Study 8.2

RECREATION FLOW

August 2011

1.0 Project Nexus

Yuba County Water Agency's (YCWA or Licensee) continued operation and maintenance (O&M) of the existing Yuba River Development Project (Project) has a potential to affect whitewater boating and angling opportunities.

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

YCWA believes that three agencies have jurisdiction over recreation in the geographic area included in this study proposal: 1) the United States Department of Agriculture, Forest Service (Forest Service) on National Forest System (NFS) land; 2) United States Department of Interior, National Parks Service (NPS); and 3) California Department of Fish and Game (CDFG). Each of these agencies and their jurisdiction and management direction, as understood by YCWA at this time, is discussed below.

Forest Service

The Forest Service's jurisdiction and applicable management goals are described by the Forest Service from page 59 to 76 in the Forest Service's March 2, 2011 letter to FERC providing the Forest Service's comments on YCWA's Pre-Application Document, or PAD (YCWA 2010). The Forest Service's jurisdiction and management goals are not repeated here.

NPS

NPS's jurisdiction and goals are described by the NPS in the NPS's March 4, 2011 letter to FERC providing the NPS's comments on YCWA's PAD. NPS's jurisdiction and management goals are not repeated here.

CDFG

CDFG's jurisdiction is described by CDFG on page 1 of CDFG's March 2, 2011 letter to FERC providing CDFG's comments on YCWA's PAD. CDFG's goal, as described on page 2 of CDFG's letter is to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife and plant species.

3.0 Existing Information and Need for Additional Information

Section 7.8.3 (Recreation Facilities and Opportunities in the Project-Affected River Reaches) of YCWA's Pre-Application Document (YCWA 2010) provides a summary of the existing whitewater boating information on the river reaches affected by the Project. Specifically, in 2008, YCWA conducted the New Bullards Bar Dam Whitewater Boating Study on November 8

and 9. Results of this study determined the acceptable flow range for whitewater boating, primarily for hardshell kayaks, on: 1) the 2.3-mile portion of the North Yuba River below New Bullards Bar Dam downstream to the confluence with the Middle Yuba River; and 2) on the 7.5-mile portion of the mainstem Yuba River from the confluence with the North Yuba River downstream to the United State's Army Corp of Engineers (USACE) Englebright Reservoir (non-Project). The key findings of this study are in Section 7.8.3.1 of YCWA's Pre-Application Document (PAD), which includes the types of craft that may potentially boat the reach, the minimum and maximum optimal flow ranges, and the put-in and take-out locations for this reach. A complete description of the study methods and results are also found in Attachment 7.8B of the PAD.

The 2008 study included the 7.5-mile mainstem Yuba River segment (below the confluence of the North and Middle Yuba Rivers). This mainstem Yuba River segment is also part of the lower section of the whitewater reach that begins on the Middle Yuba River at the Highway 49 bridge crossing and continues downstream 12 miles (past the North Yuba River confluence) to Englebright Reservoir. The Middle Yuba River reach starting at Highway 49 was not part of the 2008 study. However, the results from the 2008 study does provide relevant information on the 7.5-mile mainstem Yuba River section of the Middle Yuba River reach that begins at the Highway 49 bridge, which must utilize the same takeouts as the 2008 study since no other takeouts exist.

There is also some information regarding whitewater boating opportunities in the Project Vicinity,[1] not including flow levels, currently available at American Whitewater's (AW) website, as well as some other boating websites and forums.

Additional information collected within this study will be used to close the gaps in the existing information on whitewater boating opportunities and what the acceptable range of flow levels is for the river reaches affected by the Project.

4.0 Study Goals and Objectives

The primary goals of the study are to determine if Project operations can: 1) provide acceptable whitewater boating opportunities consistent with demand on river reaches potentially affected by the Project; 2) determine anglers' preferences (e.g., flow, location and type of fishing) on Project-affected study reaches; and 3) be consistent with the needs of the area, the primary purposes or ability of the Project, and other resource management plans.

The study objectives include:

- Utilize opportunistic flows to determine the acceptable flow range for whitewater boating on the Project-affected stream reaches.

[1] For the purposes of this document, the Project Vicinity is defined as the area surrounding the Project on the order of a United States Geological Survey (USGS) 1:24,000 topographic quadrangle.

- Determine the number of flow days by month in the acceptable flow range for whitewater boating opportunities (e.g. rafting and kayaking) under current Project operations and under regulated and unimpaired flows.[2]
- On the Project-affected stream reaches, determine popular locations where anglers fish, the flows at which they fish, the type of fishing (e.g., wade or bank), and the number of useable days under existing Project conditions.
- Examine the feasibility of developing real-time flow data for Project-affected stream reaches.

5.0 Study Methods and Analysis

5.1 Study Area

For the purpose of the whitewater boating component of the study, the study area includes three study reaches;

- 7.5-mile-long portion of the Middle Yuba River from Our House Diversion Dam (RM 12.0) downstream to Highway 49 Bridge (RM 4.5)
- 12.0-mile-long portion of the Middle Yuba River and mainstem Yuba River from Highway 49 Bridge (RM 4.5) downstream to Englebright Reservoir (RM 32.2 on the mainstem Yuba River)
- 4.1-mile-long portion of Oregon Creek from Log Cabin Diversion Dam (RM 4.1) downstream to the confluence with the Middle Yuba River (RM 0.0)

In addition, the North Yuba River whitewater boating reach above New Bullards Bar Reservoir from Indian Valley downstream to New Bullards Bar Reservoir will be included in the study area for the sole purpose of identifying the takeout patterns, issues, and levels of use via a focus group. Note that this reach is not a Project-affected river reach as YCWA does not have any Project control over the flows in this study reach.

For the purpose of the angling component of the study, the study area includes:

- 2.3 mile-long section of the North Yuba River from New Bullards Bar Dam (RM 2.3) downstream to the confluence with the mainstem Yuba River (RM 0.0)
- 12.0 mile-long section of the Middle Yuba River from Our House Diversion Dam (RM 12.0) downstream to Highway 49 Bridge (RM 4.5)
- 4.5 mile-long section of the Middle Yuba River from Highway 49 Bridge (RM 4.5) downstream to the mainstem Yuba River (RM 0.0)
- 7.5 mile-long section of the Yuba River (RM 39.6) from the confluence with the North and Middle Yuba rivers downstream to Rice's Crossing (RM 32.2)

[2] Unimpaired flow refers to flows that might exist without Project operations.

- 4.1-mile-long section of Oregon Creek from Log Cabin Diversion Dam (RM 4.1) downstream to the confluence with the Middle Yuba River (RM 0.0).

5.2 General Concepts and Procedures

The following general concepts and practices apply to the study:

- 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. Upon request, GIS maps will be provided to agencies in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata, that is useful for interactive data analysis and interpretation. Metadata will be Federal Geographic Data Committee (FGDC) compliant.[3]
- 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 (i.e., no effort in addition the specific field tasks identified for the

[3] The Forest Service and CDFG each have requested that a copy of the GIS maps be provided to them when the maps are available.

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) for decontaminating their boots, waders, and other equipment between study sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g. zebra mussel, *Dreissena polymorpha*). This is of primary importance when moving: 1) between tributaries and mainstem reaches; 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 Study Methods

This study is divided into two components – a whitewater boating and angling component. The whitewater boating component of the study focuses specifically on whitewater boating opportunities on the Middle Yuba River below Our House Diversion Dam downstream to Englebright Reservoir (Yuba River), Oregon Creek, and the North Yuba River reach from Indian Valley to New Bullards Bar Reservoir (relating only to the take-out portion of the reach). The angling component of the study focuses on angling opportunities on each of the Project-affected stream reaches.

5.3.1 Whitewater Boating Component

5.3.1.1 Middle Yuba River Below Our House Diversion Dam

The Middle Yuba River whitewater boating component consists of two study reaches on the Middle Yuba River below Our House Diversion Dam. The study reaches are from: 1) Our House Diversion Dam downstream to the Highway 49 bridge crossing; and 2) Highway 49 bridge crossing downstream to Englebright Reservoir. Note that the final 7.5 miles of the second reach (below the confluence with the North Yuba River) are on the Yuba River downstream of the Middle and North Yuba River confluence.

The study methods for the whitewater boating component consist of three steps. These include: 1) conducting an opportunistic flow study on the Middle Yuba River study reaches; 2) comparing the regulated and unimpaired whitewater boating opportunity for the study reaches; and 3) describing the existing or potential whitewater boating opportunities on the study reaches. Each of these steps is detailed below.

5.3.1.1.1 <u>Step 1 - Conduct Opportunistic Flow Study on Two Middle Yuba River Study Reaches - Our House Diversion Dam downstream to Highway 49; and Highway 49 downstream to Englebright Reservoir</u>

This step will consist of four primary elements – 1) weekly forecasting of the projected opportunistic flows in the study reaches; 2) a core team of boaters; 3) boater evaluation forms; and 4) a focus group with the core team of boaters.

Weekly Forecasting of Opportunistic Flow Levels

YCWA will provide regular, weekly updates on the projected flows (to the best of the YCWA's capabilities) for the two Middle Yuba River study reaches during the spring run-off period starting in May 2012 and continuing through the descending limb of the hydrograph (likely into late June and early July 2012). YCWA will provide the weekly updates via a weekly conference call (posted on the Relicensing Website) with any interested Relicensing Participants, but will include AW, at a minimum. The updates will include all necessary real-time flow information as available at the time of the call and any trend information on projected opportunistic flow levels through the upcoming weekend. The update will focus on flows upstream and downstream of Our House Diversion Dam on the Middle Yuba River, and North Yuba River flows (including spill) below New Bullards Bar Dam, which is particularly important flow information for making a decision whether the Highway 49 to Englebright Reservoir study reach is boatable.

If the weekly flow projections on the study reaches indicate that the upcoming boating window occurs from Friday through Monday may provide potential flows in the target flow ranges, then AW will communicate this potential to a core team of boaters who will boat the reach. The flow projection information will also be broadcasted on the AW website (http://www.americanwhitewater.org), at a minimum.

Core Team of Boaters

While this approach relies on opportunistic flows in the study reaches, YCWA and Relicensing Participants agreed that utilizing a core team of boaters in regular contact with YCWA and/or AW would provide a measure of control and reliability over the study results. YCWA will work with Relicensing Participants to identify the core team of boaters. The core team will consist of boaters with commensurate skill levels and an appropriate distribution of craft types to include, at a minimum, hardshell kayaks, inflatable kayaks, and rafts. As practical, the core team may also include R2s (two-person rafts) and catarafts. The core team will then boat the Middle Yuba River study reaches within each targeted flow range (Table 5.3-1). The pre-selected, core team of boaters will paddle the study reach(es) at least once in each of the targeted flow ranges in Table 5.3-1.

Table 5.3-1. Target flow ranges for each study reach on the Middle Yuba River.

Study Reach	Target Flow Range (cfs)			
	A	B	C	D
Our House Diversion Dam to Highway 49	325 – 500	700 – 900	900 – 1,200	1,200 – 2,200
Highway 49 to Englebright Reservoir	600 – 800	800 – 1,000	1,000 – 1,200	--

The target flow ranges provided in Table 5.3-1 were developed to span the flow ranges for each of the primary types of craft for each study reach. These flow ranges by type of craft are provided in Table 5.3-2.

Table 5.3-2. Flow ranges by primary types of craft on each Middle Yuba River study reach.

Study Reach	Flow Range (cfs) By Type of Craft		
	Inflatable Kayak/R2	Hardshell Kayak	Raft
Our House Diversion Dam to Highway 49	325 – 500	700 – 2,200	700 – 1,200
Highway 49 to Englebright Reservoir	--	600 – 1,000	1,000 – 1,200

While the primary focus of this study component is to utilize a core team of boaters to minimize the potential variables in the study data, YCWA expects that boaters outside the core team will likely boat the study reach(es) opportunistically. YCWA will collect and separately analyze/summarize any data from opportunistic boaters if the opportunistic boaters boat a study reach in at least two target flow ranges (and complete a Post-Run Evaluation Form for each run and the follow-up Comparative Evaluation Form).

Boater Evaluation Forms and Process

The objective of the opportunistic flow study is to record how changes in flow alter the quality of the experience for individual participants and the group. The core team of boaters will opportunistically paddle each targeted flow range, then individually complete a single-flow boater Post-Run Evaluation Form (Attachment 8.2A). The single-flow Post-Run Evaluation Form focuses on the specific characteristics of the study reach at the single flow the boater experienced. Upon completion of at least two flows within the targeted ranges and subsequent Post-Run Evaluation forms, the boater will complete the Comparative Evaluation Form, which evaluates one flow over another for specific characteristics (Attachment 8.2B). The boater evaluation forms will be provided to boaters by one of two versions – hard copy or online version. Both versions ask the same questions. A link to the online version will be provided to the core team of boaters and also posted on the AW website, at a minimum.

Focus Group with the Core Team of Boaters

Following completion of the Post-Run and Comparative evaluation forms, YCWA will conduct a focus group discussion with the core team of boaters.[4] The focus group discussion will include specific questions concerning the boating experience at the different flow levels and refine the acceptable and optimal flow ranges for each craft, as necessary. The ultimate goal of the focus group discussion and the opportunistic flow study step is for the core team of boaters' to identify what flows would represent the general paddling public preference by craft type.

The primary data for this step will consist of the boaters' responses to the evaluation forms (Post-Run and Comparative) and the focus group results at the conclusion of the opportunistic flow study step.

[4] Opportunistic boaters outside the core team of boaters may be included in this focus group if the opportunistic boater: 1) ran the study reach(es) in each of the target flow ranges; 2) completed all the necessary evaluation forms; and 3) can be contacted for inclusion in the focus group.

Contingencies If Opportunistic Flows Are Inadequate in Spring 2012

In the event that the spring 2012 opportunistic flows do not provide flows within each of the target flow ranges (Table 5.3-1), then YCWA will utilize the following progressive contingency options. YCWA will implement the following contingency options in the following order until all the target flow ranges have been accomplished. If, after implementing the two contingency options, all of the target flow ranges have not been met, then the opportunistic study will be considered complete. YCWA will utilize any available data to complete the remainder of the study components (Steps 2 and 3 below).

- *Option 1 - 2013 Opportunistic Flow Study* – YCWA would continue the opportunistic flow study in spring 2013 utilizing the same opportunistic methods as described in Step 1 above.

- *Option 2 – Augment Flows Below Our House Diversion Dam in Spring 2013* - At Our House Diversion Dam, YCWA will mechanically operate the slide gate on the dam that controls the flows that enter the Lohman Ridge Diversion Tunnel to augment the flows below Our House Diversion Dam in order to meet the necessary target flow ranges that were not accomplished by opportunistic flows. This option will be implemented only during the descending limb of the hydrograph in spring 2013. Note: mechanically operating the gate is a crude means of controlling the flow below Our House Diversion Dam and YCWA will make a good faith effort to control the gate within its operational limits to aim for a target flow range. YCWA cannot guarantee specific flow levels using this method. Before implementing this option, YCWA, in consultation with Relicensing Participants, will determine if this option is feasible. If YCWA and Relicensing Participants collaboratively agree that this option is feasible to complete the study, then YCWA will implement this option.

5.3.1.1.2 Step 2- Comparison of Regulated and Unimpaired Whitewater Boating Opportunity for the Study Reach

In Step 2, YCWA will estimate the annual number of usable days that occur based on regulated and unimpaired flows for the each Middle Yuba River study reach. For the purpose of this study, a usable day is defined as a day when a recreationist would have reasonable access to the river and the mean daily flow in the study reach is within the acceptable flow range as determined through boater evaluations/focus groups (Step 1) and using the hydrology data approved by YCWA and Relicensing Participants[5].

5.3.1.1.3 Step 3 – Description of the Whitewater Boating Opportunities on the Study Reaches

In Step 3, YCWA will summarize the whitewater boating opportunities on the Middle Yuba River study reaches. This summary will document for each study reach the: 1) put-in and take-out access; 2) demand for whitewater boating; 3) constraints; 4) conflicts or complementary opportunities with other recreational opportunities; 5) whitewater classification; 6) the types of

[5] In addition, Licensee will make this comparison for the North Yuba River from New Bullards Bar Dam downstream to Englebright Reservoir (studied in 2008).

craft suitable for boating the reach; 7) acceptable and optimal flows for the class of boating and type of boating that would likely occur; and 8) the annual number of usable (boatable) days that occur based on regulated and unimpaired flows.

5.3.1.2 Oregon Creek from Log Cabin Diversion Dam Downstream to the Confluence with the Middle Yuba River

This whitewater boating study component consists of one study reach on Oregon Creek from Log Cabin Diversion Dam (RM 4.1) downstream to the confluence with the Middle Yuba River (RM 0.0). This study component uses a progressive, phased approach, whereby information gathered in Phase I will determine whether Phase II of the study component is necessary or not. Each of these two phases is detailed below.

5.3.2.1.1 Phase I Assessment

Step 1 - Identify Existing Whitewater Flow-Related Recreation Opportunity

YCWA, in consultation with AW and other interested Relicensing Participants (reconnaissance group) will conduct a field visit in 2011 at representative sites along Oregon Creek below Log Cabin Diversion Dam. YCWA and other field participants will observe the river access and river channel conditions along Oregon Creek at readily accessible access locations and potentially by hiking alongside the creek. During the site visit, YCWA will document the access and river condition through photographs and field notes, and the results of these conditions/observations will be summarized and included in the study report.

Step 2 - Review Field Assessment and Determine Whitewater Boating Feasibility

In this step, YCWA will consult with Relicensing Participants to determine whether or not Oregon Creek has potential for whitewater boating. If YCWA and Relicensing Participants collaboratively agree that a whitewater boating opportunity does potentially exist on Oregon Creek, then YCWA will proceed to the Phase II assessment. If not, the Phase I Assessment will be considered adequate to complete the study regarding this reach.

5.3.2.1.2 Phase II Assessment

Step 1 – Conduct Opportunistic Flow Study

YCWA will conduct an opportunistic flow study on Oregon Creek from Log Cabin Diversion Dam to the confluence with the Middle Yuba River using the same methods as in Section 5.3.1.1 for the Middle Yuba River study reach, but during the spring snowmelt/runoff period in 2012. Target flow ranges and types of craft will be determined based on the observations during the field visit in the Phase I assessment.

Step 2 - Comparison of Regulated and Unimpaired Opportunity for Whitewater Boating

If the opportunistic flow study in Step 1 confirms the whitewater boating potential, then YCWA, in Step 2, will estimate the annual number of usable days on the study reach that occur based on regulated and unimpaired flows (identical to the comparison in Section 5.3.1.1 for the Middle Yuba River study reaches). If the opportunistic flow study in Step 1 determines that the study reach does not have any whitewater boating potential, then YCWA will provide detail this determination in the study report and the Phase II assessment will be complete.

Step 3 – Description of the Whitewater Boating Opportunity on Oregon Creek

In Step 3, YCWA will summarize the whitewater boating opportunity on the Oregon Creek study reach using the same methods in Step 1 of Section 5.3.1.1 for the Middle Yuba River study reaches.

5.3.1.3 Whitewater Boating Takeout Assessment on the North Yuba River Reach Above New Bullards Bar Reservoir (Indian Valley downstream to New Bullards Bar Reservoir)

This study component focuses on the North Yuba River study reach (upstream of New Bullards Bar Reservoir) from Indian Valley downstream to New Bullards Bar Reservoir. The study component will assess issues related to the take-out on the study reach in two steps. These include: 1) conducting a whitewater boating focus group; and 2) describing the existing and desired take-out opportunities on the study reach.

5.3.1.3.1 Step 1 – Conduct Whitewater Boating Focus Group

In Step 1, YCWA will conduct a single whitewater boating focus group consisting of no more than 10 participants. YCWA, in consultation with the Relicensing Participants, will select the whitewater boaters to participate in the focus group. YCWA will make a good faith effort to reach identified individuals to conduct the focus group with the following types of participants - private boaters, permitted commercial outfitters, and clients of the permitted commercial outfitters (if feasible). The focus group questions will specifically relate to the take-out for this study reach, and include, but not be limited to the following: 1) existing take-out locations for boaters (private and commercial); 2) access considerations for the various take-out locations, 3) how the take-out affected the overall boating experience; and 4) what are potential desired take-out options. The focus group topics and question are provided in Attachment 8.2C.

Focus Group Process

Focus groups and interviews will be semi-structured, with specific topic areas and questions developed for anglers. Initial questions will focus on how people use the river. The goal is to describe the character of the whitewater boating takeout and identify potential desired takeout options for the study reach.

The focus group will consist of no more than 10 participants and include up to two YCWA-provided facilitators. The facilitators will pose open-ended questions to guide discussion, but will draw out participants with follow-up questions as needed. The focus groups would ideally be scheduled after researchers have conducted fieldwork to increase opportunities for shared understanding about the locations and issues under discussion.

As with any research methodology, interviews/focus groups have strengths and weaknesses. They are most useful for describing consensus opinion of homogenous groups, and they allow participants to "brainstorm" collectively to improve the number or accuracy of ideas. However, generalizing from small groups is more challenging, particularly if there is diversity within a group. The extent of agreement within groups is one input into decisions about whether additional flow evaluation studies would prove useful.

5.3.1.3.2 Step 2 – Description of the Whitewater Boating Take-out Opportunities

In Step 2, YCWA will summarize the existing and desired whitewater boating takeout opportunities on the North Yuba River study reach based on the information gathered in Step 1.

5.3.2 Angling Component

The study methods for the angling component consist of three steps (Steps 2A through 2C). These include: 1) conducting an angling focus group; 2) comparing the regulated and unimpaired angling opportunity for the Study Reaches; and 3) describing the existing and desired angling opportunities on the Study Reach. Each of these steps is detailed below.

5.3.2.1 Step 1 - Focus Group Interviews

In Step 1, YCWA will conduct up to two focus groups with anglers. The anglers will be selected through consultation with the Relicensing Participants. Subjects for angling questions will likely include: 1) access considerations, 2) target species, 3) types of fishing (wade/boat-based/shore-based; spin/bait/fly), 4) flow ranges for each type of opportunity by Study Reach, 5) angling quality relative to regional opportunities, and 6) desired angling opportunities on the study reaches. The focus group topics and question are provided in Attachment 8.2D.

5.3.2.1.1 Focus Group Process

YCWA will utilize the same focus group process as detailed in Section 5.3.1.3 for the North Yuba River whitewater boating focus group. The goal is to describe the character of angling recreation opportunities and identify flow-dependent attributes. A second series of questions will focus on the effects of flows on those attributes and whether interviewees can identify specific flows that affect the quality of angling opportunities.

YCWA will develop an initial list of participants for the focus groups with Relicensing Participants. Researchers will make a good faith effort to reach identified individuals to conduct interviews.

5.3.2.2 Step 2-Comparison of Regulated and Unimpaired Angler Flows for the Study Reach

In Step 2, YCWA will estimate the average annual number of angling usable days that occur based on regulated and unimpaired flows for the Study Reach. For the purpose of this study, a usable day is defined as a day when a recreationist would have reasonable access to the river and the mean daily flow in the Study Reach is within the acceptable flow range as determined through angler focus groups (Step 1) and using the hydrology data (once approved by YCWA and Relicensing Participants).

5.3.2.3 Step 3 – Description of the Existing and Desired Angling Opportunities on Study Reaches

In Step 3, YCWA will document the angling opportunities on each Study reach, including: 1) popular angling locations; 2) access; 3) types of angling (species, seasonality, shore, wade, etc.); 4) range of useable flows for angling on each Study Reach; and 5) the annual number of usable days that occur based on regulated and unimpaired flows. In addition, YCWA will characterize the desired angling opportunities on study reaches. YCWA will utilize the information gathered during the focus groups, as well as the from any visitor surveys (see Recreation Use and Visitor Survey Study, Study 8.1) to characterize the existing and desired angling opportunities on the study reaches.

5.3.3 Data Analysis and Study Report Preparation

YCWA will synthesize the data collected/analyzed into a study report at the conclusion of the study, and will include summary data in tables, attachments and/or appendices. Specifically, the report will include 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.

6.0 Study-Specific Consultation

YCWA will engage in the following study specific consultation:

- YCWA, in consultation with Relicensing Participants, will identify the team of boaters to opportunistically run the Middle Yuba River study reaches (and the Oregon Creek study reach if an opportunistic flow study is conducted on the reach).

- YCWA, in consultation with Relicensing Participants, will determine whether or not Oregon Creek has potential for whitewater boating. If YCWA and Relicensing Participants collaboratively agree that a reasonable whitewater boating opportunity exists on Oregon Creek, YCWA will proceed with the Phase II assessment.

- YCWA, in consultation with Relicensing Participants, will identify whitewater boaters to participate in the whitewater boating focus group on the North Yuba River study reach from Indian Valley to New Bullards Bar Reservoir.
- YCWA, in consultation with Relicensing Participants, will determine if contingency option 2 on the Middle Yuba River whitewater boating component is feasible. If YCWA and Relicensing Participants collaboratively agree that this option is feasible to complete the study, then YCWA will implement this option.
- YCWA, in consultation with Relicensing Participants, will identify anglers to participate in focus groups.

7.0 Schedule

Licensee anticipates the schedule to complete the study as follows assuming FERC issues its Study Determination by September 16, 2011 and the study is not disputed by a mandatory conditioning agency:

Whitewater Boating Component

Middle Yuba River Study Reaches
Opportunistic Flow Study ..... May - June 2012
Boating Comparison of Regulated/Unimpaired Hydrology ..... July - September 2012
Description of Whitewater Boating Opportunity..... October - December 2012
2013 Contingency .....May - June 2013

Oregon Creek Study Reach
Phase I Assessment .....November 2012
Phase II Assessment..... May - August 2012

North Yuba River Takeout Assessment
Whitewater Boating Focus Group ..... May - July 2012
Description of the Whitewater Boating Takeout Opportunities ..... July - September 2012

Angling Component

Angler Focus Groups ..... May - July 2012
Angling Comparison of Regulated and Unimpaired Hydrology .....July 2012
Description of Angling Opportunity..... August 2012

Data Analysis and Report Preparation..... September 2013

8.0 Consistency of Methodology with Generally Accepted Scientific Practices

This study proposal is consistent with generally accepted relicensing studies (e.g., Yuba-Bear, Drum-Spaulding, South Feather River, DeSabla-Centerville, and Beardsley/Donnells), and is consistent with FERC study requirements under the newly developed Integrated Licensing Process (FERC 2003). Focus groups following the completion of information gathering for the opportunistic flow studies will be conducted by researchers with social science training and will follow standard qualitative research protocols (Patton 1990). In addition, researchers have experience with focus group efforts from previous studies (e.g., Yuba-Bear, Drum-Spaulding, South Feather River, DeSabla-Centerville, and Beardsley/Donnells) using questions tested and refined from those efforts. Field work will be conducted following recommendations provided in Whittaker et al. (1993, 2005), and studies completed on West Rosebud Creek by PPL Montana. Documentation may include still photos and notes.

9.0 Level of Effort and Cost

YCWA estimates the cost to complete this study in 2011 dollars is between $70,000 and $90,000.

10.0 References Cited

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ATTACHMENT 8.2A

Post-Run Evaluation Form

Middle Yuba River Whitewater Boating Study
Post-Run Evaluation Form

1. Name: _____
2. Date of Run: _____
3. Which Study Reach are you evaluating? (circle one) a. Our House Div. Dam to Hwy 49 b. Hwy 49 to Englebright
4. Please identify the put-in and take-out locations you used and estimate the time you put-in and took out on this run.
   a. Put-in location: _____ ► Time:_____
   b. Take-out location: _____ ► Time:_____
5. What was the target flow (flow you are evaluating) on this run? _____ **cfs** ► as measured at: _____ .
6. What type of craft did you use for this run? (circle one)
   a. Hardshell kayak
   b. Inflatable kayak
   c. Cataraft (length: _____ ft.)
   d. R2 (length: _____ ft.)
   e. Raft (length: _____ ft.)
   f. Other (specify) _____ (length: _____ ft.)
   g. No craft: I road/trail-scouted this run
7. In general, how would you rate the whitewater difficulty at this flow (Class I to Class VI)? _____ .
8. Are you likely to return for future boating if the flow you are evaluating were to be provided? (circle one)
   a. Definitely No b. Possibly c. Probably d. Definitely Yes
9. Relative to the flow you are evaluating, would you prefer a flow that was higher or lower or was this optimal flow?
   a. Much Lower b. Lower c. Higher d. Much Higher e. Optimal
10. Please respond to each of the following statements about the characteristics of this run at the flow you are evaluating.

Statement	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
This reach is boatable at these flows.	1	2	3	4	5
This reach offers challenging and technical boating.	1	2	3	4	5
This reach has nice water features such as waves and holes.	1	2	3	4	5
This reach has good play spots.	1	2	3	4	5
This run offers good overall whitewater challenge	1	2	3	4	5
This is a safe run.	1	2	3	4	5
This is an aesthetically pleasing run	1	2	3	4	5
This run is a good length	1	2	3	4	5
The portages on this run are not a problem	1	2	3	4	5
There are enough places to take a break or have lunch on this run.	1	2	3	4	5

11. Please estimate the number of **hits**, **stops**, **boat drags**, and **portages** you had on this run.
    a. I **hit** rocks or other obstacles (but did not stop) about ____ times.
    b. I was **stopped** after hitting rocks or other obstacles about _____ times (but did not have to get out of my boat to continue downstream).
    c. I had to get out to **drag or pull my boat off** rocks or other obstacles about _____ times.
    d. I had to **portage** around unrunnable rapids, log jams, or other sections about _____ times.
12. Did you observe or experience any significant safety issues on this run at the flow you are evaluating – such as swims, pins, wrapped boats, man-made or natural river features etc.? Please explain below. Use the back if you need more space.

_____
_____
_____
_____

Recreation Flow Study | Yuba River Development Project, FERC Project No. 2246 | Post-Run Evaluation Form

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ATTACHMENT 8.2B

Comparative Evaluation Form

Middle Yuba River Whitewater Boating Flow Study
Comparative Evaluation Form

Section 1 - Boater Background Information (1 page)

1. Name: _____
2. Email: _____
3. Zip Code: _____
4. Age: _____
5. How long does it take you to get to the Middle Yuba River Study Reach from your home? (circle one)

   a. Less than 15 minutes b. 15 to 30 minutes c. 31 to 60 minutes d. More than 60 minutes
6. What is your preferred craft? (circle one)

   a. Hardshell kayak b. Inflatable kayak c. Cataraft d. R2 e. Raft f. Other (specify): _____
7. Please indicate your current boating skill level. a. Novice b. Intermediate c. Advanced d. Expert e. Elite
8. How many years have you been boating at this level? _____ years
9. In the past 3 years, how many days a month do you boat? _____/month
10. a. Have you ever participated in a hydro relicensing whitewater boating study before? a. Yes b. No

    b. If yes, what year and for which hydro project? *(List up to 2 projects)*

	Year	Name of Hydro Project
i.	_____	_____
ii.	_____	_____

11. a. How many times have you boated this run before this study? _____ / year

    b. If you have boated this reach before this study what were the flows and type of craft you used?

    i. Flow: _____ ► Craft: _____
    ii. Flow: _____ ► Craft: _____
    iii. Flow: _____ ► Craft: _____
12. Please respond to each of the following statements about your river-running preferences. (circle one response per row)

Statement	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
I prefer running rivers with difficult rapids (Class IV and V).	1	2	3	4	5
Running challenging whitewater is the most important part of my boating trips.	1	2	3	4	5
I often boat short river segments (<4 mi.) to take advantage of whitewater play areas.	1	2	3	4	5
I often boat short river segments to experience a unique and interesting place.	1	2	3	4	5
I often boat short river segments to run challenging rapids.	1	2	3	4	5
Good whitewater play areas are more important than challenging rapids.	1	2	3	4	5
I am willing to tolerate difficult put-ins/portages to run interesting whitewater reaches.	1	2	3	4	5
I prefer boating rivers that feature large waves and powerful hydraulics.	1	2	3	4	5
I prefer boating steep, technical rivers.	1	2	3	4	5
I enjoy boating both technical and big water rivers.	1	2	3	4	5

13. Please list some of the whitewater runs in California you typically boat each year; and how often you boat these runs.

    a. Reach Name: _____ ► Trips per year on this reach: 0-3 4-8 9-15 15+
    b. Reach Name: _____ ► Trips per year on this reach: 0-3 4-8 9-15 15+
    c. Reach Name: _____ ► Trips per year on this reach: 0-3 4-8 9-15 15+
    d. Reach Name: _____ ► Trips per year on this reach: 0-3 4-8 9-15 15+

Comparative Evaluation Form (continued)

Section 2 – Comparative Evaluation of Flow Levels (2 pages)

1. Which Study Reach are you evaluating? (circle one) a. Our House Div. Dam to Hwy 49 b. Hwy 49 to Englebright

2. What craft type are you evaluating the flows for? (circle one)

   a. Hardshell Kayak b. Inflatable Kayak c. Cataraft d. R2 e. Raft f. Other (specify): _____

3. Please evaluate the following flows for Your Craft and Skill Level. In making your evaluations, please consider all the flow-dependent characteristics that contribute to a high quality trip (e.g., boatability, whitewater challenge, safety, availability of surfing or other play areas, aesthetics, and rate of travel). IMPORTANT: If there is a flow level that you do not feel comfortable making this evaluation for, then check the box in the First Row.

Complete for EACH column	Flow Level (cfs)									
	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200
Cannot Estimate At This Flow	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Totally Acceptable	5	5	5	5	5	5	5	5	5	5
Acceptable	4	4	4	4	4	4	4	4	4	4
Marginal	3	3	3	3	3	3	3	3	3	3
Unacceptable	2	2	2	2	2	2	2	2	2	2
Totally Unacceptable	1	1	1	1	1	1	1	1	1	1

4. Based on your boating trips on this reach, please answer the following questions by providing a flow for each.
   (Note: you can specify flows that you have not seen, but which you would predict based on your experience.)

   a. What is the lowest flow you need to simply get down the river in your craft? _____ *cfs*

   b. What is the lowest flow that provides a quality technical boating experience for this reach? _____ *cfs*

   c. What is the optimal flow range that provides the best whitewater characteristics for this run? _____ to _____ *cfs*

   d. What do you feel the highest safe flow for your craft and skill level? _____ *cfs*

5. Based on your boating trips on this reach, if the flows in your optimal boating range (Question 4, Row C) were provided, then how often you would return to this run. (circle one)

   a. Never b. Once Every Year c. Multiple Times Every Year d. Once Every Few Years e. As Often As I Could

6. Based on your boating trips on this reach and at flows in your optimal boating range (Question 4, Row C), to which established boating runs in California do you feel the Study Reach is most similar?

	River Name	Run	Season	Optimal Flow (cfs)
a.				
b.				
c.				
d.				

7. Compared to the runs you listed above, how would you rate boating opportunities on this Study Reach at the flows in your optimal boating range (Question 4, Row C). *(circle one number for each; if you are unsure, leave that item blank).*

Other Reach Name:	Compared to the reach at left, the Study Reach is…				
	…Much Worse	…Worse	…About the Same	…Better	…Much Better
a. _____	1	2	3	4	5
b. _____	1	2	3	4	5
c. _____	1	2	3	4	5
d. _____	1	2	3	4	5

Comparative Evaluation Form (continued)

8. Please respond to the following statements about the non-whitewater characteristics of the Study Reach at the flows in your optimal boating range (Question 4, row C).

Statement	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
a. Length of Shuttle is not a problem.	1	2	3	4	5
b. The put-in for this run is good.	1	2	3	4	5
c. The take-out for this run is good.	1	2	3	4	5
d. The total shuttle to boating ratio on this run is good.	1	2	3	4	5

9. If you have any suggestions for improving the access or shuttle for this run please describe these improvements below.

a. _____

b. _____

c. _____

d. _____

e. _____

10. Please provide any comments about your overall boating experience on Study Reach below.

_____

_____

_____

_____

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Thank You For Taking the Time to Complete this Form.

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ATTACHMENT 8.2C

DRAFT North Yuba River Whitewater Boating Takeout Focus Group Questions

North Yuba River Whitewater Boating Takeout Focus Group
DRAFT Topics and Questions

Experience / Background Information

1. Do you boat the NYR reach as a private boater, commercial outfitter, or commercial client?
2. How many years have you been boating?
   - Overall?
   - On the NYR reach?
3. What type of boats do you commonly use?
   - Overall
   - On the NYR reach?
4. How would you rate your skill level with each type of craft?
5. In general, estimate the number of days per year you spend boating?
6. Estimate the number of times you have boated the NYR from Indian Valley to NBBR?
   - Total
   - Times per year
7. What months is the NYR reach typically boatable?
8. How would you classify the existing boating demand for the NYR reach?
   - Less than 10 groups per weekend day
   - Between 10 and 20 groups per weekend day
   - 20 or more groups per weekend day

Questions Specific to the Takeout

Note: in general, the answers will be categorized by private vs. commercial boaters

9. Where do you typically takeout on this reach?
   - Specific river mile/location (identify on a map)
   - On river right or left?
10. Please explain the following for each different takeout location/option.
    - Physical logistics
    - How long does it take (in minutes)?
    - Rate the level of effort/difficulty of the takeout using a scale from 1 to 5 (1=Easy; 5=Difficult)
    - How does the takeout experience affect your overall boating experience?
      - 1-Very much; 2-Somewhat; 3-Not at all
    - How does the takeout situation contribute to your decision to boat this reach?
      - 1-Very important; 2-Important; 3-Average; 4-Somewhat important; 5-Not important
    - If the takeout situation was improved (reduces the effort and time), would you boat the reach more often?
      - 1-Strongly disagree; 2-Disagree; 3-Neither agree nor disagree; 4-Agree; 5-Strongly disagree
11. If you had your choice, what would be the ideal takeout location/scenario?
12. Would you be willing to pay a reasonable user fee (e.g., per boater, per vehicle, per group, etc.) for an improved takeout location or scenario?
    If so, would a user fee affect the demand for boating on this reach? How so?

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ATTACHMENT 8.2D

DRAFT Angler Focus Group Questions

Angling Focus Group
DRAFT Topics and Questions

Experience

[Option: provide participants with a form with these questions to complete prior to starting the group discussions.]

1. Total years fishing
2. Fishing within the study reaches
   - Total years fishing
   - Typical days per year
3. Types of fishing (spin, bait, fly)
4. Modes of fishing (shoreline, wading, tubing, boat)

Access and Use Areas

5. Identify existing access locations, how they work, and what fishing areas they provide access to. [Identify these areas on a map, particularly high use areas.]
6. Identify if visitors typically use public vs. private access? Is this legal private access?
7. Identify typical use levels by season and time of day.
8. Identify any constraints to angling and any potential solutions to these constraints?
9. Rate overall access quality (1=totally unacceptable, 2=slightly unacceptable, 3=marginal, 4=slightly acceptable, 5=totally acceptable).

Type and Quality of Fishing Opportunity

10. Target species
11. Types of fishing (wade/boat/tube/shore; spin/bait/fly)
    - Likely flow ranges for each type of opportunity.
    - Rough estimate of angling success (fish per hour of effort; size, etc.)
    - Seasonality and time of day considerations on fishing success

Regional Assessment Issues

12. List similar reaches on nearby rivers and discuss similarities/differences
13. Rating (1=worse than others, 3=similar to others, 5=better than others)
    - Within 2 hours
    - Within Northern California (4 hours)
14. Estimate size of local angling community in the region
    - Less than 100 anglers / 100 to 500 anglers / Greater than 500 anglers
15. Discuss of proportion of anglers who do different types of fishing (fly/spin/bait)
16. Discuss of proportion of anglers who use different modes of fishing (shore/wade/tube/boat)

Potential Management Issues

17. Do you experience crowding? If so, what locations? And, what times of year?
18. What, if any, facilities would you like to see on the stream reach?
19. Do you experience any safety/liability issues?
20. Have you experienced any conflicts with others (anglers, river users, residents, etc.)

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