



NORTHCOAST REGIONAL LAND TRUST

The Northcoast Regional Land Trust owns and manages the 54-acre Freshwater Farms Reserve located on former tidelands along Humboldt Bay. This property is found in an area historically dominated by salt marsh but which has been converted, through diking and simplification of the slough systems, into drier land for agriculture. The project site itself was cut off from the greater Freshwater Slough system by a wooden flap tide gate and a levee, preventing tidal influence on the property. Surveys showed that endangered and threatened fish species, including coho salmon and steelhead and coastal cutthroat trout, have still been using this area for rearing prior to their migration to the ocean. It was determined that expansion and enhancement of this habitat would be beneficial to these species and contribute to their recovery.

The construction phase of the restoration project began in August 2009, and took two-and-a-half weeks to complete. Fish screens were installed and CA Fish & Game biologists manually removed all of the fish from the project area before construction. Four slough networks, of varying complexity and totaling about 3,200 feet in length, were excavated in the historic marsh plain.



Two existing seasonal ponds were also excavated to provide year-round habitat for tidewater goby (*Eucyclogobius newberryi*). We hope that tidewater goby, known to inhabit the existing pond south of the Wood Creek tide gate, will migrate through the new slough system and utilize these newly-excavated brackish water pools. A large pool was also excavated upstream of the crossing on Wood Creek in order to expand the freshwater habitat in which numerous young salmon have been observed. An existing dike on the north bank of Wood Creek (approximately 300 ft long) was removed to allow unimpeded tidal flow on the lower Wood Creek marsh plain.

The soil created from all of the excavation work was used on-site to construct shallow hills (hummocks) on the marsh plain. The hummocks were designed and constructed to only rise in elevation to where brackish wetland characteristics (e.g. frequent tidal inundation, specific plant communities) exist. Three redwood root wads were installed in the banks of the slough channels, while one root wad was placed in the large upstream freshwater pond. Five additional root wads were placed across the marsh



plain within the project area to provide perches for the numerous raptors and wetland birds found in the area. Hand seeding with sterile erosion-control grass seed was done after construction to protect newly-constructed and unvegetated hummocks from tidal and raindrop erosion during the winter. [View pictures](#) and get an explanation of the entire process.

Two hummocks will remain unvegetated and will act as controls to help the project team determine the extent and profile of passive wetland plant colonization over time. The test hummocks will be surveyed annually, and will be controlled for invasive plant species, which will be manually removed when observed.

The existing wooden flap tide gate at the mouth of Wood Creek was opened with a come-along on October 30th, allowing full access to the project site for fish, crustaceans, and other aquatic species, as well as the tides that bring them in. We will observe the reaction of the project site to regular tidal inundation over the next year. Once the Project Manager and Project Engineer agree that the restoration site has settled, the tide gate will be dismantled in place and removed.

The revegetation phase for this project will begin on March 31, and is expected to be completed by April 15, 2010. 46,300 native wetland-associated plants will be planted across the constructed tidal hummocks and along the margins of the new slough channels. Plant species include: Lyngbyes sedge, tufted hairgrass, softstem bulrush, saltgrass, silverweed, small-fruited bulrush, and willow all native to the area and propagated from sources on or near the property. The project area is tidally-influenced and receives some periods of flooding, though planting times will be scheduled for low-tide periods. The revegetation plan was developed by John Bair, riparian botanist for McBain & Trush, and mirrors natural conditions at neighboring Fay Slough.

The Land Trust thanks the following private and public partners, who granted funding and in-kind assistance for this project:

[US Fish & Wildlife Service](#)

[The Nature Conservancy](#)

[NOAA Fisheries](#)

[CA Department of Fish and Game](#)

[National Fish & Wildlife Foundation](#)

[North American Wetlands Conservation Act](#)

[Natural Resource Conservation Service](#)

[Freshwater Farms Nursery](#), Rick Storre

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