



July 26, 2013

Filed via Electronic Submittal (E-File)

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

SUBJECT: Yuba River Development Project
FERC Project No. 2246-058 - California
Study 6.1, Riparian Habitat Upstream of Englebright Reservoir
Additional Analysis

Dear Secretary Bose:

On September 30, 2011, the Federal Energy Regulatory Commission (FERC) issued a Study Plan Determination for the Yuba County Water Agency's (YCWA) relicensing of its Yuba River Development Project, Federal Energy Regulatory Commission (FERC) Project Number 2246 (Project).

The Determination included Study 6.1, *Riparian Habitat Upstream of Englebright Reservoir*. The study, which was modified by FERC on December 8, 2011 and May 14, 2012, required, in part, that YCWA consult with Relicensing Participants regarding the need for seed germination and recruitment information, including the need for modeling the potential relationship between flows and riparian seed germination.

This letter informs FERC that YCWA and Relicensing Participants have consulted on Study 6.1 and collaboratively agreed on the additional analysis described in this letter, which will be performed under Study 6.1. The analysis focuses on Fremont's cottonwood (*Populus fremontii*); assumes seed dispersal for Fremont's cottonwood is from April 1 through July 15; and that the maximum stage change per day for Fremont's cottonwood seedling germination, establishment and survival is 2.5 centimeters per day (cm/day). Such a rate is faster than maximum root follow rates (1 to 1.5 cm/day), but potentially allows for capillary action to provide water to root tips. Actual maximum recession rate for viable seed germination may be much less (Stella et al. 2010).¹

¹ Stella, J.C.; J.J. Battles; J.R. McBride; and B.K. Orr. 2010. Riparian seedling mortality from simulated water table recession, and the design of sustainable flow regimes on regulated rivers. *Restoration Ecology* 18:284-294.

- **Task 1-** YCWA and Relicensing Participants will jointly select two existing Study 6.1 transects² in each of the following three reaches for a total of six transects:
 - Our House Diversion Dam Reach (Middle Yuba River between Our House Diversion Dam and Oregon Creek)
 - Log Cabin Diversion Dam Reach (Oregon Creek between Log Cabin Diversion Dam and the Middle Yuba River)
 - Middle/North Yuba River Reach (Yuba River between the confluence of the Middle and North Yuba rivers and New Colgate Powerhouse).

The area of interest in each transect will be discussed when the transects are selected.

- **Task 2** – YCWA will create a stage discharge relationship for each selected transect using available hydrology data and modeling as appropriate. YCWA will provide a tool in Microsoft™ Excel, or other similar format, that shows the elevation of water along each transect at different flows.
- **Task 3** – Using the tool developed in Task 2, for each of the six transects and for the period between April 1 and July 15 in each of the 41 years in the relicensing hydrology period of record (i.e., Water Year 1970 through Water Year 2010), YCWA will create Microsoft™ Excel tables with the following columns of output data:
 - Date
 - mean daily flow (cfs) With-Project Hydrology
 - daily recession rate (%) With-Project Hydrology
 - mean daily stage (cm) With-Project Hydrology
 - daily stage change (cm) With-Project Hydrology
 - mean daily flow (cfs) Without-Project Hydrology
 - daily recession rate (%) Without-Project Hydrology
 - mean daily stage (cm) Without-Project Hydrology
 - daily stage change (cm) Without-Project Hydrology

The With-Project and Without-Project hydrologies used to develop the tables will be obtained from the relicensing Water Balance/Operations Model. YCWA will highlight table cells with a stage change of 2.5 cm or less.

YCWA and Relicensing Participants will jointly review the completed tool and tables and discuss areas of interest for limited additional analysis regarding specific areas of the selected transects and specific flows before proceeding to Task 4.

- **Task 4** – For With- and Without-Project hydrologies, YCWA will provide for each transect in the tables developed in Task 3:
 - The number of years and percent of years for which stage recession was 2.5 cm or less than 2.5 cm/day for the entire analysis period

² Each of the Study 6.1 transects was collocated with transects for Study 1.1, *Channel Morphology Upstream of Englebright Reservoir*, and Study 3.10, *Instream Flow Upstream of Englebright Reservoir*.

- A summary table that has the average, maximum, and minimum by water year type of the number of consecutive days with a recession rate of 2.5 cm/day or less.
- Two frequency distributions, one based on With-Project and one based on Without-Project hydrologies, for stage increments (e.g., 3 or 5 cm) where recession did not exceed 2.5 cm/day, and no recession rate in excess of 2.5 cm/day followed in a given year. Distributions to include all years in the relicensing hydrology period of record.

In addition, YCWA will create 'spaghetti hydrographs' (using stage in cm) by water year type for With- and Without-Project hydrologies, and by five water year types (i.e., 10 charts per transect). YCWA will limit y and x axis to the analysis period and will highlight line segments for which the recession rate does not preclude opportunity for germination. Opportunity for germination in this context is defined as less than a 2.5 cm/day stage change and not preceding (in the same year) a day or period with daily stage change less than less than 2.5 cm/day.

- **Task 5** – YCWA will include this analysis and results in a revised Technical Memorandum 6.1, *Riparian Habitat Upstream of Englebright Reservoir*. The tool developed in Task 2, and the tables and charts developed in Tasks 3 and 4 will be included in the technical memorandum as attachments. YCWA anticipates the revised technical memorandum will be issued within 2 months of when YCWA and Relicensing Participants collaboratively select the six transects for analysis.

YCWA reviewed this letter with Relicensing Participants at a meeting on July 24, 2014, and understands that the following Relicensing Participants agree that performance of the analysis described in this letter adequately addresses the participant's need for additional information from YCWA regarding Study 6.1 seed germination and recruitment: United States Department of Agriculture, Forest Service; United States Department of Interior, Fish and Wildlife Service; United States Department of Commerce, National Marine Fisheries Service; State Water Resources Control Board; California Department of Fish and Wildlife; and Foothills Water Network. No Relicensing Participants disagreed.

If you have any questions regarding these letter, please contact me.

Sincerely,

YUBA COUNTY WATER AGENCY



Curt Aikens
General Manager

cc: Alan Mitchnick – FERC DC
Ken Hogan – FERC DC
Relicensing Participants on YCWA's Yuba River Development Project's Relicensing E-Mail Contact List (via e-mail)