

4 MINUTE READ

Dry Creek



from **Engineering With Nature: An Atlas, Volume 2.**

by US Army Engineer Research and Development Center



Sonoma County and Healdsburg, California, United States

Enhancing salmon habitat in Wine Country. Since the mid-1980s, Dry Creek has been highly regulated for flood control by the U.S. Army Corps of Engineers (USACE) and water supply by Sonoma Water, accommodating the water needs of 600,000 consumers. Though the creek historically provided winter habitat and seasonal rearing for steelhead (*Oncorhynchus mykiss*), coho (*O. kisutch*), and Chinook (*O. tshawytscha*) salmon, changes in downstream flows due to the dam significantly degraded salmonid habitat. Therefore, instead of Sonoma Water building a bypass pipeline to convey the water supply and mitigate habitat concerns, the Dry Creek Ecosystem Restoration Project, a joint venture with the USACE San Francisco District, restored approximately 30 hectares of stream, floodplain, and riparian habitat along lower Dry Creek. The 2018 project increased in-stream habitat complexity and improved hydrologic connectivity with the floodplain by constructing combinations of riffles, large wood structures, backwaters, side channels, and alcoves along a portion of the 22 kilometer creek, promoting the recovery of local salmon and steelhead as well as other native wildlife. The current project is in the

monitoring and adaptive management phase, but additional restoration projects along the creek will continue.

Article cover: Large woody debris in the constructed backwater. (Photo by Inter-Fluve)

Producing Efficiencies

The project incorporated an existing long backwater depression that naturally ponded throughout the year and strategically widened the main stem at one location, taking advantage of a flat area to create additional offchannel habitat and enhance riffle formation. Despite cool summer water, Dry Creek provided little salmonid habitat because of the required water management from Warm Springs Dam. So, the restoration project worked with the existing dam operations to support appropriate velocities for salmonids during summer base flow and lower winter flow conditions, avoiding the need for a costly bypass pipeline.

Using Natural Processes

The project team took a dynamic design approach, working with the natural sediment transport processes, vegetation succession regime, and expected periodic overflows to maximize the benefits of the restoration and create more habitat complexity over time. Plantings will evolve into a resilient, diverse riparian habitat that regenerates naturally and supports native plant dominance. And replicating the influences of former large food events by selective vegetation removal and the construction of side channel, alcove, and backwater pond habitats has created new habitats ideal for the rearing and spawning of both coho and steelhead.





Monitoring for adaptive management at the Dry Creek Ecosystem Restoration Project site.

(Photo by USACE, San Francisco District)

Broadening Benefits

The restored habitat has enhanced an existing walking trail that runs along the site, and Sonoma Water has posted informational signs along the way describing the restoration project and its species and habitat benefits. The improved aesthetic and environmental value of the site have become an attraction for visitors to the local vineyards, driving tourism to the site and providing additional economic benefits. This outcome contrasts starkly with the pipeline alternative, which would have disrupted the local economy for the duration of its construction. Instead, the region presents itself as focused on biodynamic, organic, and salmon-friendly farming.



Fabric-wrapped soil lifts interplanted with native willow and dogwood shrubs provide erosion protection to adjoining vineyard lands. Using vegetation to resist erosion has many ecosystem benefits while protecting valuable property.

(Photo by Inter-Fluve)



Constructed backwater habitat for salmonids.

(Photo by Inter-Fluve)

Promoting Collaboration

The National Marine Fisheries Service and the California Department of Fish and Wildlife both provided project assistance. Further, the project team worked with local landowners, using public meetings, nonstandard estates, and demonstration projects to develop broad support for species recovery and ecosystem restoration on vineyard properties in the study area. Originally, the local landowners were skeptical about future limitations associated with restoration activities on their property. But because of their experience with this project, many landowners have asked to participate in the larger Ecosystem Restoration Project now happening along Dry Creek by USACE and Sonoma Water.



Dry Creek Ecosystem Restoration Project site postconstruction in summer 2019.

(Photo by USACE, San Francisco District)



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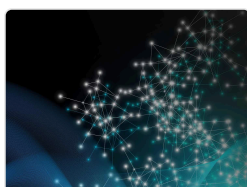
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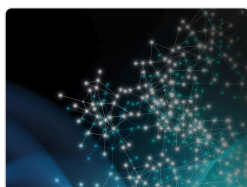
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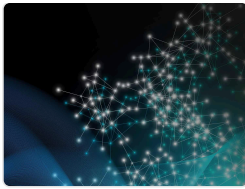
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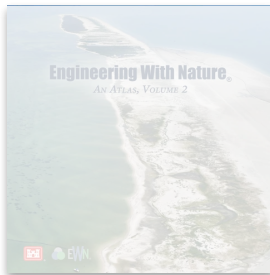
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