

Yuba IRWMP – YWA-12

Project Short Form¹

Please fill out the following information to the best of your ability/knowledge. Once the project has been received and a preliminary review completed, the project team will work with you to develop additional information.

Project Sponsor Contact Information

Lead Agency/Organization	Yuba Water Agency
Name of Primary Contact(s)	Willie Whittlesey
Mailing Address	Yuba Water Agency 1220 F Street Marysville, CA 95901
Email Address	wwhittlesey@yubawater.org
Phone (###) ###-####	(530) 741-5017
Project Partners/Collaborators	YWA member units

General Project Information

Project Title	New Colgate Powerhouse Tailwater Depression
Project Total Budget, based on current knowledge	TBD
Project Funding Match, if any	TBD
Total Project Funding Request	\$6,200,000
Can a detailed cost estimate be provided upon request?	No
Project Location (map if available)	Dobbins
City/Community	Dobbins
Watershed/subwatershed	Yuba/North Yuba
Groundwater Basin	Fractured Hard Rock
Project Type (highlight in gray all that apply)	Conceptual Feasibility Study Study/Assessment Planning Engineering/Design Permitting CEQA/NEPA Facility Construction Restoration Monitoring Best Management Practices Acquisition Demonstration/Pilot Project

¹ Completed Project Short Forms should be sent via email to Katie Burdick at admin@burdico.net

Project Description

Write a narrative briefly describing the project components and/or characteristics (maximum of 300 words).

The primary purpose of this project is to improve the flood protection capability of New Bullards Bar Reservoir. This is accomplished by the Tailwater Depression limit allowing the Colgate Powerhouse to operate for a longer period of time through a major flood event. This allows more water to be evacuated from New Bullards Bar Reservoir in advance of the peak flow and allows for peak flow releases out of New Bullards Bar Reservoir.

The New Colgate Powerhouse, constructed between 1968 and 1970, is located on the Yuba River at the upper end of Englebright Reservoir. The two generators are driven by vertical-shaft impulse (Pelton) turbines. The powerhouse is owned and operated by Yuba Water Agency (YWA) and provides power to the PG&E system.

High tailrace water elevations, due to high flows in the river during flooding, reduce the space in the turbine runner pits. If the tailwater rises to the point where foam interferes with the rotation of the runner, a backsplash effect occurs in the buckets, resulting in irregular runner rotation, excessive turbine vibration, and instability of power output. To continue operation of the unit under rising tailwater level conditions, the water flow discharged through the unit must be reduced to reduce the amount of foam generation. If the tailwater level continues to rise, the units eventually have to be shut down because they are not operable when submerged.

Technical Benefits of the Project: Installation of a tailwater depression system at New Colgate Powerhouse is technically and operationally feasible and the best means of avoiding operation curtailments resulting from high flows in the Yuba River.

Economic Benefits of the Project: Curtailments reduced the power generation by an average of 14,552 megawatt hours (MWh) for the 14 historical curtailment events, with a range of 1,826 MWh to 60,533 MWh. Average annual flood inundation benefits were estimated to be \$228,000 without considering growth and \$879,999 with growth. An estimated \$237,000 in power generation benefits would be realized. Equivalent annual economic cost over a 50-year period of analysis, including imputed interest at 6 percent during the construction period and operation and maintenance costs, was estimated to be \$344,700. The average annual operation and maintenance cost is estimated to be about \$27,200. This includes about \$17,800 for energy consumption and lesser amounts for materials and supplies. It has been assumed that the operating and maintenance labor will be provided by the New Colgate Powerhouse operating personnel during their regular work hours. Therefore, no additional labor cost is anticipated.

The project has a benefit-cost ratio of 1.35:1 without growth and 3.24:1 with growth.

Construction tasks requiring the shutdown of the turbines will be scheduled to minimize impacts on energy production. This will be in coordination with the California ISO and PG&E to avoid power losses.

I. Project Rationale/Issues Statement

Briefly describe the need for the project and the desired outcomes/deliverables (maximum of 200 words).

During the 31 years since full operation of New Colgate Powerhouse, there have been 14 occasions, ranging from 3 to 12 days, when flows in the Yuba River caused high tailwater conditions and required total or partial curtailment of generation. Curtailments occurred during a total of 91 days. Curtailments reduced the capacity to release water by an average of about 12,900 acre-feet during the 14 curtailment events. The amounts ranged from about 1,600 acre-feet during 3 days in 1974 to 54,000 acre- feet during 11 days in 1996-1997. This project addresses the following identified regional issues:

Infrastructure

Develop new infrastructure as well as repair, replace and retrofit aging infrastructure to ensure adequate and reliable water supply;

Flood Management

Improve integrated flood management to ensure better emergency preparedness;

Climate Change

Respond to projected climate change impacts on water supply reliability, water quality, public safety and watershed health and develop regional and inter-regional adaptive management strategies.