



Hydrologic Characterization and Modeling for Evaluating Water Management Strategies on the Upper Eel River and Upper Russian River

Project: Hydrologic Characterization and Modeling for Evaluating Water Management Strategies on the Upper Eel River and Upper Russian River
Institutions: Mendocino County Inland Water and Power Commission
Amount: ~~\$46,000~~ \$6,000 (with HIS)
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Project Narrative

The Eel River originates on the southern flank of 6,740-foot (2,050 m) Bald Mountain, in the Upper Lake Ranger District of the Mendocino National Forest in Mendocino County. The river flows south through a narrow canyon in Lake County before entering Lake Pillsbury, the reservoir created by Scott Dam. Below the dam the river flows west, re-entering Mendocino County. At Cape Horn Dam, about 12 miles approximately east of Willits, water is diverted from the Eel River basin through a 1-mile tunnel to the East Fork of the Russian River and through a hydroelectric power facility known as Potter Valley Project (PVP). Water released at the outlet of the power plant first provides agricultural water for the community of Potter Valley in Mendocino County. The remaining water not consumed in Potter Valley is stored in Coyote Valley Dam (CVD). Water diverted from CVD is used along the Russian River mainstem for several water uses: agriculture, municipal and environmental. Thus, there is a need for evaluating changes in water transfer volumes from the Eel river into the Russian River due to the upcoming relicensing of the PVP hydroelectric plant [operated by PG&E and licensed by FERC, Project No.77, Expiration Date: 2022]. This study proposes: (a) a hydrologic characterization of the Upper Eel River and comparison of unimpaired and impaired flow conditions, and (b) quantifying the impact of changes in water diverted from upper main Eel River into the Russian River.

Objectives, Tasks and Products

Objective 1: Hydrologic characterization of the Upper Eel River Basin (From its headwater up to Below North Fork).

Task (s): Collection of streamflow, climate, land use, infrastructure and water demand data for the Upper Eel River. Estimate the natural flow at different control points and compare it with current impaired flow conditions.

Product: A report + hydrologic information system (HIS)? +\$6,000?. The natural flow regime at Scott and Cape Horn dam.



Objective 2: Construction of a decision support system (DSS) for the Upper Eel and Upper Russian River Basins.

Task (s): Construction, calibration and validation of a hydrologic and water planning model for the Upper Eel and Russian River Basin.

Product: A hydrologic and water planning model for the Upper Eel and Upper Russian River Basins.

Objective 3: Evaluation of current and alternative water management strategies

Task (s): Evaluate the current and alternative water management strategies, such as:

- Current and future change in climate conditions,
- Increase/reduction in water demands,
- Evaluate other alternatives that are interesting for the stakeholders and water managers.

Product: A report that describes the system performance for the different alternatives evaluated.

Objective 4: Fostering a collaborative modeling process for the construction of the hydrologic and water planning model and definition of alternatives.

Task (s): Outreach, such as attending meetings, field trips, conference calls, webinars, etc., with the Mendocino County Inland Water and Power Commission to determine the scope, application and limitations of the model to build

Product: A list of the meetings and events attended for outreach purpose.