungeness Section, Key strategies and actions supporting the overall approach to recovery, *"Nearshore habitat protection and restoration to improve the quantity and quality of estuarine and nearshore habitat."* (Page 325). WRIA 18 LFA, *"Restore unrestricted tidal flow and flushing to the north end of Washington Harbor."* NOPL 2011 Draft Strategy Table A: Goals and Objectives, *"Restore and maintain ecosystem function and nearshore processes - focus on protection and restoration of habitat-forming, watershed, and nearshore processes."* Tidal hydrology and habitat-forming processes were specifically addressed in the 2010 **Washington Harbor Restoration Project Geomorphic Assessment**, and the 600-foot bridge will meet these objectives.

**Restores Formerly Productive Habitat:**

WA Harbor is a 118-acre barrier estuary that provides superb, productive estuarine marshes and eelgrass meadows that are excellent marine nearshore habitat for a variety of

	<p>salmon and char species. Within the northern 37 acres the road and culverts have eliminated the eelgrass beds, degraded the salt marsh, caused concerns for thermal impacts, and impaired fish access. The project will reverse or eliminate these impacts and return this area to its former condition. The Point No Point Treaty Council (PNPTC) Report, <i>"Historical Changes to Estuaries, Spits, and Associated Tidal Wetland Habitats in the Hood Canal and Strait of Juan de Fuca Regions of Washington State"</i> (2006) makes the following observations. "Perhaps the most apparent human alteration to wetland habitat is a 1250 foot-long east-west road that traverses the lagoon and tidal marsh and alters much of the north section of tidal lagoon and marsh habitats (Figure 7). This road has substantially impaired the historical habitat connectivity of the complex." The project will eliminate this connectivity impact.</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> The project restores ecosystem processes by: 1) Restoring tidal hydrology, which will engender the return of eelgrass beds, eliminate thermal pollution caused by the incomplete draining of the northern 37 acres, increase shorebird foraging habitat, restore the movement of sediment, large wood and nutrients, and improve stability of the main WA Harbor inlet. 2) Restoring habitat connectivity which will allow fish and crustaceans to freely move throughout the entire estuary.</p> <p><b><u>Scale of influence:</u></b> <b>Spatial-</b> The project has large spatial scale. It profoundly affects 37 acres of estuarine habitat and has secondary benefits for the remainder of the 118-acre estuary. <b>Temporal-</b> Life span of the bridge would likely equal or exceed 70 years. It's unlikely that another structure that obstructs fish migration and the movement of large wood, sediment, and nutrients would ever be permitted in the future. Therefore, the project benefits can reasonably be considered permanent.</p> <p><b><u>Certainty of Project Success:</u></b> Certainty of success is extremely high. Geomorphic and cultural resource assessments are complete, the bridge is designed to the 80% level, partial construction funds are in hand, permitting is funded, and the project is supported by the landowner, easement holder, and stakeholders including JST, WDFW, Clallam County, and NOSC.</p> <p><b><u>Timing Needs &amp; Sequencing Requirements (project readiness):</u></b> The project is construction ready (see certainty of success).</p> <p><b><u>Cost Range and Appropriateness:</u></b> \$1,745,288 Total project cost = \$47,170/acre. This is extremely cost-appropriate. The average cost for other estuarine marsh restoration projects on the Olympic Peninsula and Hood Canal is \$170,000/acre.</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b> This project continues restoration of JCL summer chum pocket estuary habitat that was begun with the 2009 Pitship Pocket Estuary project.</p> <p><b>Photos and Graphics are available for viewing at:</b> <a href="http://waconnect.paladinpanoramic.com/Project/180/15484">http://waconnect.paladinpanoramic.com/Project/180/15484</a></p>	
09044	<p><b>Jimmycomelately Riparian Protection</b></p> <p><b><u>Project Description:</u></b> A ¾-mile length of riparian forest along Jimmycomelately (JCL) Creek will be permanently protected through the purchase of a conservation easement or fee-simple property from a single land owner. This is the only unprotected riparian property within the anadromous zone, and is the remaining major element for the restoration/protection of the lower watershed. Riparian forest and channel conditions on the property are excellent. All the JCL</p>	NOLT & JSKT

	<p>salmonids spawn and/or rear in this reach: HC/ESJDF summer chum and Puget Sound steelhead (both ESA-listed), coho, and cutthroat.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> In the late 1990's, JCL summer chum salmon were nearly extirpated, due in large part to habitat degradation. Stock supplementation activities have recovered the chum population to significant numbers. Extensive habitat restoration work was recently completed in the estuary, adjacent nearshore, and lower ½-mile of stream channel. Immediately upstream of the restored stream channel is this ¾-mile stretch of privately owned, forested channel containing excellent habitat, which will be permanently protected by the project. Upstream of the private forest, JCL Creek is protected within state and federal forest lands.</p> <p><b><u>Benefit to Salmon:</u></b> This project will permanently protect 0.75 miles of important, high quality spawning and rearing habitat for all the JCL salmonids. Restored habitat downstream will also benefit from the protection of this area.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> Summer Chum Salmon Recovery Plan, page 85 and 99: "Protection, restoration and maintenance of the Jimmycomelately and Salmon/Snow watersheds are of paramount importance." The lower 1-2 miles of these watersheds must be restored and protected to effect and ensure recovery of the Strait population aggregate. "Protection of the freshwater reaches is the highest priority (for JCL Creek)."</p> <p><b><u>Illustrate how Project supports Restoration or Protection of Ecosystem Functions:</u></b> Ecosystem functions are protected by permanently protecting a mature conifer/hardwood riparian forest along 0.75 miles of stream channel. The protected corridor will extend at least 300-feet on either side (600-feet total) of the stream. No timber harvest, road building, or other development activities will be allowed to occur within this protected riparian forest. The project will link the currently protected stream reaches above and below the project site.</p> <p><b><u>Certainty of Project Success:</u></b> There is a single landowner, who appears willing, so certainty of success appears high.</p> <p><b><u>Address Timing Needs &amp; Sequencing Requirements:</u></b> Because the landowner appears willing, this project should proceed immediately. Otherwise there is a possibility that the property could be logged, sold, or developed.</p> <p><b><u>Cost Appropriateness:</u></b> Sales price will be tied to fair market value as determined by an appraisal. Land prices are currently favorable.</p>	
09076	<p><b>Elwha River Salmon Enumeration Weir</b></p> <p><b><u>Likely Sponsors:</u></b> National Park Service, US Geologic Survey, NOAA Fisheries, US Fish and Wildlife Service, Lower Elwha Klallam Tribe</p> <p><b><u>Funding Request:</u></b> \$610,000</p> <p><b><u>Partnerships:</u></b> This project will consist of a partnership between 4 federal agencies and the Lower Elwha Klallam Tribe.</p>	NPS, USGS, USFWS, NOAA, WDFW & LEKT

	<p><b><u>Brief Description of Project:</u></b> Construct, install and maintain a floating weir in the Elwha River to allow the accurate enumeration of returning adult salmon to the watershed.</p> <p>The current depressed state of the native Elwha River populations are at risk of extinction with the impending removal of the hydroelectric projects on the Elwha River and release of sediment into the system (expected duration of impact 5-7 years). However, following dam removal the potential for stock recovery is high. A fish enumeration weir on the river will allow managers to accurately assess recovery rates, will provide an efficient means for broodstock collection and will allow for tagging and collection of other important biological information needed to assess the success of ecosystem recovery on the Elwha River.</p> <p><b><u>Limiting Factors Addressed:</u></b> There is currently no enumeration of adult salmon returning to the Elwha River. The weir will permit enumeration to occur and will help managers assess the effectiveness of restoration and recovery actions being conducted in conjunction with dam removal on the Elwha River.</p> <p><b><u>Stock Status and Trends:</u></b> Stocks of Chinook, steelhead, and bull trout are currently endangered. Chum and pink salmon are at critically low levels.</p> <p><b><u>Listed Stocks:</u></b> Puget Sound Chinook, Puget Sound steelhead, bull trout.</p> <p><b><u>Other Stocks:</u></b> Non-listed stocked include coho and sea-run cutthroat, pink salmon and chum salmon.</p> <p><b><u>Benefit to Salmon: Implementation of Key Action Area Work Plans</u></b> A weir allows managers to accurately assess recovery rates and provides an efficient means for brood stock collection, tagging and collection of other important biological information pertinent to ecosystem recovery on the Elwha River. This information will provide managers with tools necessary to accurately evaluate and the effect of the Elwha River Fish Restoration Plan (NOAA Technical Memorandum NMFS-NWFSC-90) and manage the restoration actions adaptively.</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objective Does This Project Meet and How?</u></b> Implementation of Key Action Area Work Plans. This project will help to fulfill the monitoring needs identified in the Elwha River Fish Restoration Plan (NOAA Technical Memorandum NMFS-NWFSC-90).</p> <p><b><u>Project Support of Restoration or Protection of Ecosystem Functions:</u></b></p> <ol style="list-style-type: none"> <li><b>1. A key tool for decision making:</b> One of the key concepts identified in the Elwha River Fish Restoration Plan is the assessment of strategies employed to restore fish populations. The fish enumeration weir will provide accurate information on the number of salmon returning to the Elwha River. This information will assist managers in answering the most anticipated question of “How many fish are returning to the Elwha River?” Without the weir, this question may never be accurately answered.</li> <li><b>2. Implementing the recommendations of the Hatchery Scientific Review Group (HSRG):</b> The fish enumeration weir will also assist managers in meeting escapement limits of Hatchery Origin Returns (HORs) in the watershed and therefore limiting the potential for negative genetic and ecological interactions between HORs and Natural Origin Returns (NORs). The HSRG has identified a limit of 20% HORs in the watershed as being critical to meeting interaction guidelines between hatchery and natural-origin fish. The weir will allow managers to assess observed ratios and permit HSRG recommendations to be attained.</li> </ol>	
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	<p><b><u>Certainty of Project Success:</u></b> The partners in this project have been actively consulting with other regional managers involved with the design, construction and operation of floating weirs used to enumerate salmon.</p> <p><b><u>Proposed Starting and Ending Dates:</u></b> 2012 to 2014</p> <p><b><u>Cost Appropriateness:</u></b> Cost estimates are based upon expenses incurred in similar weir construction and operation programs.</p>	
<b>Inactive Project Narratives</b>		
10079.1	<p><b>Lower Morse Creek Feasibility Study</b></p> <p><b><u>Project Description:</u></b> A feasibility study is needed to explore the restoration options for the lower 1.2 miles of Morse Creek where it passes through 4 Season's Ranch, a private community. This effort builds on current and earlier work taking place on .5 miles of creek just upstream. Linking the lower reach to the upstream reach is integral to recovery of habitat in this watershed. The feasibility study will include necessary survey, hydrologic, archaeological, geotechnical and instream and riparian investigations to inform development of a suite of possible enhancement actions. A critical component to the project will be landowner meetings with the 4 Season's Ranch Community to determine the community member's needs, concerns and support for possible restoration actions. This information will be brought together with technical information to develop restoration alternatives.</p> <p><b><u>Why the Project is Needed (limiting factors addressed):</u></b> Fish habitat throughout this reach and extending to the estuary is extremely poor. The channel is straightened, confined and cut off from its floodplain. There are very few pools (3 according to the WRIA 18 LFA) and no habitat features such as woody debris or side channels. Gravel size tends to be too large for spawning due to high velocities flushing material out of the system. Riparian cover is also somewhat limited in parts of this reach. Fish navigating the reach encounter high velocities and over-simplified habitat. This project is the next major action for Morse Creek following the completion of the re-meander upstream in 20010. The entire Morse Creek estuary exists on these properties. It is vastly impacted and simplified.</p> <p><b><u>Benefit to Salmon:</u></b> <b><u>ESA Listed Stocks:</u></b> Morse Creek is home to multiple stocks of imperiled salmonids. The project targets ESA listed steelhead and bull trout, pink salmon, chum and coho salmon. All stocks use the creek for spawning and rearing. Morse is within the ESU for ESA listed chinook however, Puget Sound chinook are extirpated from Morse Creek. Out planting of Elwha chinook into the system has taken place since 2005, and raceways for juvenile Elwha chinook for stock protection during Elwha dam removals are located on Morse Cr. The project concepts developed in this study will aim to improve spawning, rearing, holding and/or riparian habitats.</p> <p><b><u>Non Listed Stocks:</u></b> Coho, pink, chum, trout</p> <p><b><u>Which Salmon Recovery Plan/Watershed Analysis or Plan Objectives does this Project Meet &amp; How?</u></b> The WRIA 18 LFA identifies these restoration actions as important to Morse Creek.</p>	NOSC

	<ul style="list-style-type: none"> <li>• “Restore floodplain function downstream of RM 1.7, including the removal of portions of dikes, elimination of floodplain constrictions, and restoration of natural banks”</li> <li>• ‘Restore large woody debris (LWD) presence throughout the channel downstream of the natural falls at RM 4.9; develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity until full riparian function is restored.</li> <li>• “Restore riparian function by encouraging conifer regeneration in deciduous stands that historically had a conifer component”</li> <li>• Todd et. al list the estuary as severely impaired</li> </ul> <p><b><u>How Project supports Restoration or Protection of Ecosystem Functions:</u></b></p> <p>The project will aim to enhance severely impacted, formerly productive habitat. This reach contains 25% of the anadromous zone of Morse Cr and the Morse Cr estuary. Currently this reach is severely compromised and enhancement will result in a improvement in the functionality of the anadromous zone of Morse Creek.</p> <p><b><u>Spatial/Temporal Scale of influence:</u></b></p> <p>The project could affect up to a mile of lower Morse Creek and the Morse Creek estuary and will compliment another .5 miles of habitat restored in 2010. Temporal scale is somewhat unknown until the feasibility study is complete and project approaches are identified.</p> <p><b><u>Address Timing Needs &amp; Sequencing Requirements:</u></b></p> <p>Tremendous efforts on the part of many partners have gone into a substantial floodplain reconnection project upstream of the 4 Season’s Ranch. Throughout 5 years of planning for that project, the partners have always said <i>“It is hoped that conducting this restoration project on state land will serve as a model for good project implementation, demonstrate positive outcomes and will lead to future opportunities on private lands in the two residential developments on Morse Creek.”</i>. An invitation to visit the 4 Season’s Ranch community came in 2009. Some members of the community feel there are a large number of residents who have been following the floodplain restoration efforts, attending public meetings and communicating with project partners who are ready to talk about possible restoration within their community. This opportunity must not be missed and momentum should be maintained. If restoration can be achieved in this reach, there will be only a small piece of un-restored creek between this reach and the floodplain reconnection project which took place in 2010. The reach between the two projects contains the Highway 101 bridge and a private road abutting the creek. Although it would be desirable to address the road and replace the bridge, these are elements of restoration that are not ripe for action, whereas the 4 Season’s Ranch project is. A feasibility study is the critical first step for determining what, if any actions will be possible in this complex community.</p> <p><b><u>Range of Estimated Cost:</u></b></p> <p>Actual project costs are unknown at this time. However, as stated above, this feasibility study is critical to any efforts at restoration actions in this community.</p> <p><b><u>Watershed priority:</u></b></p> <p>Morse Creek Watershed priority is set by the Lead Entity.</p> <p><b><u>Other Key information:</u></b></p> <p>During 2010/2011, NOSC engaged in outreach to the community to assess their support for NOSC applying for funds for a feasibility study. The board of Four Season’s Ranch voted not to allow NOSC to pursue the feasibility study.</p>	
12099	<p><b>Johnson Creek Riparian Protection and Restoration</b></p> <p><b><u>Description:</u></b></p> <p>Johnson Creek is east of Sequim, and contains valuable habitat for salmonids and elk. This capital project would acquire land for conservation through easements or fee simple acquisition, and conduct restoration projects on the intact riparian corridor above SR 101</p>	NOLT/JSKT



	<p>along Johnson Creek. Restoration work could include LWD and management of invasive species.</p> <p><b><u>Why the Project is needed (limiting factors to be addressed):</u></b>          These limiting factors would be eliminated if lands were permanently protected and restored:</p> <ul style="list-style-type: none"> <li>• Establish riparian corridor protection</li> <li>• Address mass wasting potential</li> <li>• Implement instream fish habitat enhancement project.</li> </ul> <p><b><u>Benefit to Salmon:</u></b>          Multiple stocks would benefit from protection of the Johnson Creek riparian corridor including ESA winter steelhead, coho, sea-run cutthroat trout, and resident trout</p> <p><b><u>Which Salmon Recovery Plan Objective does this Project Meet and How?</u></b></p> <ul style="list-style-type: none"> <li>• WRIA 17 LFA pg 212-215. Protecting and restoring a riparian buffer.</li> <li>• Puget Sound Recovery Plan – Habitat: Protect Existing Physical Habitat &amp; Habitat Forming Processes</li> <li>• Puget Sound Partnership – Protect Habitat</li> <li>• NOPE Recovery Strategy 2008 – implement salmon recovery plans to protect fish habitat &amp; maintain ecosystem function.</li> </ul> <p><b><u>How Project supports Restoration or Protection of Ecosystem Functions?</u></b>          This project would establish riparian corridor protection of an intact corridor, and enhance fish habitat through restoration projects.</p> <p><b><u>Project's Spatial-Temporal Scale of Influence:</u></b>          Johnson Creek corridor above SR 101, east of Sequim</p> <p><b><u>Timing Needs and Sequencing Requirements (project readiness):</u></b>          There are landowners along Johnson Creek who are interested in working with the Land Trust when funding is available.</p> <p><b><u>Range of Estimated Costs:</u></b>          One of the properties that is considered for conservation is 155 acres, which is probably \$15,000 per acre fair market value, and conservation easements, on average, are about half of fair market value, \$7,500/acre. The incidental costs, including survey, appraisal and review, legal, title, forest management plan, can add up to \$30,000. Large wood projects could be \$50-100,000. This brings the total project cost to \$1.18 million.</p> <p><b><u>Watershed priority &amp; watershed area (which WRIA):</u></b>          WRIA 17</p> <p><b><u>Other Key Information, especially any relationship to previous or current projects:</u></b>          It is likely that this project would score well with the Rocky Mountain Elk Foundation because it's an active elk migration corridor. NOLT will pursue funding them RMEF and other grant sources.</p> <p><b>Photos and Graphics are available for viewing at:</b>  <a href="http://waconnect.paladinpanoramic.com/Project/180/17388">http://waconnect.paladinpanoramic.com/Project/180/17388</a></p>	
09049	<p><b>Create Stable-funded Incentive program</b></p> <p><b><u>Project Description:</u></b>          Habitat protection is a priority action. Non-regulatory riparian protection incentives are successful and with sufficient funding could be more widely used. Currently a County</p>	CC & CCD



	sponsored riparian habitat protection program is funded by one-time only grant dollars. Through conservation easements, the program has contributed to protecting in perpetuity about 500 acres of marine and freshwater riparian habitat. The project protects high quality fish habitat and helps to support ecosystem function. Project partners include Clallam County, land trusts; willing private landowners; tribes; cities; state agencies, and local businesses.	
09052	<b>Clallam County Map Roadside Ditches</b>  <b>Project Description:</b> Streamkeepers of Clallam County monitors water quality in area streams on a quarterly basis. However, impervious surfaces in the LE area have increased in recent years, with a potential increase in the contribution of stormwater to roadside ditches. The quantity and quality of stormwater contributions from roadside ditches to stream channels need to be identified and a prioritized list of improvement projects must be developed. This project advances habitat protection and restoration and could become a baseline for stormwater quality monitoring.	CC
09070	<b>Assess implementation of CAO, SMP &amp; HPA ordinance.</b>  <b>Project Description:</b> A ground-truth survey is essential to understand the status and effectiveness of regulations designed to protect habitat. Coupled with the tracking system described in (42), a ground-truthed assessment will be used as a tool for monitoring and adaptive management. Partners include Clallam County, cities, state agencies, tribes. The project can also be used as a tool to advance habitat protection and restoration.	NOPL, CC, COPA & COS
09071	<b>NOPL Area Wide Increase compliance with ordinances &amp; codes</b>  <b>Project Description:</b> The City of Port Angeles has recently hired a Code Compliance Officer. At this time the position is only funded as a 40% position. Recent efforts to strengthen the Environmentally Sensitive Areas Protection Ordinance have been successful and the city plans further code amendments to further strengthen the ESA Protection Ord. The enforcement sections of our codes are a little weak and will require political support and staff effort to strengthen. A community forestry program is being developed with the intent to increase the tree canopy cover in the city to increase stormwater interception, infiltration, and evapotranspiration. Clallam County DCD has revamped its code compliance program to include 2 Code Compliance officers and a group of active volunteers. Still, most compliance actions are limited to responding to complaints due to limited staff resources. Additional resources will help to increase compliance through active involvement in project inspection and monitoring at all stages of development. This program advances habitat protection.	NOPL, CC, COPA & COS
09051	<b>Clallam County Salmonid Outreach Planner</b>  <b>Project Description:</b> Building on existing local efforts, develop a comprehensive collaborative program for outreach, education, public involvement, and stewardship promotion At this time outreach efforts are funded by project monies only and are focused on an individual project. A coordinated and consistent effort to communicate with citizens about salmonid ecology and recovery will go a long way to increase public awareness of salmonid recovery efforts and the role that each individual can play. Partners include Clallam County, cities, tribes, state agencies, Clallam Conservation District, North Olympic Salmon Coalition, Clallam Marine Resources Committee, WSU Beachwatchers, and school districts.	CC & CCD

09058	<b>Elwha Morse Management Team</b>  <u><b>Project Description:</b></u> Support and develop capacity.	CC
09061	<b>WRIA-19 Watershed Council</b>  <u><b>Project Description:</b></u> Support and develop capacity.	CC
09062	<b>Dungeness River Management Team</b>  <u><b>Project Description:</b></u> Support and develop capacity.	CC
09074	<b>NOPLE Area Adaptive Management Plan &amp; Monitoring</b>  <u><b>Project Description:</b></u> This will allow the lead entity to participate in the group process needed to create an adaptive management plan which incorporates areas needed for recovery which have not been primary focuses previously and better integrates efforts. This meets Non-Capital program objectives I, ii, iii, iv, vi, vii, and ix.	NOPLE, CC, COPA, & COS
<b>Projects Removed from the Work Plan</b>		
09067	<b>Increase Recovery Capacity &amp; Support NOPE-wide</b>  <u><b>Project Description:</b></u> This program will build & support increased capacity for habitat project sponsors, additional coordination with PSP, develop funding strategies, and further ESA recovery efforts. This will allow for funding diversification, increased project design and implementation, all of which will quicken recovery efforts. This meets all objectives (I through ix) for non-capital projects.	NOPLE
09072	<b>NOPLE area wide update stormwater management program</b>  <u><b>Project Description:</b></u> The City of Port Angeles is currently drafting programs to better manage stormwater, including LID techniques, elimination of combined sewer overflows (CSO), and Phase II NPDES requirements. The long-term goal of the County is to improve water quality through stormwater management. Salmonid recovery plans and watershed plans recommend a more comprehensive, collaborative stormwater management program that builds on existing local efforts. To most effectively advance salmonid recovery, the program needs to be extended to other areas of the county. Partners are county, cities, tribes, Clallam Conservation District, North Olympic Salmon Coalition.	NOPLE, CC, COPA & COS
09068	<b>NOPLE-Area Wide Outreach Program</b>  <u><b>Project Description:</b></u> These varied efforts will inform and educate about the need for salmon recovery, local projects underway and a call to action about the local changes required to assist salmon and lessen degradation of salmon habitat. This specifically addresses Non-Capitol project	NOPLE & WDFW

	objectives iii, iv, v, vi, vii and viii.	
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