

Study 6.1

# **RIPARIAN HABITAT UPSTREAM OF ENGLEBRIGHT RESERVOIR**

November 2010

## **1.0 Project Nexus and Issue**

Yuba County Water Agency's (YCWA or Licensee) continued operation and maintenance (O&M) of the Yuba River Development Project (Project) may have the potential to affect riparian habitat.

## **2.0 Resource Management Goals of Agencies with Jurisdiction Over the Resource to be Studied**

The following was provided to Licensee by the United States Department of Agriculture Forest Service (Forest Service) as a description of the Forest Service's management goals for riparian habitat on National Forest System (NFS) land as identified in the National Forest Management Act (NFMA, public Law 94-588 1976) and the Tahoe National Forest (TNF) Land and Resource Management Plan (TNF LRMP), as amended by the Sierra Nevada Forest Plan Amendment (USDA Forest Service 2001a and 2001b) and the Supplemental Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004a and 2004b):

- Plant Community Diversity/Special Habitats/Connectivity: Manage riparian plant communities to maintain and improve the species composition and structural diversity. Manage riparian plant communities to maintain and/or improve spatial and temporal connectivity for native riparian plant species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.
- Streamflow Patterns/Sediment Regimes/Stream and Shoreline Riparian Vegetation: Manage stream flows to maintain and /or improve in-stream flows so they are sufficient to sustain desired conditions of riparian plant communities. Manage streambanks and shorelines to minimize erosion and sustain desired riparian habitats.

## **3.0 Study Goals and Objectives**

The goals of this study are: 1) to assess the condition of riparian habitats within river reaches upstream of the United States Army Corps of Engineer's (USACE) Englebright Reservoir potentially affected by continued Project O&M.

The objective of this study is to gather the data and information necessary to meet the study goals.

## **4.0 Existing Information and Need for Additional Information**

YCWA's Pre-Application Document contained information about the riparian vegetation mapped in the area of the Project, including CalVeg maps and National Wetland Inventory (NWI) maps on a 1:24,000 scale, shown with United States Geological Survey (USGS) topographic features and Project facilities. Section 7.6 of the Pre-Application Document includes a table of NWI palustrine and riverine wetland types and acres within the Project Area<sup>1</sup> and the Federal Energy Regulatory Commission (FERC) Project Boundary.<sup>2</sup>

Based on NWI maps (1987), there are approximately 40,417 feet and 125 acres of riverine wetlands within the Project Area, with approximately 8,044 feet and 54 acres within the FERC Project Boundary. Remaining NWI classified wetland habitats in the Project Area include approximately 63,926 feet and 13 acres of palustrine wetlands and approximately 4,635 acres of reservoir open water.

NWI riparian wetlands have been classified using aerial imagery but no ground-mapping data is known to exist to support this inventory. In addition, no known site-specific assessments of riparian habitats or habitat condition within the FERC Project Boundary are known to exist. To achieve the study goals, additional information is needed.

## **5.0 Study Methods and Analysis**

### **5.1 Study Area**

The study area includes: 1) the Middle Yuba River from Our House Diversion Dam Impoundment to the confluence with the North Yuba River, 2) Oregon Creek from the Log Cabin Diversion Dam Impoundment to the confluence with the Middle Yuba River, 3) the North Yuba River from New Bullards Bar Dam Reservoir to the confluence with the Middle Yuba River, and 4) and the portion of the Yuba River from the confluence of the North and Middle Yuba rivers to just upstream of the USACE Englebright Reservoir.

If YCWA proposes an addition to the Project, the study area will be expanded if necessary to include areas potentially affected by the addition.

### **5.2 General Concepts and Procedures**

The following general concepts and practices apply to the study:

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<sup>1</sup> For the purposes of this document, the Project Area is defined as the area within the Federal Energy Regulatory Commission (FERC) existing Project Boundary and the land immediately surrounding the FERC Project Boundary (*i.e.*, within about 0.25 mile of the FERC Project Boundary) and includes Project-affected reaches between Project facilities and downstream to the next major water controlling feature or structure.

<sup>2</sup> The FERC Project Boundary is the area that Licensee uses for normal Project operations and maintenance, and is shown on Exhibits J, K, and G of the current license.

- Personal safety is the most important consideration of each fieldwork team.
- Licensee will make a good faith effort to obtain permission to access private property where needed well in advance of entering the property.
- Field crews may make minor variances to the FERC-approved study in the field to accommodate actual field conditions and unforeseen problems. When minor variances are made, Licensee's field crew will follow the protocols in the FERC-approved study.
- When Licensee becomes aware of major variances to the FERC-approved study, Licensee will issue an e-mail to the Relicensing Contact List describing the variance and reason for the variance. Licensee will contact by phone the Forest Service (if the variance is on National Forest System land), USFWS, SWRCB and CDFG to provide an opportunity for input regarding how to address the variance. Licensee will issue an e-mail to the Relicensing Contact List advising them of the resolution of the variance. Licensee will summarize in the final study report all variances and resolutions.
- Licensee's performance of the study does not presume that Licensee is responsible in whole or in part for measures that may arise from the study.
- Global Positioning System (GPS) data will be collected using either a Map Grade Trimble GPS (sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (3 meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and Licensee's relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets.
- Licensee's field crews will record incidental observations of aquatic and wildlife species observed during the performance of this study. All incidental observations will be reported in the appropriate Licensee report (e.g., incidental observations of special-status fish recorded during fieldwork for the Special-Status Turtles – Western Pond Turtle Study will be reported in Licensee's Stream Fish Populations Study report). The purpose of this effort is not to conduct a focus study (no effort in addition the specific field tasks identified for the specific study) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of the study.
- Field crews will be trained on and provided with materials (e.g. Quat-128 [didecyl dimethyl ammonium chloride], scrub brush, etc.) for decontaminating their boots, waders, and other equipment between study sites. Major concerns are amphibian chytrid fungus (*Batrachochytrium dendrobatidis*), and invasive invertebrates (e.g. zebra mussels, *Dreissena polymorpha*). This is of primary importance when moving: 1) between tributaries and mainstem reaches; 2) moving between basins (e.g. Middle Yuba River, Yuba River and North Yuba River); and 3) moving between isolated wetlands or ponds and river or stream environments.

## 5.3 Methods

The study includes five steps: 1) site selection 2) gather data and prepare for field effort; 3) conduct field surveys; 4) prepare data and quality assure/quality control (QA/QC) data; and 5) prepare report. Each step is described below.

### 5.3.1 Step 1 – Site Selection

To the extent practical, Licensee will co-locate study sites with Licensee’s Instream Flow Study Upstream of the Englebright Reservoir Study and Channel Morphology Study. PHABSIM study sites (transect or transect cluster locations) are selected within a reach to represent the range of channel and habitat types in the reach (Bovee 1982). The characteristic feature of a PHABSIM study reach is homogeneity of the channel structure and flow regime. Characteristics of the areas where riparian habitat sites will be placed are gradients less than 2 percent, accumulations of gravel and finer material in channel and on margins, and floodplain and/or terrace development. The study includes five locations (Table 5.3-1).

**Table 5.3-1. Potential location and character of riparian habitat study sites.**

Stream	Potential Location	Character
Middle Yuba River	Below Oregon Creek in the vicinity of Freemans Crossing (RM 3.5 -4.5)	Moderately and unconfined channel, ~1% gradient, alluvial and depositional.
	Above Oregon Creek (RM 4.5 – 5.5)	Steeper (>1% gradient), confined, more transport-dominated than near Freemans’s Crossing, though some lateral cobble/gravel bar development.
Oregon Creek	Celestial Valley (RM 1.5 – 2.5)	Confined 1.6% gradient, planar bedform, gravel-sized material in channel and on margins.
North Yuba River	Below New Bullards Bar Dam.	Reach has very little accessibility due to vertical cliffs, and dominance of bedrock and boulders within channel. Large, immobile substrate, lateral and vertical controls by bedrock limits responsiveness to changes in inputs of sediment and to changes in hydrology.
Yuba River	Below New Colgate Powerhouse	Confined, less than 1%, cobble and boulder-dominated bed with very deep pools immediately below the Powerhouse, but increasing alluvial deposition as move downstream.

One study site will be selected in each location.

### 5.3.2 Step 2 – Collect and Review Existing Data and Information

Existing data, including Geographic Information System (GIS) data, historical information, reports, maps, and aerial photography relevant to riparian vegetation will be collected and reviewed where available for river reaches. These sources are expected to provide documentation on geology, topography, soils, riparian vegetation coverage and type, invasive species, and land-use (*i.e.* mining, timber management, recreation, road development, fires, grazing, and water diversions). Information regarding riparian vegetation and physical processes on western slope Sierra Nevada streams or other pertinent riparian literature from other geographic regions will also be reviewed. Pertinent information will be used for comparison and interpretive purposes when evaluating the streams and rivers in the study area.

### **5.3.3 Step 3 – Condition Assessment**

Surveyors will conduct a condition assessment at each site using the protocol *Riparian Area Management, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas* (Prichard *et al.* 1998). Observations of representative conditions and noteworthy atypical conditions (*e.g.*, channel encroachment or site-specific erosion) will be documented by geo-referenced photographs. Recorded site information will include: 1) hydrologic attributes and processes including observations for historical and existing flow levels, connection to floodplain, sinuosity, width/depth ratio, and gradient 2) vegetative attributes including dominant and sub-dominant vegetative species; vertical community distribution; horizontal community stratification; evidence of periodic recruitment and vigor; presence of large woody debris; and dominant and sub-dominant species for known association with moist soil conditions<sup>3</sup> and capability for maintaining bank stability against the erosive forces of moving water 3) erosion and/or deposition attributes including floodplain and channel characteristics; vegetative colonization of point bars; vertical stability; and sediment supply.

Licensee will collect data for incidental observations of special-status species. For all special-status species observations, Licensee will complete the appropriate CNDDDB form and transmit the form to the CNDDDB. Licensee will provide a copy of the CNDDDB form to the Forest Service if the observation occurs on NFS land.

### **5.3.4 Step 4 – Prepare Data and Quality Assure/Quality Control Data**

Following field surveys, Licensee will develop GIS maps depicting riparian habitat and other related information collected during the study. Field data will then be subject to QA/QC procedures, including spot-checks of transcription and comparison of GIS maps with field notes to verify locations of wetland and riparian sites found.

### **5.3.5 Step 5 – Prepare Report**

Licensee will prepare a report that includes the following sections: 1) Study Goals and Objectives; 2) Methods; 3) Results; 4) Discussion; and 5) Description of Variances from the FERC-approved study proposal, if any. The report will include field data to support riparian condition assessment and riparian habitat maps.

## **6.0 Study-Specific Consultation**

The study includes one study-specific consultation:

- Licensee will consult with interested and available Relicensing Participants regarding the number and location of the riparian habitat assessment sites (Step 1).

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<sup>3</sup> Dominant and subdominant vegetation, soil conditions, and hydrology will be recorded in the field using methods described in the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE 1987, 2008).

## **7.0 Schedule**

Licensee anticipates the schedule to complete the study as follows assuming the Pre-Application Document (PAD) is filed on November 1, 2010, and FERC issues its Study Determination by October 4, 2011:

Site Selection (Step 1).....	November 2011- March 2012
Collect and Review Existing Data and Information (Step 2) .....	April 2012- May 2012
Condition Assessment (Step 3).....	June - July 2012
Prepare and QA/QC Data (Step 4) .....	August 2012
Study Report Preparation (Step 5) .....	September 2012- October 2012

## **8.0 Consistency of Methodology with Generally Accepted Scientific Practices**

This study is consistent with the goals, objectives, and methods outlined for most recent FERC hydroelectric relicensing efforts in California. The proposed methodologies use standard assessment methods developed and used by federal land management agency personnel.

## **9.0 Level of Effort and Cost**

[Relicensing Participants – Licensee will include a cost range estimate for this study in its Proposed Study Plan. Licensee]

## **10.0 References Cited**

Prichard, D., J. Anderson, C. Correll, J. Fogg, K. Gebhardt, R. Krapf, S. Leonard, B. Mitchell, and J. Staats. 1998. Riparian area management: a user guide to assessing proper functioning condition and the supporting science for lotic areas. Technical Reference 1737-15. Bureau of Land Management, BLM/RS/ST-98/001+1737, Service Center, Denver, CO. 136 pp.

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Engineer Waterways Experiment Station. Report No. Y-87-1.

———. 2008. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (ERDC\EL TR-08-13). U.S. Army Corps of Engineers. U. S. Army Engineer Research and Development Center, Environmental Laboratory, Vicksburg, MS.

United States Fish and Wildlife Service (USFWS). 1987. National Wetland Inventory (NWI) maps. US Department of the Interior, USFWS, Region 1. Portland, OR.

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Yuba County Water Agency. 2007. Final Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Yuba River Accord. Prepared for the Department of Water Resources, Bureau of Reclamation and Yuba County Water Agency.

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