

WDFW Estuary MOA Preliminary Habitat Project List Notes:

Preliminary Project List: The projects identified in this list are derived from a variety of sources, including the Lower Columbia Fish Recovery Board (LCFRB), Lower Columbia River Estuary Partnership (LCREP), U.S. Army Corps of Engineers USACE), Washington Department of Fish and Wildlife (WDFW), and other entities. This list includes projects in a variety development stages, ranging from conceptual to those ready for construction. This project list will be adjusted over time depending on feasibility, emerging priorities and opportunities, and landowner and community support.

Landowner Support and Coordination: Landowner and community support is recognized as critical to the long term success of Estuary Habitat MOA implementation. No project will be implemented without first securing necessary landowner and community support, and required agreements.

Estimated Project Benefits: Salmon and steelhead survival benefits are determined in accordance with the guidance and procedures outlined in “Estimated Benefits of Federal Agency Habitat Projects in the Lower Columbia River and Estuary” (FCRPS BA, Attachment B.2.2). Project benefits identified in this table are considered preliminary, and will be refined by the expert regional technical group in accordance with Reasonable and Prudent Alternative (RPA) 37 (FCRPS Biological Opinion, 2008).

Project Coordination: As described in Section C.1 of the Estuary Habitat MOA, WDFW will sponsor or coordinate projects proposed under the agreement. WDFW will coordinate with the Lower Columbia Fish Recovery Board (LCFRB), Lower Columbia River Estuary Partnership (LCREP) and other action partners as needed to ensure efficient and effective implementation of the MOA.

Table 1 Preliminary WDFW Estuary MOA Project Benefits and Survival Unit Summary ¹

Washington MOA Project	Certainty of Success	Potential Benefit	Total	Estuary Module Sub-Action	Total Possible Survival Units by Sub-Action		Preliminary Estimated Survival Units By Project		Notes ⁵
					Ocean	Stream	Ocean	Stream	
1 Abernathy Tidal Restoration	4	3	12	CRE-1.4	2	2	0.06	0.06	Intensively Monitored Watershed (IMW) Treatment Plan identifies two projects in the tidal reaches of Abernathy Cr (1A and 2A). The projects would enhance a minimum of 500' of off-channel habitat and 2200' of mainstem through engineered log jam construction, large woody material placement, riparian enhancement, and floodplain reconnection. Conceptual designs have been completed for these projects. Explore opportunities for creation of chum spawning habitat. Project Site Acres = 22
2 Germany Tidal Restoration	4	3	12	CRE-1.4	2	2	0.06	0.06	IMW Treatment Plan identifies two projects in the tidal reaches of Germany Cr (2A, 2B, 2C). The projects would enhance a minimum of 600' of mainstem habitat, stabilize 350' of eroding bank, and enhance a minimum of 7 acres of riparian area. Conceptual designs have been completed for these projects. Explore opportunities for creation of chum spawning habitat, and restoration of riparian and wetland habitats along the Columbia River shoreline. Project Site Acres = 75
3 Lower Kalama Tidal Restoration	5	4	20	CRE-1.4	2	2	0.1	0.1	Lower Columbia Fish Enhancement Group (LCFEG) recently completed a Lower Kalama Off-channel Habitat Assessment that identified five projects in the tidal reaches of the Kalama. Three of these scored in the fundable range when subjected to the LCFRB criteria (KRL 0.1, KRR 0.7, and KRL 1.4). These projects would create or enhance existing off-channel habitat. Conceptual designs and cost estimates have been completed for KRR 0.7. Explore opportunities for creation of chum spawning habitat. Project Site Acres = 32 + 34 + 2 + 12
				CRE-10.1	10	4	0.12	0.05	
4 Acquisition of Two Alternative Parcels at Wood's Landing/Columbia Springs and Restoration of Chum Salmon Spawning Tributary or Channel	4	3	12	CRE-9.1	1	0.5	0.2	0.05	Acquire one of two possible properties in the vicinity of the genetically distinct I-205 spawning population of chum salmon, and restore tributary spawning habitat either by: OPTION A - Acquire the 2.29 acre Chaney property located just downriver of the Wood's Landing Columbia River chum salmon spawning site -- that can be combined with existing conservation easements to result in a combined restoration area of 13.0 acres. This parcel contains the last unprotected habitat for "I-205 population" of chum salmon. Site also has Native American cultural and educational values and a functioning riverine wildlife community; or, OPTION B - Acquire the 5.5 acre Egan Property and construct a 1400' long by 6' wide engineered spawning channel using natural springs and the WDFW Vancouver Hatchery as a water source. A conceptual design and preliminary feasibility study have been completed on this alternative. This site has high educational potential since it is adjacent to the Columbia Springs educational facility. Project Site Acres = 13.0 (Chaney+Woods Landing) or 5.5 (Egan parcel).
				CRE-9.3	8	3	0.24	0.03	

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5	Ft Columbia Tidal Reconnection ²	5	5	25	CRE-10.1	2	0.8	0.09	0.03	Replace culvert to allow reconnection of salt water tidal wetland and provide fish passage into wetland. Project Site Acres = 25
6	Fisher - Hump Island Restoration	4	5	20	CRE-1.4	2	2	0.12	0.12	Modify dredge spoils to improve flushing flows within the Hump - Fisher Island embayment; plant additional riparian vegetation (Hump Island); revegetate meadow on Fish Island (5-10 acres); remove piling/add LWD. Project Site Acres = 337
					CRE-6	0.3	0.15	0.1	0.03	
7	Paradise Point Wetland Enhancement	5	4	20	CRE-1.4	2	2	0.08	0.08	Restore and enhance approximately 1000 lineal feet of side channel habitats within a tidally influenced forested/emergent/scrub-shrub wetland complex; construct mainstem LWD structures to increase juvenile rearing and adult holding habitat during low tributary flows, low Columbia River flows, and periods of low tide; and investigate opportunities for creation of chum spawning habitat. Restoration would compliment conservation banking efforts on Morgan Property, at the North Fork Lewis River mouth. Project Site Acres = 60
					CRE-10.1	10	4	0.15	0.07	
					CRE-15.3	1.5	0.7	0.05	0.02	
8	Austin Point LWD Complexing	4	4	16	CRE 1.4	2	2	0.07	0.07	Restore riparian habitat and construct ELJs on the right bank of the North Fork Lewis River at the confluence with the Columbia River, to provide instream cover and complexity, and cold-water refuge for outmigrating salmonids. Restoration would compliment conservation banking efforts on Morgan Property, at the North Fork Lewis River mouth, across from project site; investigate options for off-channel habitat creation other WDFW lands in project vicinity. Project Site Acres = 71
9	Elochoman Tidal Restoration	3	5	15	CRE-1.4	2	2	0.06	0.06	CLT was funded to purchase 200 acres of high quality intertidal forested riparian and wetland habitat along the Elochoman River and Elochoman Slough. The property is adjacent to the JBH Refuge and 210 acres already owned by CLT on Nelson Creek. The property includes over 7000' of off channel habitat. Potential restoration activities on the property include culvert removal, tidegate removal, road abandonment, invasive treatment, and riparian enhancement. Project Site Acres = 200
					CRE-10.1	10	4	0.15	0.05	
					CRE-10.2	3	1.2	0.05	0.01	
					CRE-15.3	1.5	0.7	0.05	0.02	
10	Willow Grove Tidal Restoration	3	5	15	CRE-1.4	2	2	0.06	0.06	CLT has recently purchased over 200 acres of intertidal wetland and off-channel habitat along the Columbia River and Coal Creek. Potential restoration activities include restoration of native wetland communities, invasive control, and enhancing the hydrologic connection of the site to the mainstem, possibly via Fisher slough. Project Site Acres = 312
					CRE-10.1	10	4	0.15	0.05	
					CRE-15.3	1.5	0.7	0.05	0.01	

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						Ocean	Stream	Ocean	Stream	
11	Shillapoo Wildlife Area/Post Office Lake Setback Levee Feasibility Study ³	4	2	8	CRE-10.1	10	4	0.0	0.0	Investigate the potential for constructing setback levees at Shillapoo Wildlife Area and Post Office Lake to reconnect historic Columbia River floodplain (Note: Further discussions with WDFW, private property owners, the Clark County Conservation District, COE and USFWS needed to determine feasibility and scope and scale of project). Project Site Acres = 3154
12	Duncan Creek Fish Passage Restoration	3	3	9	CRE-10.2	3	1.2	0.03	0.1	Modify existing dam and outlet structure and construct a backwater elevation control berm/roughened channel to improve steelhead, coho and chum passage during Columbia River low flow periods. Project Site Acres = 2
13	Lower Washougal Delta Habitat Complexing	4	4	16	CRE-1.4	2	2	0.06	0.06	Construct ELJs on the Lower Washougal river delta at the Columbia River confluence to provide instream cover and complexity, and cold-water refuge for outmigrating juvenile salmonids and migrating adults. Project Site Acres = 10
14	Lower Kalama Delta Habitat Complexing	3	4	12	CRE-1.4	2	2	0.06	0.06	Construct ELJs on the Lower Kalama river delta at the Columbia River confluence to provide instream cover, complexity and holding; cold-water refuge for outmigrating juvenile salmonids and migrating adults; and to reduce predation by pinnepedes during low flow conditions. Investigate options for channel realignment. Project Site Acres = 5
15	Chinook River Estuary Feasibility/Restoration ⁴	2	5	10	CRE-10.1	10	4	0.15	0.05	Enhance tidal inundation of the historic Chinook River estuary through creation of a community adaptive management strategy. WDFW along with several partners have replaced the failing tide-gates with two new gates that have the ability to be mechanically opened and closed. The new gates provide increased flood protection to Chinook Valley landowners and provide an important management tool in improving the health and productivity of the Chinook River estuary. Through modeling and monitoring efforts WDFW will work with several adaptive management strategies to increase the tidal fluctuation to approximately 500 acres in the Chinook River estuary. Project Site Acres = 500
					CRE-10.2	3	1.2	0.03	0.01	
					CRE-10.3	2	0.8	0.03	0.01	
16	Lower Cowlitz River Tidal Restoration	3	3	9	CRE-1.4	2	2	0.05	0.05	The Lower Cowlitz River and Floodplain Habitat Restoration Project Siting and Design report identifies 6 potential projects in the tidal reaches of the Lower Cowlitz and Coweeman Rivers (1.0L, 0.5R, C3.5R, C4.0B, 3.0L, 4.5R). These projects include removal of dredge material, riparian enhancement, side channel creation and/or enhancement, riprap removal, and LWD placement. (Note: when scored by LCFRB, these projects did not all fall within the fundable range, but out-of-basin/estuary benefits were not included at that time). Opportunities exist for beneficial use of dredged materials. Project Site Acres = 226
					CRE-6.2	0.3	0.15	0.08	0.01	

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					Ocean	Stream	Ocean	Stream	
17 Coweeman River Tidal Restoration	4	3	12	CRE-1.4	2	2	0.06	0.06	The Lower Cowlitz River and Floodplain Habitat Restoration Project Siting and Design report identifies 6 potential projects in the tidal reaches of the Lower Cowlitz and Coweeman Rivers (1.0L, 0.5R, C3.5R, C4.0B, 3.0L, 4.5R). These projects include removal of dredge material, riparian enhancement, side channel creation and/or enhancement, riprap removal, and LWD placement. (Note: when scored by LCFRB, these projects did not all fall within the fundable range, but out-of-basin/estuary benefits were not included at that time). Opportunities for beneficial use of dredged materials. Project Site Acres = 71
				CRE-6.2	0.3	0.15	0.08	0.01	
18 Lewis River Acquisition and Restoration	4	4	16	CRE-1.3	2	2	0.1	0.1	Clark Co. is proposing to acquire a large parcel of floodplain forest along the left bank of the mainstem Lewis near Mud Lake. This property also has potential for future side channel and floodplain reconnection, as well as lacustrine habitat restoration. Acquisition and restoration would compliment conservation banking efforts on Morgan Property, at the North Fork Lewis River mouth. Project Site Acres = 154
				CRE-1.4	2	2	0.08	0.08	
				CRE-9.3	8	3	0.15	0.03	
				CRE-10.3	2	0.8	0.06	0.01	
				CRE-15.3	1.5	0.7	0.05	0.01	
19 Port of Kalama Off-channel Wetland Enhancement	5	5	25	CRE-1.4	2	2	0.06	0.06	Restore and enhance tidal slough and channel habitats at the Port of Kalama's Northport mitigation site and WDFW ownership; remove or modify pile structures. Project Site Acres = 157
				CRE-8.2	6	6	0.03	0.03	
				CRE-10.1	10	4	0.12	0.05	
				CRE-15.3	1.5	7	0.05	0.01	
20 Cottonwood/Howard Island Tidal Channel Connection	3	5	15	CRE-10.1	15	6	0.15	0.05	Reconnect and construct backwater channels. Project Site Acres = 400
21 Barlowe Point Beach Nourishment	4 if public ownership, 2 if private	2	4 to 8	12.1	0.2	0.1	0.02	0.01	Contour beach profile through beach nourishment to reduce fish stranding (Note: should be associated with subsequent effectiveness monitoring). Project Site Acres = 21

Total: 3.51 1.89

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ESU Type	Project Contribution Totals	Estuary Survival Benefit (x .2)
Ocean	3.51	0.702
Stream	1.89	0.378

¹Salmon and steelhead survival benefits are determined in accordance with the guidance and procedures outlined in "Estimated Benefits of Federal Agency Habitat Projects in the Lower Columbia River and Estuary" (FCRPS BA, Attachment B.2.2). Project benefits identified in this table are considered preliminary, and will be refined by the expert regional technical group in accordance with Reasonable and Prudent Alternative (RPA) 37 (FCRPS Biological Opinion, 2008).

²This project received survival benefits as a construction project in the 2008 baseline portfolio (2000 - 2006).

³This project is a feasibility study therefore no survival benefits were assigned.

⁴This project received acquisition survival benefits and restoration survival benefits in the 2008 BiOp (CRE-10.3).

⁵Project acreage refers to total project site. Actual acreage of restored habitat will be determined during final project development.