

Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Restore historic wetlands near mouth of Rodeo Lagoon at Golden Gate NRA, Marin County, California, Phase 1 & 2

Discipline: Natural
Type of Project: Technical Assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 7/1/2011 - 7/1/17
Funding Amount: \$27,602 (FY15, \$7,602; FY12: \$10,0001 FY12: \$10,000)

Investigators and Agency Representative:

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Project Abstract: The Rodeo Lagoon watershed is located just north of the Golden Gate, in southwest Marin County about 5 miles north of San Francisco. It encompasses a 4.43 square mile watershed, ranging from sea level to over 1100 feet in elevation. Geologic formation contact zones have resulted in the formation of springs, landslides and abundant sloping wetlands formed where groundwater discharges onto hill slopes in the upper watershed. These wetlands have sheet flowing water on the valley floor and highly productive herbaceous plant dominated vegetation. The project area occupies a 0.31 square mile sub-watershed above Rodeo Beach.

The project area includes a dirt parking lot that abuts an access road near the shoreline. Upstream of the dirt lot, a willow riparian habitat within an incised channel and wet meadow habitat occurs upstream of the farm road. Transitional wetland habitats are located along the hillslope toes. Flow in this disturbed system is conveyed in a series of ditches, headcut channels and partially failed culverts before eventually discharging onto Rodeo Beach and into the Pacific Ocean.

Historic maps and photographs of the project area show the conversion of habitats from conditions mapped by the U.S. Coast and Geodetic Survey in the 1850's that show a flat valley floor sloping to Rodeo Lagoon and lacking defined channels. Maps from the 1920's show the establishment of roads and more recent maps, photos, and construction reports show the unpaved 'Gun and Tractor Park' lot created by the Army prior to the 1940's. Early land-uses resulted in direct impacts to wetlands in the Rodeo watershed through filling, alteration of surface flow patterns, and placement of drainages into culverts. Natural sheetflow in the contributing watershed upstream of the parking area was also collected and channelized into drainage ditches and metal culverts. Over time, this manipulated system has resulted in culvert failures and extensive gullying along and upstream of the failed culverts.

Our recent research has demonstrated that the upstream portion of the project area has a water table near the soil surface that supports a *Scirpus microcarpus* dominated community and appears little disturbed. However, the central and lower (southern) portions of the wetland are drained by deeply-incised channels that did not exist historically. In some cases, the gullied channels are up to 10 feet deep.

The proposed actions will directly restore approximately 4 acres of wetland and other transitional habitats. The restoration of these sites will reverse the impact of past management activities on the landscape. Restoration activities would also be consistent with various directives for restoring and protecting wetlands.

Construction activities will be conducted during the dry season, likely late fall, and completed in a single year. Currently, construction actions are slated to start during the fall of 2012. At least one pre-construction meeting will be conducted with all parties involved to go over chain of communication, roles and responsibilities, construction sequencing and techniques, safety, and timelines. In addition, a required wildlife and Endangered Species training session will be provided for all onsite construction staff.

We will provide technical support during construction activities including near constant checking of grades to ensure that they match design criteria, oversee

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installation of erosion control materials, oversee planting, prepare an as-built topographic map (1-foot contour interval) for the site, and develop a summary report of construction activities. We would coordinate with a biological monitor and likely an archeological monitor (NPS staff) who will be present during key periods of construction.

It is anticipated that the FHWA engineer and contractors will be responsible for general layout of construction area and including access routes, initial staking for grades, and temporary construction fencing. Areas for salvage and protection will be done concurrently by CSU and NPS staff. Erosion materials will be installed by contractors.

An active vegetation management program is planned. The Park nurseries run by the Golden Gate National Parks Conservancy will be responsible for the collection and propagation of native wetland plants, installation of temporary browse and trampling protection, and weeding. Native plants will be propagated from locally collected seed sources and outplanted. Project participants from GOGA, NPS Water Resources Division, and Colorado State University will coordinate with the Park nurseries to assure that seedlings are planted according to design specifications. Temporary fencing will be required to prevent excessive herbivory while the planted seedlings establish and spread. Local environmental education programs in the area (YMCA and Headlands Institute) will be incorporated into the revegetation aspect of this project to provide students (elementary through high school) opportunities to learn about natural resource restoration through hands-on participation. Adult volunteers will also be involved with revegetation activities as well.

Following restoration actions, short-term hydrologic, vegetation, and wildlife monitoring will be initiated to determine success of project actions in meeting restoration goals. Actions will include monitoring of established groundwater and surface water stations, establishment of new ground water monitoring wells, and the establishment of vegetation plots around each well to track the survival, and growth of plantings. A short monitoring report including management recommendations will be completed.

Outcomes with Completion Dates:

1. Due date for completion of written documentation of natural resource modifications to design plan during wetland construction—November 1, 2014.
2. Due date for completion of as-built topographic surveys (pending availability of FY12 funding)—November 1, 2014.
3. Due date for post-construction monitoring report and recommendations (pending availability of FY12 funding)—September 30, 2015

Keywords: wetland meadows, restoration, Rodeo Lagoon at Golden Gate NRA, Marin County, California, Colorado State University