

ERTG Template for LCRE Habitat Restoration Project Summary

Project Description

The information requested below provides input to the scoring of projects. Refer to the ERTG Scoring Criteria (Attachment 1) and definitions below when developing the project information. Reference to the Columbia River Estuary Conceptual Model (see link below) can also be made to help standardize terminology and to provide descriptions for stressors, habitats, processes and functions.

Header:

Date

Prepared by Bill Bennett, 503-915-0220, and bbennett@estuarypartnership.org

Sponsoring agency Lower Columbia River Watershed Council (Margaret Magruder); (503) 728-9015; Magruder@Clatskanie.com

Funding agency Estuary Partnership (Catherine Corbett); 503.226.1565; ccorbett@estuarypartnership.org

Site Louisiana Swamp; Westport Slough; River Mile 50; -123.278, 46.1158

Project status or stage Implementation

Proposed

Project:

Problem statement *Summarize the site-specific problem(s) the proposed restoration(s) is intended to address. What are the causes of the problems?*

The Louisiana Swamp is a 45-acre property that was historically a freshwater marsh and scrub-shrub wetland located on Westport Slough that provided important refugia and foraging habitat to salmonids. Today, the site is primarily pasture that is dominated by exotic invasive vegetation with 35 acres of the site being hydrologically disconnected from Westport Slough by a levee. In addition, Tandy Creek, which historically ran through the site, has been rerouted and channelized. These modifications have had the effect of eradicating all available foraging, rearing, and refugia opportunities for salmonids within the site and simplifying aquatic habitat within Westport Slough.

Vision/goal *Describe the expected outcome, i.e., what the site would look like if restoration is successful.*

The proposed project will restore 35-acres of tidally influenced scrub-shrub swamp, 3,700 ft of off-channel habitat, and 1,100 ft of stream supporting a diversity of fish and wildlife species along Westport Slough.

Objectives *State the project's objectives in terms of functions for salmon. For example, how will access, capacity etc. be increased or enhanced?*

Specific Project Objectives Include:

1. Remove 1,740 feet of levee reconnecting 35-acres of historical freshwater tidal marsh and scrub-shrub wetland habitat
2. Restore and/or excavate 3,700 ln. ft of off-channel habitat to create a complex network of sinuous tidal channels
3. Restore 1,100 ft of Tandy Creek by restoring its floodplain connectivity, creating secondary channels that activate under high flows, installing large wood, and restoring the riparian buffer
4. 35-acres of native plant restoration including exotic invasive control

Project actions, phases, sizes by year

List the proposed restoration¹ actions and phases by year. For each restoration action, state the number of barriers to be removed, the width of the breach or reconnection, and/or the number of acres/miles to be restored by year. In a multi-year effort, be sure to identify the action(s)/phase(s) that are being proposed at this time.

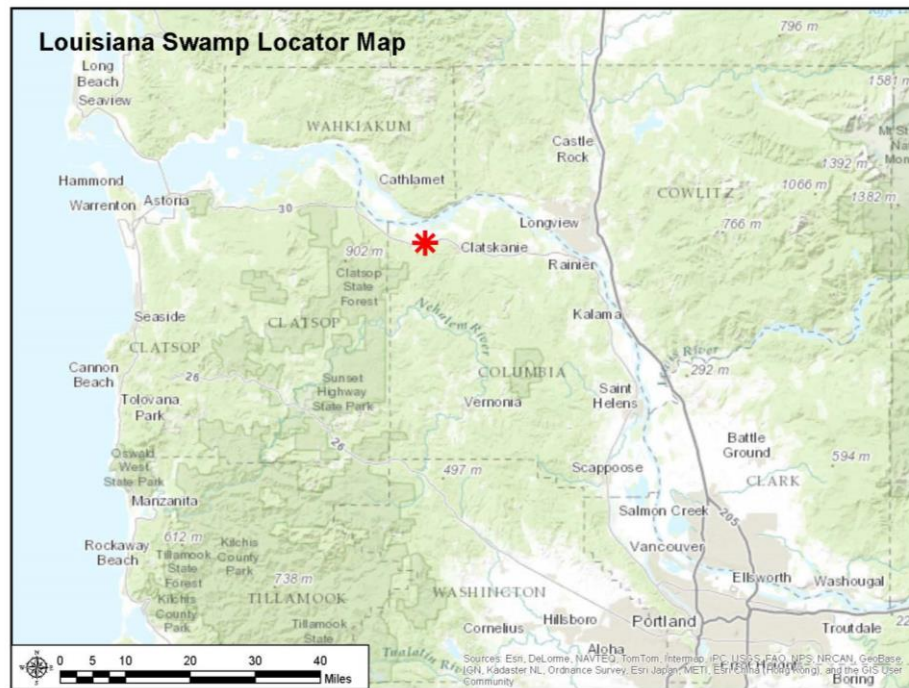
Project Timeline and Action Size: 2013 – All restoration actions are planned to be completed in one phase including

1. Remove 1,740 ft of levee
2. Restore/Excavate 3,700 ft of off-channel habitat and place large wood
3. Restore 1,100 ft of Tandy Creek and place large wood
4. Plant 35-acres with native plants and conduct invasive plant control
5. Promote the reestablishment of beaver to the site by planting forage and providing dam/lodge building structure

2014: Complete native plant installation (as needed), control exotic invasive vegetation, maintain plantings for establishment, and conduct project monitoring

2014 to 2019: Maintain plantings for establishment

Linkage to Estuary Module:



Estuary module action.

subaction(s) and project goal; Maps of the site, landscape, and site location in the LCRE

Identify the appropriate subaction (Attachment 2) and state the size (number of acres or miles) the project subaction will provide. Document how the value was obtained. Show these subactions on a map of the site. Also include a map of the project site in its landscape and a map of the project's location in the lower Columbia River and estuary.

Actions were digitized in AutoCAD and then imported into ArcMap where each sub-actions was measured using the calculate geometry in the attribute table. All actions were calculated using the proposed topography based upon the 2-yr flood (13 ft NAVD88).

¹ As used here, the term “restoration” refers to conservation, protection, enhancement, restoration, or creation.

CRE-1.4 Riparian restoration	0.7 miles
CRE-9.4 Channel restoration	1.88 acres
CRE-10.1 Levee breach.....	31.7 acres
CRE-15.3 Invasive Plant Control	31.7 acres

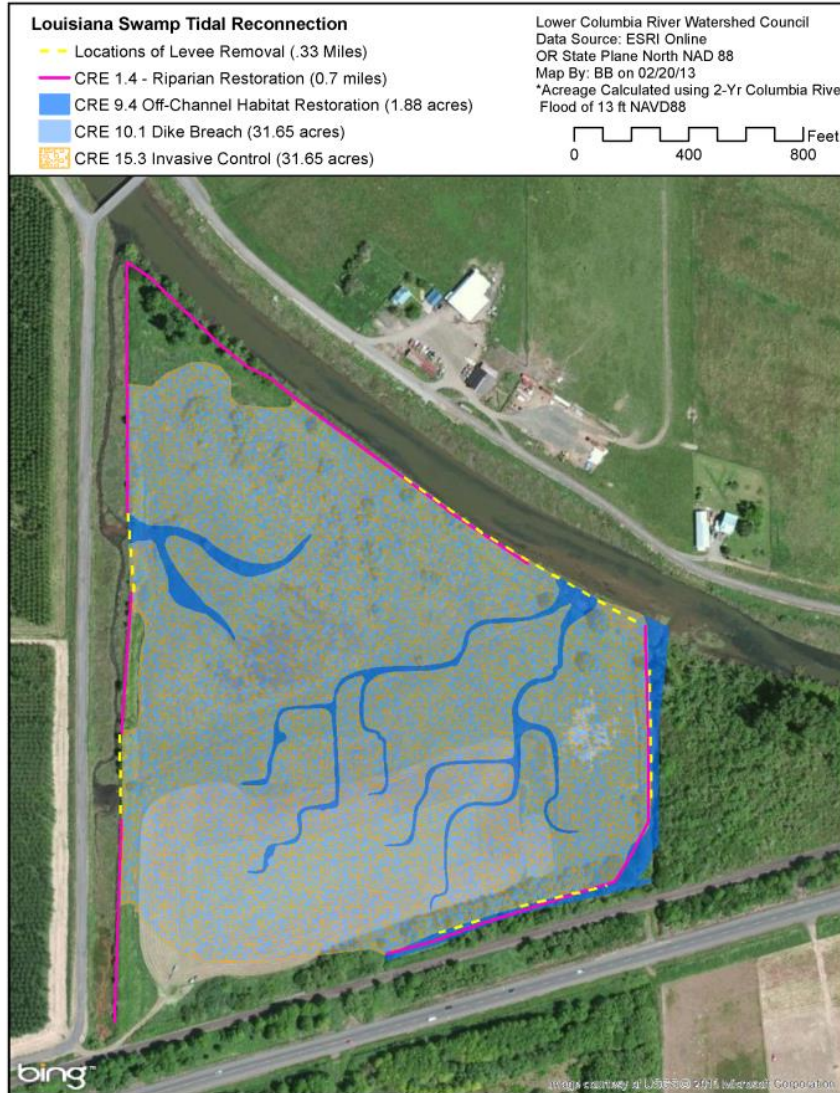


Figure 1 Proposed Restoration Actions

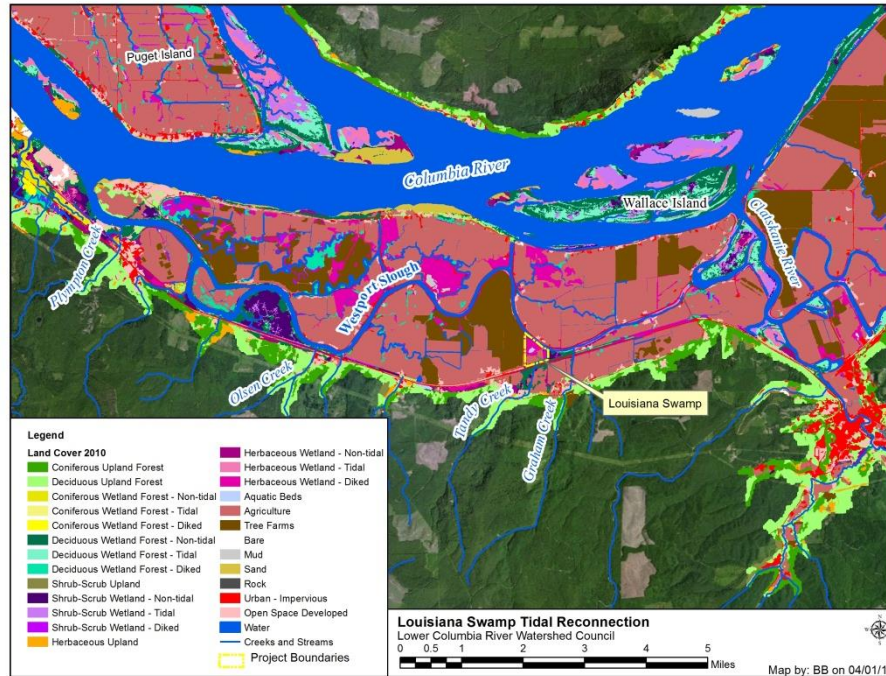


Figure 2 Overview map of project area within the surrounding landscape

Pre-Assessment:

Whenever possible, provide summary data (values).

Photo Point

Provide a digital photograph(s) of the site; note the point and orientation of the photograph, time of year, and tide/water level stage.



Figure 3 Mouth of Tandy Creek looking south across Westport Slough at low tide (January 2011)



Figure 4 Looking at a tide gate on western side of dike from across the slough at low tide (Sept 2012)



Figure 5 Looking west from inside the diked area (July 2011)

Aerial image *Provide an aerial image from a satellite or plane. Annotate the image to convey information about the project. Prepare map(s) with landform types delineated.*



Figure 6 2012 Aerial photo of the project site.

Condition of physical metrics

Describe the major stressors and physical controlling factors². Basically summarize the existing condition of the site. What is the average tidal range, salinity? What is the ordinary-high-water tide elevation? Extreme-high-water elevation? Two-year flood elevation?

Currently, 35 acres of the project site are hydrologically impaired by the construction of a levee around the site with two failing tide gates. This has the effect of disconnecting the site from Westport Slough and preventing access by fish. Water level recorders have been operated at the site within Westport Slough, Tandy Creek, and behind the dike for a 2-year period. Data indicates that Westport Slough tracks Columbia River Water Levels when compared to the Wauna Gage (Station 9439099) operated by NOAA on the Columbia River. The station is 2-miles downstream of the western confluence of Westport Slough and the Columbia. The following tidal elevations are based on measurements taken at the Wauna Gage from 2002 to 2012 and the 2-year flood event for the Columbia.

² Controlling factors are the basic physical and chemical conditions that construct and influence the structure of the ecosystem.

Average tidal range.....	5.77 ft
Salinity.....	0 ppt
Ordinary high water tide elevation.....	8.98 ft (NAVD 88)
Extreme high water elevation.....	11.59 ft (NAVD 88)
Two-year flood elevation.....	13 ft (NAVD 88)

Condition of habitat metrics

Describe the key results of a vegetation survey.

The General Land Office Survey shows the project area was a mix of intertidal marsh, scrub-shrub wetlands, and some riparian forest prior to Euroamerican settlement. Today the 35 acres behind the levee is predominately reed canarygrass (*Phalaris arundinacea*) with some patches of Pacific willow (*Salix lucinda*). In addition, areas along the levee are predominated by Himalayan blackberry (*Rubus discolor*) with some individuals of black cottonwood (*Populus balsamifera ssp. trichocarpa*) and red alder (*Alnus rubra*).

Condition of functional metrics

Assess using existing data whether juvenile salmonids are present in the area and within the site. Describe the species composition and population sizes in the immediate or nearby watershed; use any available historical and current fish species and abundance data. Provide context for the potential of the site for fish availability.

ODFW surveys have identified multiple salmonid species utilizing Westport Slough for migration, rearing, and spawning. Salmonids species listed include fall Chinook, coho, and winter steelhead (Table 1) (Streamnet 2011). In addition, Westport Slough is listed as Critical Habitat for Lower Columbia River Chinook and proposed as critical habitat for Lower Columbia River coho; both of which are federally threatened.

Table 1 Streamnet 2011 data regarding salmonid distribution in Westport Slough

Species	Strata	Habitat Utilization	River Mile Reach of Westport Slough
Chinook	Fall	Spawning and Rearing	0 to 1.08 RM
	Fall	Migration and Rearing	1.08 to 9.48 RM
Coho	NA	Migration and Rearing	0 to 10.21 RM
Steelhead	Winter	Migration and Rearing	0 to 10.21 RM

Many of Westport Slough’s drainages have spawning populations of coho including Tandy and Graham Creeks, which are adjacent to the property. In addition, the Clatskanie River, which connects to Westport Slough at its confluence with the Columbia River, supports populations of spawning coho, Chinook, and steelhead. In the last four years, ODFW estimates 1,506 (Year 2011), 1,609 (Year 2010), 1,070 (Year 2009), and 995 (Year 2008) coho adults have returned in each year to spawn (ODFW, “Status of Oregon Stocks of Coho Salmon, Nov 2011). Also, preliminary numbers from a smolt trap operated by ODFW at River Mile 4 of the Clatskanie River estimate the watershed produced 36,850 (+/- 9,068) coho smolts, 71,075 (+/- 24,280) coho fry, and 10,648 (+/- 7,910) chinook fry in the 2011-2012 year. The Clatskanie River and several tributaries of Westport Slough are also planned future Chum release sites as the species is reintroduced to the area.

Performance Anticipated:

Physical change

Describe how the action(s) will affect physical controlling factors.

Breaching the levee will reconnect 32-acres of historically tidal marsh and scrub-shrub habitat to Westport Slough and reintroduce natural hydrologic processes to the site. Tidal

channels within the site will also be reconnected to Westport Slough, which will experience diurnal tides daily. In addition, Tandy Creek will be restored by reconnecting the stream to its historical floodplain and returning its historical function as an alluvial fan.

Habitat change *Describe the expected condition of habitat after restoration.*

The site will be converted to a scrub-shrub wetland with a network of intertidal backwater channels by reconnecting the site to Westport Slough. This will establish a natural and dynamic tidal hydrology supportive of the native plant community and that suppresses invasives. In addition, the increased tidal exchange will restore and maintain a more sinuous network of dendritic tidal channels. Tandy Creek will also be reconnected to its floodplain and allowed to migrate through the project site again. Large wood will also be placed in the intertidal channels and in Tandy Creek to increase habitat complexity. Preferred beaver forage and dam building structure will also be provided to encourage their reestablishment to the site. Beaver will construct dams within the tidal channels maintaining deeper pools during low water levels and a higher water table.

Process/Function on change *Describe the expected changes in ecosystem processes and functions, e.g., Juvenile salmon feeding, rearing, refuge, water quality improvement, off site food web support.*

The objective of this project is to restore estuarine processes that will support a native scrub-shrub wetland with intertidal channels, which historically occurred at the site. By re-establishing these estuarine processes, there will be an increase in food production and in the outflow of nutrients, invertebrates, and detritus into the Columbia River. This will support a more diverse food web and increase preferred prey resources, such as chironomids, for juvenile salmonids within the estuary. In addition, reconnecting the site to Westport Slough will create refugia from extreme flow events and provide critical rearing habitat for juvenile salmonids promoting their growth and likelihood of surviving at sea. The restoration of these ecosystem processes and functions will also support a diversity of wildlife species and life history strategies including neotropical birds, raptors, waterfowl, beaver, deer, amphibians, and reptiles.

Certainty of Success:

Landowner support *Describe the willingness and support of the landowner.*

The property is owned by Lower Columbia Tree Farm, LLC and managed by Greenwood Resources, Inc. Both entities are very supportive of the project and would like to see the property restored. The landowner also plans to help run several volunteer workdays for tree plantings.

Constraints or show-stoppers *Describe potential issues that could inhibit or prevent execution and fulfillment of the project goals and objectives.*

No major issues are anticipated in preventing execution of the project. Currently, the landowner is on board with the project and interested in seeing habitat restored at the site.

Restoration technique *Describe the level of acceptance and maturity of the restoration technique; e.g., tried and true or experimental.*

Levee removal is a proven and widely utilized technique for restoring floodplains and wetlands. These projects have continually shown to be successful in the re-establishment of tidal processes and the restoration of habitat. Moreover, the restoration design is based upon an in-depth analysis of data collected at the site and nearby reference sites.

Natural processes and self-maintenance *Explain the extent to which natural processes would be restored and how well the restoration action(s) are anticipated to be maintained through natural processes.*

We will restore the site’s hydrology by removing the levee, which is the primary controlling factor causing habitat degradation. This will restore estuarine forming processes returning the site’s structure and function to a natural state. Moreover, reconnecting the site will establish self-sustaining ecosystem processes that promote and maintain a diverse native wetland community. In addition, we will continue maintenance work to establish native plantings and eradicate exotic invasive weeds over a period of five years. Once fully established, the native plantings will form a diverse and resilient plant community that is self-maintaining. This will also support the recolonization of beavers to the site, who will construct and maintain dams supporting a natural hydrology that also helps maintain a native plant community.

Potential, Anticipated Access Benefit:

Distance of the project to the main stem Columbia River *State distance in river miles from the main stem Columbia River*

The project is ~2.8 miles to the Columbia via the upstream/eastern end and ~7.8 miles via the downstream/western end of Westport Slough.

Connectedness to mainstem *Describe how well the project site is currently connected and will be connected to the main stem after the restoration. Include any historical data on habitat access and quality.*

Removal of the levee will restore full connectivity between the project site and Westport Slough, which is directly connected to the Columbia. Aerial photos from the 1920’s and 30’s show the site as being completely connected to Westport Slough at that time with no dike altering its hydrology. In addition, GLO Maps and historical aerial photos also show Tandy Creek historically running through the center of the project site, which is now channelized and has been routed around the constructed levees.

Species impacted *Describe which species, stocks, or populations are likely to benefit, based on the best available data.*

ODFW surveys have identified multiple salmonid species utilizing Westport Slough for migration, rearing, and spawning including Chinook, coho, and steelhead. Lower Columbia River coho and Chinook in particular are known to spawn in the Clatskanie River and many of the other drainages of Westport Slough. In addition, Westport Slough is listed as Critical Habitat for Lower Columbia River Chinook and proposed for Lower Columbia River coho. ODFW also plans to reintroduce Chum to the region including the Clatskanie River, Graham Creek and other nearby drainages. It is also expected that multiple upriver salmon stocks use Westport Slough during the migration period for refugia and rearing, but no data is available at this time regarding this subject.

Potential, Anticipated Capacity Benefit:

Habitat complexity	<p><i>Describe habitat complexity, channels, large woody debris.</i></p> <p>Reconnecting the site to Westport Slough will provide fish access to a complex scrub-shrub wetland with a network of intertidal channels. Channels will be enhanced to create a complex network of sinuous tidal channels that provide a diversity of habitats. In addition, large wood will be placed within all intertidal channels and in Tandy Creek to increase in-stream complexity, floodplain connectivity, and provide overwintering rearing habitat for salmonids. Riparian plantings will also aid in the recruitment of large wood and create a more complex floodplain.</p>
Water quality	<p><i>Describe water quality.</i></p> <p>Westport Slough and Tandy Creek have no known major water quality impairments. Monitoring of temperature data indicates that Westport Slough is on average ~1° C warmer than the Columbia River most of the year. In addition, monitoring data indicates that Tandy Creek can provide cold-water refugia for salmonids with its temperature on average being ~4° C cooler than Westport Slough. Water quality will also be improved by increasing shade cover and reducing bank erosion by the installation of new riparian plants.</p>
Invasive species	<p><i>Describe impacts from invasive plant and animal species.</i></p> <p>Reed canarygrass is the dominant plant community within the low-lying areas behind the levee with Himalayan blackberry occurring along the levee. These plants have the effect of homogenizing habitat and reducing the diversity of detrital inputs that support the food web. Planned actions to control invasives include reconnecting the site to Westport Slough, clearing and grubbing of the Himalayan blackberry, covering with fill or disking the reed canary grass, and planting native plants to help restore the site to a more native natural plant community. In addition, some incidents of yellow flag iris have been observed, which will be removed. Moreover, the site will be managed for a total of 5-years post implementation to ensure a natural native plant community becomes established.</p>
Adjacent lands	<p><i>Describe the condition of adjacent lands.</i></p> <p>Properties adjacent to the project site are behind a levee and predominantly in agricultural and residential use.</p>
Comments	<hr/> <p><i>Include comments or other pertinent information.</i></p> <hr/>