

# Willow Creek Fish Habitat Enhancement Project (Implementation Summer-Fall 2012)

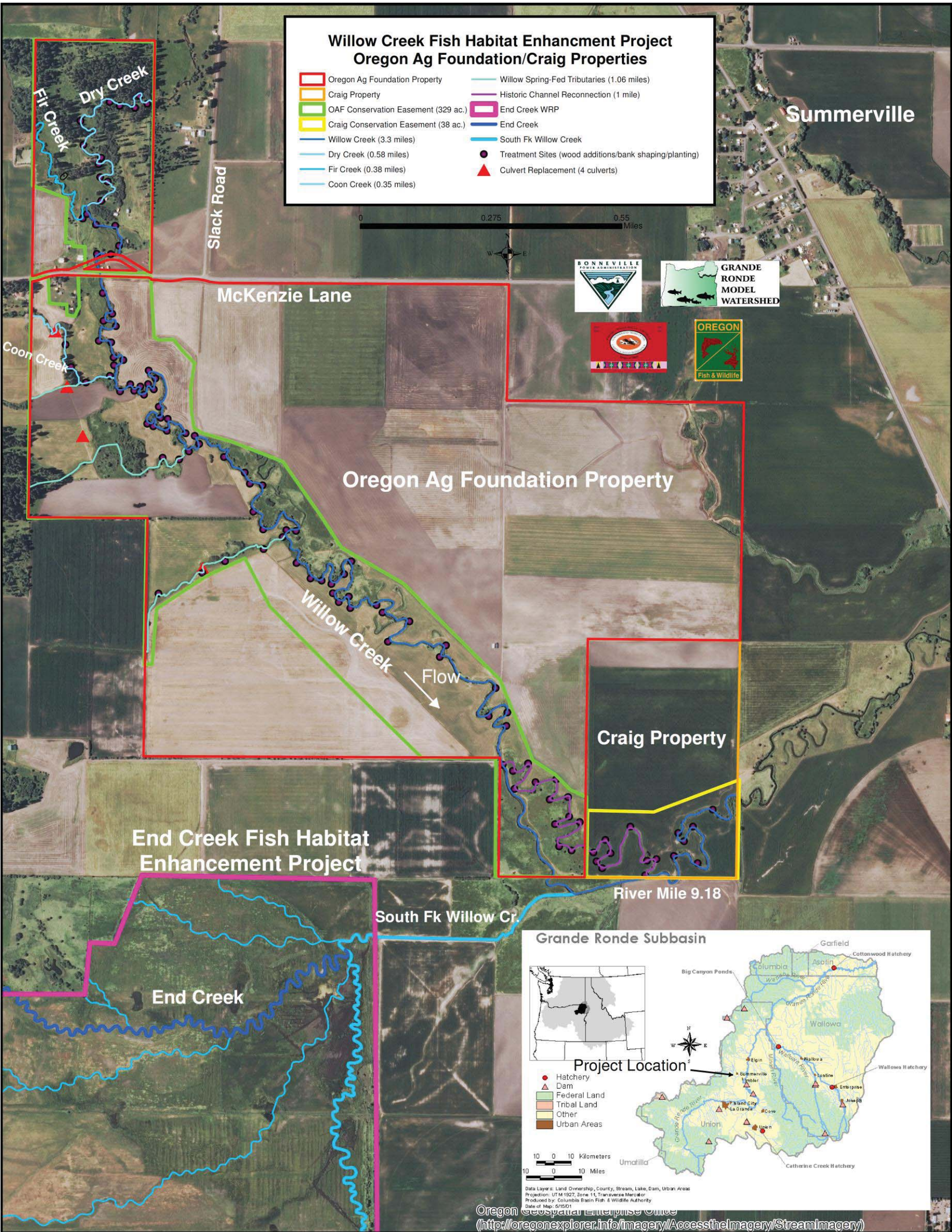
**Project Cooperators:** GRMW, CTUIR, ODFW, and Landowners: Oregon Ag Foundation & Stephen Craig

**Cost Share:** \$337,100 GRMW-BPA, \$50,000 CTUIR-BPA Accord.

**In-Kind Contributions:** GRMW-BPA, \$5,000, CTUIR-BPA Accord \$35,000, ODFW-BPA \$20,000

**Project Overview:**

- Approximately 1 mile of historic channel meander along lower Willow Creek within the project area was re-constructed and activated.
- Grazing by livestock was eliminated on all portions of the Project in 2011 and will be put into a conservation easement (CREP).
- Vertical stream banks were shaped at a 3:1 ratio to increase high flow capacity and provide floodplain activation.
- A total of 86 large wood addition sites encompassing nearly 9,000 linear feet of vertical, actively eroding stream banks were treated along Dry, Fir, Willow, and Coon creeks using approximately 2,400 pieces of wood ranging from 12' to 25' in length.





Project Name	Streams	Year	Assessment Unit steelhead	Assessment Unit Chinook	River Vision Touchstones	BiOP Limiting Factor ID	Snake River Basin Draft Recovery Plan/BiOP Identified Limiting Factors	Eco Concern Sub-Cat ID	Ecological Concern-Sub Category	Project Goals	Project Objectives	Implementation Actions /Metrics	Monitoring Metrics		
Willow Creek (Oregon Ag Foundation/Craig)	Willow Creek, Fir Creek, Dry Creek, Coon Creek	2012	UGS8	CCC2	Biota-Connectivity	1	Habitat Quantity	1.1	Anthropogenic Barriers	Replace existing culverts. Subbasin Plan Reference: Sediment Conditions. (page 261)	<b>Protect Habitat:</b> Property to enroll in wetland reserve program. <b>Enhance riparian habitat conditions:</b> Increase riparian plant communities through planting and seeding and natural recruitment. <b>Enhance Floodplain Connectivity:</b> Slope stream banks to increase high flow capacity, place large wood within the active channel to facilitate activation of old channel scrolls at high flow. <b>Restore natural channel and floodplain morphology:</b> Restore and enhance stream channel dimension, pattern, and profile to facilitate watershed processes and function in a dynamic state of equilibrium. Activate 1 mile of old channel scroll and abandon straightened channelized reach. <b>Enhance in-stream structural diversity and complexity:</b> Place large wood structures within the active channel. <b>Reduce streambank erosion rates:</b> Use bio-engineering techniques to provide roughness to stream banks. Increase riparian plant communities through planting, seeding and natural recruitment.	Property to be enrolled into CREP: OAF approximately 200 acres, Craig approximately 37 acres. Added structural complexity (engineered large wood structures) at 84 sites (2,400 pieces of wood) along approx. 3.5 stream miles (Dry, Willow, Fir, Coon Cr, and spring-fed tributaries). Constructed and re-activated a historic 1 mile reach of Willow Creek. Installed native grass seed and mulch on disturbed areas. Initiated conversion of 78 acres of crop land to native grasses. Constructed 2 floodplain ponds.	<b>Enhance riparian habitat conditions:</b> Aerial and ground photo-point monitoring completed annually to document projects. <b>Enhance in-stream structural diversity and complexity:</b> ODFW Aquatic Inventory Project completed habitat surveys in October 2010.Snorkel surveys, Spawning surveys. <b>Restore natural channel and floodplain morphology:</b> Longitudinal and cross-section surveys pre and post restoration using Trimble GPS. <b>Decrease summer peak temperatures:</b> CTUIR: Water temperature - hourly data - Hobo Pendant loggers - April to November starting 2010. <b>Reduce streambank erosion rates:</b> ODFW completed pre-project streambank stability surveys in September 2010. <b>Biologic Metrics collected:</b> ODFW spawning surveys, CTUIR snorkel surveys		
					Riparian Vegetation	4	Riparian Condition	4.1	Riparian Condition	Protect Habitat. Subbasin Plan Reference: Habitat Protection (page 258).					
								4.2	LWD Recruitment	Enhance riparian habitat conditions. Subbasin Plan Reference: Riparian Conditions (page 262).					
					Connectivity	5	Peripheral and Transitional Habitats	5.1	Side Channel and Wetland Conditions	Enhance Floodplain Connectivity. Subbasin Plan Reference: Channel Conditions (page 260).					
								5.2	Floodplain Condition						
					Geomorphology	6	Channel Structure and Form	6.1	Bed and Channel Form	Enhance in-stream structural diversity and complexity. Subbasin Plan Reference: Channel Conditions (page 260).					
								6.2	Instream Structural Complexity						
								7	Sediment Conditions	7.2				Increased Sediment Quantity	Reduce excessive sediment. Subbasin Plan Reference: Sediment Conditions (page 261).
					8	Water Quality	8.1	Temperature	Decrease summer peak temperatures. Subbasin Plan Reference: Riparian Conditions (page 262).						
Hydrology	9	Water Quantity	9.2	Decreased Water	Increase summer water quantity. Subbasin Plan Reference: Low Flow Conditions (page 263).										





The far left aerial photo is an example of high vertical banks on Dry Creek in the upper reaches of the project area prior to construction. Exposed bank heights of the existing channel throughout the project were 6-10 ft. The yellow arrow corresponds with the location of photo point series left and below taken pre-treatment October 24, 2011 and post treatment on November 11, 2012.



The aerial photo on the far right is looking downstream at Lower Willow Creek pre-project June 11, 2009. The immediate foreground is the McKenzie/OAF property and the recently plowed ground is the Craig property. The arrow corresponds to the location of the photo series above and right. The above photo is looking downstream towards the active channel from the right bank of the historic channel before construction October 24, 2011. The photo on the right is from the same location on November 6, 2012 during construction. The remnant channel from the 1930's was activated November 20, 2012.





The aerial photo from April 20, 2012 to the right is looking downstream at the historic channel of Willow Creek on the Oregon Agriculture Foundation property and the Craig property shortly after the areas included in the construction zone were scarified for cultural resources.



The image to the left is the plan view design by ODFW for the restoration and reactivation of the historic channel of Willow Creek on the Oregon Agricultural Foundation and Craig properties. The channel was activated November 20, 2012.