Applicant-Prepared Draft Biological Assessment for Central Valley Spring-Run Chinook Salmon, Central Valley Steelhead and North American Green Sturgeon

Attachment A

YCWA's Proposed Conditions and Associated Rationale Statements

(Appendix E2 of Exhibit E of YCWA's Amended FLA)

Yuba River Development Project
FERC Project No. 2246

June 2017

ATTACHMENT A

YUBA COUNTY WATER AGENCY'S PROPOSED CONDITIONS AND ASSOCIATED RATIONALE STATEMENTS

1.0 General

1.1 YCWA's Proposed Condition GEN1: Organize Ecological Group and Host Meetings

Licensee shall, within 60 days of license issuance, establish an Ecological Group that includes, but is not limited to, Licensee, Forest Service, USACE, NMFS, USFWS, Cal Fish and Wildlife, BLM, and SWRCB. Ecological Group meetings shall be open to any organization or individual, who may fully participate in the meeting. Licensee will coordinate meeting agendas with interested agencies. Licensee shall maintain an Ecological Group e-mail contact list consisting of e-mail addresses (one primary and one alternate) provided to Licensee by the Forest Service, USACE, NMFS, USFWS, Cal Fish and Wildlife, BLM, and SWRCB agencies, and provided to Licensee by organizations or individuals that notified Licensee in writing of their interest in participating in the Ecological Group meetings.

Thereafter, Licensee shall organize and host Ecological Group meetings, and unless otherwise agreed to by the Ecological Group, meetings shall be held at Licensee's office in Marysville, CA.

Licensee shall organize and host at least one Ecological Group meeting each year on the second Tuesday in April, unless otherwise agreed to by the Ecological Group. Licensee shall organize and host additional Ecological Group meetings if agreed to by the Ecological Group. The April meeting shall begin at 9:00 AM, and the agenda for the April meeting shall include, unless otherwise modified by the Ecological Group, the following:

1. Introductions
2. Public comments
3. Licensee's report of any deviations from the conditions in the license since the previous meeting required under this condition
4. Discussion of Licensee's ecological-related FERC filings in the previous calendar year (e.g., reports required by measures or implementation plans)
5. Review of monitoring data and reports - Review and discuss the results of Upper and Lower Yuba River Aquatic and Water Temperature monitoring plans. In particular, the discussion will include the results of fish population monitoring data collected in

the previous calendar year (and other prior years, as appropriate), in light of preserving and protecting ecological values affected by the Project

6. Discussion of Licensee's planned license-required ecological-related monitoring in the current calendar year
7. Discussion of any license-required agency ecological-related consultation in the current calendar year, and Licensee's proposal to complete the consultation, if needed
8. Discussion of any Licensee-anticipated proposals that have ecological consequences in the calendar year regarding: 1) changes or additions to facilities or features in the license; 2) variances to conditions in the license; or 3) amendments to the license
9. Licensee's follow-up on action items from the last meeting required by this condition
10. Identification of Licensee's follow-up action items from this meeting, if any
11. Adjourn

At least 30 days in advance of the April meeting, Licensee shall make available to the Ecological Group the following material:

- Reports and other information from the previous calendar year required by license conditions or implementation plans in the FERC license

Licensee shall prepare for each Ecological Group meeting held under this condition a letter summary that shall include the date and location of the meeting, attendees, subjects discussed, and Licensee's action items agreed to by Licensee at the meeting. The summary is not intended to be a transcript of the meeting or formal comments on the license by Licensee or participants in the meeting. Licensee shall file each meeting summary with the Commission no later than 30 days following the meeting.

If Licensee, Forest Service and the Ecological Group agree in advance, the April Ecological Group meeting may be coordinated with the annual meeting required in the Forest Service's FPA § 4(e) Condition No. 1 (i.e., the two meetings may be held as one meeting or may be held as separate meetings on the same day at the same location). If the two meetings are held as one meeting, at a minimum, Licensee shall assure the agenda items for the April Ecological Group meeting are discussed at the joint meeting and Licensee shall file with the Commission within 30 days of the meeting a summary for the agenda item for the Ecological Group portion of the meeting (i.e., summary will not cover agenda items for the Forest Service's FPA § 4(e) Condition No. 1). Agenda items for Forest Service's Condition No. 1 shall be summarized and reported to the Commission as required in that condition.

Licensee is only required to take actions recommended in writing by the Ecological Group if a term or condition of the license expressly provides that the Ecological Group may direct the Licensee to take such action.

Rationale Statement in Support of YCWA's Condition GEN1. The formation of an Ecological Group comprised of agencies and YCWA would facilitate communications and assure that interested agencies have an opportunity to discuss license implementation, which is solely the responsibility of YCWA, with YCWA. Further, providing that all Ecological Group meetings are open to the public would assure both transparency and a venue for NGOs and unaffiliated members of the public to express their interests regarding license implementation. Notification regarding meetings would be provided by YCWA using an e-mail contact list made up of contacts furnished by interested agencies and parties to YCWA. Advanced notification of Ecological Group meetings and meeting material would be sent to those on the contact list.

The condition provides that YCWA would organize and host all Ecological Group meetings, with at least one agendized meeting held each year in April. Other meetings may be held upon agreement of the Ecological Group. Documentation of meetings would be provided by YCWA, which would file letter summaries with FERC.

In addition, the condition would provide for efficiencies by encouraging combining the Ecological Group meeting with the Forest Service's annual meeting.

Last, the condition clearly states the authority of the Ecological Group – the group may only direct YCWA to take action if a condition in the license expressly provides the Ecological Group may direct YCWA to take an action under that condition (e.g., YCWA's proposed Condition AR8 states that some locations for water temperature gages will be selected in consultation with the Ecological Group).

Condition GEN1 does not imply that YCWA may only proceed with license implementation until after the annual meeting, or that agencies' approval is needed for YCWA to implement the terms and conditions in the license. YCWA is solely responsible for implementing the license.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

1.2 YCWA's Proposed Condition GEN2: Annual Review of Special-Status Species Lists and Assessment of New Species on NFS Lands

Licensee shall, beginning the first full calendar year after license issuance, in consultation with Forest Service annually review the current lists of special status species (species that are Federally Endangered or Threatened, Proposed Threatened or Endangered, Forest Service Sensitive, or Tahoe and Plumas National Forest Watch Lists, State Threatened or Endangered, State Species of Special Concern, and Cal Fish and Wildlife Fully Protected) that might occur on National Forest System (NFS) lands, as appropriate, in the Project area that may be directly affected by Project operations. When a species is added to one or more of the lists, Forest Service, in consultation with Licensee shall determine if the species or un-surveyed suitable habitat for the species is likely to occur on such NFS lands, as appropriate. For such newly added species, if Forest Service determines that the species is likely to occur on such NFS lands, Licensee shall develop and implement a study plan in consultation with Forest Service to reasonably assess the effects of the Project on the species. Licensee shall prepare a report on the

study including objectives, methods, results, recommended resource measures where appropriate, and a schedule of implementation, and shall provide a draft of the final report to Forest Service for review and approval. Licensee shall file the report, including evidence of consultation, with the Commission and shall implement those resource management measures required by the Commission.

If new occurrences of Forest Service special-status plant or wildlife species as defined above are detected prior to or during ongoing construction, operation, or maintenance of the Project or during Project operations, Licensee shall immediately notify Forest Service. If Forest Service determines that the Project-related activities are adversely affecting Forest Service sensitive or watch list species, Licensee shall, in consultation with Forest Service, develop and implement appropriate protection measures.

If new occurrences of state or federally listed or proposed threatened or endangered species are detected prior to or during ongoing construction, operation, or maintenance of the Project or during Project operations, Licensee shall immediately notify Forest Service and the relevant Service Agency (United States Fish and Wildlife Service or National Marine Fisheries Service or Cal Fish and Wildlife) for consultation or conference in accordance with the Endangered Species Act. If state listed or fully protected species are affected, Cal Fish and Wildlife shall be notified.

Rationale Statement in Support of YCWA's Condition GEN2. Over the term of the new license, it is possible that species that could be affected by the Project could be added to special-status species lists. Condition GEN2 would require YCWA to review pertinent special-status species lists annually to identify such species. An annual, rather than more frequent, review is appropriate because, even though some lists may be updated quarterly, changes to special-status species lists are usually very minor from year to year. The condition would require that if a species has been added to the list and has a reasonable likelihood of being directly affected by the Project and adequate information is not available to assess likely Project effects, YCWA would consult with the appropriate agencies with jurisdiction over the species to develop a study plan to assess potential Project effects, provide the plan to those agencies for review, file the plan with the Commission, and perform the study as approved by the Commission. Upon completion of the study, YCWA would provide a study report to the appropriate agencies for review, and file the report with the Commission. In addition, the condition would require that if YCWA proposes a new action that could adversely affect a special-status species or its habitat, YCWA would consult with the appropriate agencies.

This condition does not apply to species listed as threatened or endangered under the ESA or the CESA since the process for adding these species to the ESA or CESA is specifically described under federal and state law, as is the process for consulting with the appropriate agency once a species has been added to the ESA to CESA.

This condition does not preclude any agency or member of the public from notifying both YCWA and Commission if the agency or member of the public believes a species has been added to a special-status species list that may be adversely affected by the Project.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition

1.3 YCWA's Proposed Condition GEN3: Provide Environmental Awareness Training to Employees

Licensee shall, beginning in the first full calendar year of the new license term, annually perform employee environmental awareness training for hydro operation and maintenance staff, and shall also perform such training for new hydro operation and maintenance staff within 1 month of when a staff member is first assigned to the Project. The training shall include:

- providing and reviewing maps showing the locations of federal land and environmentally sensitive areas (e.g., locations of special-status species populations, areas with Limited Operating Procedures, cultural resources and protected habitats) known to occur within the FERC Project Boundary;
- describing the general contents of the license, including plans, as they pertain to operations and maintenance and the protection of environmental resources;
- providing guides for the identification of special-status species, non-native invasive plants (NNIP) and aquatic invasive species (AIS) that are known or suspected by Licensee to occur within the FERC Project Boundary; and
- describing reporting procedures to Licensee's management if hydro operation and maintenance staff incidentally, during the performance of their work, observe new populations of special-status species, NNIP or AIS, or if they observe dangerous, injured, or dead wildlife.

The goal of the training shall be to familiarize Licensee's hydro operation and maintenance staff with special-status species, NNIP and AIS and sensitive areas known or suspected by Licensee to occur within the FERC Project Boundary, and procedures to avoid adverse effects. It is not the intent of this condition that Licensee's hydro operation and maintenance staff perform surveys or become experts (i.e., have more than a common knowledge) in the identification of special-status species, NNIP, AIS or historic properties.

Licensee shall direct its hydro operation maintenance staff to avoid disturbance to sensitive areas shown on the maps, and to advise all Licensee contractors to avoid these sensitive areas. If Licensee determines that disturbance of a sensitive area shown on the maps is unavoidable, License shall consult with the appropriate agencies to minimize adverse effects to the sensitive area. Licensee shall update the employee environmental awareness training material as needed.

Rationale Statement in Support of YCWA's Condition GEN3. Over the course of the relicensing, YCWA has identified sensitive areas (e.g., locations of cultural properties, non-native invasive species, special-status species, and protected habitats), and other such areas may be identified over the new license term. Under Condition GEN3, YCWA would prepare and maintain maps of sensitive areas within the FERC Project Boundary. Using these maps and other material, YCWA would provide environmental sensitivity training to Project hydro field

maintenance staff when they are assigned to the Project and provide group training to all hydro field maintenance staff annually. Providing training to staff when they are hired would assure new staff are quickly trained, and periodic training would serve as a refresher for staff to note any changes since the last training. Training would include the general identification of the special-status species and non-native invasive species that are known or suspected to occur in the Project Boundary and their general location, methods to avoid sensitive areas and minimize disturbance of special-status species during critical life stages, and a review of any pertinent orders, rules or policies (e.g., BMPs and LOPs) that pertain to these special-status species that may occur in the Project Area. Training would also include procedures for reporting to YCWA's management if staff observes any Project activity directly affecting these special-status species, and procedures for YCWA management to report to the appropriate agencies, if necessary.

The condition does not require YCWA staff to become expert in the identification of species, or conduct studies.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

1.4 YCWA's Proposed Condition GEN4: Develop and Implement a Coordinated Operations Plan to Assure Licensee's Compliance with the New License for the Yuba River Development Project[1, 2]

Licensee shall, within the first 90 days of the new license term, file with the Commission for approval a Public, unless otherwise directed by the Commission, Coordinated Operations Plan (Plan) for the Yuba River Development Project and Narrows Project (FERC Project No. 1403). Licensee shall develop the Plan in consultation with the licensee for the Narrows Project. The purpose of the Plan shall be to provide for coordinated operations of the Yuba River Development Project and the Narrows Project to assure implementation of the flow–related conditions in the Yuba River Development Project license, including maintenance of flow requirements during normal operations, scheduled outages and unscheduled outages. Licensee shall file the Plan with the Commission, and Licensee shall implement those portions of the Plan approved by the Commission that apply to Licensee. If Licensee and the licensee for the Narrows Project are unable to reach agreement on the Plan within the first 90 days of the new license term, then Licensee shall advise the Commission of the consultations between the two Licensees that have occurred, and shall request that the Commission issue an appropriate order for coordinated operations to Licensee and the licensee for the Narrows Project.

[1] YCWA has not included the Coordinated Operations Plan in YCWA's Amended FLA because YCWA and PG&E, the licensee for the Narrows Project, cannot negotiate the terms of the plan until such time as each party understands the conditions of the new Yuba River Development Project license, which conditions will not be known until FERC issues the new license.

[2] Article 411 in the existing the existing FERC license for PG&E's Narrows Project (FERC Project No. 1403) states: "*The Licensee* [PG&E] *shall, for the limited purpose of coordinating operations with Project 2246 for the development of fish resources in the Yuba River downstream of Englebright dam, comply with such reasonable modifications of project operations, as may be ordered by the Commission upon the relicensing or amendment of the license for FERC Project No. 2246, after notice and opportunity for hearing.*" The existing FERC license for PG&E's Narrows Project expires in 2023.

Rationale Statement in Support of YCWA's Condition GEN4. Both YCWA's Narrows 2 Powerhouse and PG&E's Narrows Project receive water from Englebright Reservoir and measure their compliance with flow requirements in their licenses at a streamflow gage downstream of the Projects near Smartsville. Condition GEN4 would provide that YCWA would consult with PG&E to develop a plan to assure implementation of flow requirements as required in this license. Further, the condition would provide that if YCWA and PG&E cannot reach agreement on a coordinated operations plan, then YCWA would ask the Commission to issue an appropriate order. YCWA would file the coordinated operations plan with FERC for approval if agreement is reached.

The condition does not require consultation with agencies because it is the sole responsibility of YCWA to meet the flow requirements in its license.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

1.5 YCWA's Proposed Condition GEN5: Special-Status Species on NFS Lands

Before taking actions to construct new project features on National Forest System (NFS) lands that may affect Forest Service special-status species or their critical habitat on NFS lands, Licensee shall prepare and submit a biological evaluation (BE) for Forest Service approval. The BE shall evaluate the potential impact of the action on the species or its habitat. Forest Service may require mitigation measures for the protection of the affected species on NFS lands.

The BE shall:

- Include procedures to minimize or avoid adverse effects to special status species.
- Ensure project-related activities shall meet restrictions included in site management plans for special status species.
- Develop implementation and effectiveness monitoring of measures taken or employed to reduce effects to special status species.

Rationale Statement in Support of YCWA's Condition GEN5. If, during the term of the new license, YCWA proposes any new Project facilities on NFS lands that were not addressed in FERC's NEPA process, then such facilities may have the potential to adversely affect resources protected by the Forest Service. Condition GEN5 would assure that YCWA would, early in the planning process, consult with the Forest Service to develop and submit a Biological Evaluation (BE) to the Forest Service. The BE would assess potential effects to special-status species on NFS lands, and would include procedures to minimize adverse effects to special-status species.

This condition does not relieve YCWA of filing a license amendment with the Commission and obtaining all necessary approvals and permits for the new facility. In particular, Article 3 in FERC's Form L-5 provides that YCWA may not alter the Project without FERC's approval, but that:

> Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Condition GEN5 describes the early coordination between YCWA and the Forest Service when YCWA contemplates new Project-related facilities on NFS lands.

YCWA has not included a condition requiring early consultation with the USACE regarding new facilities on federal land administered by USACE. YCWA anticipates that YCWA and USACE will consult as needed as they have done in the past.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

1.6 YCWA's Proposed Condition GEN6: Review of Improvements on NFS Lands

If during the term of the License the Commission determines that the Project involves the use of any additional National Forest System (NFS) lands outside the current Project boundary, Licensee shall obtain a special use authorization from Forest Service for the occupancy and use of such additional NFS lands. Licensee shall obtain the executed authorization before beginning any ground-disturbing activities on NFS lands outside FERC boundary covered by the special use authorization, and shall file that authorization with the Commission if the activity is related to the Project. Licensee shall be responsible for the costs of collecting all information directly related to the evaluation of the effects of the proposed occupancy and use that Forest Service needs in order to make a decision concerning issuance of a special use authorization.

If, during the term of the License, Licensee proposes to perform any Project construction work, Licensee shall obtain a construction temporary special use authorization from Forest Service before beginning any ground-disturbing activities on NFS lands outside the FERC boundary. The special use authorization will include appropriate vegetation management and erosion control measures as needed to protect NFS lands and resources. Licensee shall be responsible for the costs of collecting all information directly related to the evaluation of the effects of the proposed construction that Forest Service needs in order to make a decision concerning issuance of a construction temporary special use authorization. Licensee may commence ground-disturbing activities authorized by the license and construction temporary special use authorization no sooner than 60 days following the date Licensee files Forest Service temporary special use authorization with the Commission, if the temporary special use authorization is related to Project activity, unless the Commission prescribes a different commencement schedule. In the event there is a conflict between any provisions of the license and Forest Service special use

authorization, the special use authorization shall prevail to the extent that Forest Service, in consultation with the Commission, deems necessary to protect and utilize NFS resources.

Rationale Statement in Support of YCWA's Condition GEN6. Like YCWA's proposed Condition GEN5, Condition GEN 6 addresses any new Project facilities on NFS lands that are outside the FERC Project Boundary and were not addressed in FERC's NEPA process. Specifically, Condition GEN6 would require that YCWA obtain from the Forest Service a special use permit (SUP) for the work, and file the SUP with FERC.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.2 Geology and Soils

2.2.1 YCWA's Proposed Condition GS1: Implement Erosion and Sediment Control Plan[3]

Licensee shall implement the Erosion and Sediment Control Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1A, Erosion and Sediment Control Plan).

Rationale Statement in Support of YCWA's Condition GS1. Over the term of the new license, YCWA may need to stabilize slopes. Condition GS1 provides a generic erosion and sediment control plan that describes the consultation YCWA will initiate and measures YCWA will employ to control sediment and erosion when stabilizing slopes affected by the Project. The plan would be implemented in coordination with other plans in the license (e.g., Integrated Vegetation Management Plan and Transportation System Management Plan) that address, in part, erosion and sediment control actions.

This condition does not relieve YCWA of consulting with appropriate agencies for specific work and developing work-specific sediment and erosion control plans, where required, with an agency with jurisdiction over the work. It is anticipated that Condition GS1 provides an adequate plan for most work, but not all work that involves erosion and sediment control. Further, this condition does not relieve YCWA from obtaining all necessary permits and approvals for the work.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

[3] This condition overlaps in part with Article 19 in FERC's Form-L5 Standard Articles.

2.2.2 YCWA's Proposed Condition GS2: Implement Our House and Log Cabin Diversion Dams Sediment Management Plan[4, 5]

Licensee shall implement the Our House and Log Cabin Diversion Dams Sediment Management Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition GS2. Historically, operations of both Log Cabin and Our House diversion dam have been impacted by sediment accumulations in the impoundments, especially following unusually large storms, which have occurred approximately once every 10 to 20 years.

Condition GS2 provides for a plan regarding how sediment would be passed through Log Cabin and Our House diversion dams in most years; and how material would be removed from, transported and disposed of after large storms, which may overwhelm regular sediment bypass operations in other years. The plan also describes the permits and approvals needed to implement the plan, and the consultation YCWA would undertake to revise the plan, if needed.

Given that large storms periodically deposit large amounts of sediment in the Log Cabin and Our House diversion dams impoundments, the plan rightly describes how this material will be removed, transported and disposed of on non-federal land.

Opening of a low level outlet in a diversion dam during high flow conditions is an effective measure to pass sediment that otherwise would accumulate behind the dam, to the river downstream of the dam. This supply of sediment aids in the proper ecological function of the river, and, under normal conditions, mitigates the potential for sediment to accumulate behind the dam and clog the outlet valves. Condition GEN2 provides that each year, at the appropriate time and when hydraulic conditions are favorable, YCWA would open the low level valves in Our House Diversion Dam and Log Cabin Diversion Dam. The event would occur when a high flow is present and expected to continue for some period after, to continue moving and redistributing sediment downstream of the dam after the pass-through event. The event is scheduled for winter so that the high spring flows will continue to mobilize and redistribute moderate size sediment below the dam. Based on historic hydrology, YCWA expects that this measure would be implemented, on average, every other year at Our House Diversion Dam and once every 3 to 4 years at Log Cabin Diversion Dam.

Opening the low level outlets is expected to be beneficial to aquatic resources in the streams below the dams. Fish populations in Project reaches were generally determined by studies performed in the FERC relicensing process to be healthy and persistent transitional fisheries with age class distributions indicative of natural reproduction. However, several studies suggest that availability of suitably sized spawning gravels is limited. According to YCWA's Technical

[4] This condition overlaps in part with Articles 19 and 21 in FERC's Form-L5 Standard Articles.
[5] This plan is very similar to the August 2014 Log Cabin and Our House Diversion Dams Sediment Management Plan, which was approved by FERC on September 23, 2014, for the portion of the plan regarding mechanical removal of sediment and on March 4, 2016, for the pass through of sediment portion of the plan.

Memorandum 3-10, *Instream Flow Upstream of Englebright Reservoir,* rainbow trout spawning WUA was quite limited in most reaches due to patchy and limited distribution of suitable spawning substrate. Where suitable substrate was recorded, the preferred combination of depths and velocities often were not present. Passage of sediments will likely improve habitat by increasing the amount of substrate within the wetted channel available for rainbow trout spawning.

In addition, opening the low level outlets is expected to be beneficial to FYLF. Currently, moderate sized sediments (i.e., gravel and small cobbles) and shallow margin habitat are relatively scarce below Our House Diversion Dam, which may limit conditions for FYLF breeding and rearing. Passage of sediments will likely improve habitat by increasing the amount of substrate available for egg-attachment and shallow margins for tadpoles.

Condition GS2 is designed to pass sediment though Our House and Log Cabin diversion dams and for the sediment then to be redistributed downstream by high flows occurring at the end of the sediment pass-though event and during the following spring. The proposed condition could result in fine material being deposited downstream, although this is unlikely. Therefore, YCWA has included in its proposed Condition AR7 periodic monitoring of channel morphology, riparian sediment and other ecological conditions downstream of Log Cabin and Our House Diversion dams. Further, Condition AR7 requires YCWA to provide a monitoring report to interested agencies for review and comment prior to filing the report with the Commission.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition).

2.2.3 YCWA's Proposed Condition GS3: Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan

Licensee shall implement the Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1E, NBB Woody Material Plan).

Rationale Statement in Support of YCWA's Condition GS3. Some agency representatives have opined that allowing large woody material (LWM) to pass Our House Diversion Dam and Log Cabin Diversion Dam into downstream reaches would improve proper ecological function of the river. Historically, large woody material overtops the diversion dams, with a small portion accumulating on the diversion tunnel's trash racks. Large material on the trash racks has been removed and disposed of, while smaller material passes through the tunnels. Condition GEN3 provides that YCWA would pass LWM downstream of diversion dams, which would require YCWA to place the materials that otherwise would be disposed of in locations that would allow it to pass over the dams. This condition acknowledges that implementation of the condition would not make YCWA liable for damage to downstream bridges or culverts due to large wood. This condition, if included in the new license, would not require YCWA to obtain any permits or approvals to implement the condition.

In addition, as requested by the Forest Service, the Condition GS3 describes the methods and procedures YCWA would follow for the annual collection, piling and disposal of floating material on New Bullards Bar Reservoir. The plan specifies how floating material would be collected and where it would be piled, including the conditions of the piles. Two primary sites would be used and a third site is shown as a back-up, if needed. The plan includes YCWA's access to the sites.[6]

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.3 Water Resources

2.3.1 YCWA's Proposed Condition WR1: Implement Hazardous Materials Management Plan

Licensee shall implement the Hazardous Materials Management Plan that that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition WR1. Over the term of the new license, YCWA may need to perform work that involves use of hazardous materials. Condition WR1 provides a description of hazardous material that would be used at the Project by location, and includes a generic hazardous materials management plan that describes how YCWA would manage hazardous materials in the future.

This condition does not relieve YCWA of the requirements to consult with appropriate agencies for specific work and to develop work-specific hazardous materials management plans, where required by an agency with jurisdiction over the work. It is anticipated that Condition WR1 provides an adequate plan for most work, but not all work that involves use or management of hazardous materials. Further, this condition does not relieve YCWA from having to obtain all necessary permits and approvals for the work.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

[6] In general, the methods and procedures YCWA would follow under the plan are similar to the methods and procedures YCWA follows for the collection and removal of LWM floating on New Bullards Bar Reservoir.

2.3.2 YCWA's Proposed Condition WR2: Determine Water Year Types for Conditions Pertaining to Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam

Beginning within the first 90 days of the new license term, Licensee shall in each year in each of the months of February, March, April, May and October determine the applicable water year type described in Table 1 of this condition. Licensee shall use this determination to implement articles and conditions of the license that are dependent on water year type and that concern flows in the Middle Yuba River downstream of Our House Diversion Dam, in Oregon Creek downstream of Log Cabin Diversion Dam and in the North Yuba River downstream of New Bullards Bar Dam. Water year types for these articles and conditions shall be defined as listed in Table 1 of this condition.

Table 1. Water Year types for the Yuba River Development Project in the Middle Yuba River downstream of Our House Diversion Dam, in Oregon Creek downstream of Log Cabin Diversion Dam and in the North Yuba River downstream of New Bullards Bar Dam.

Water Year Type	DWR Forecast of Total Unimpaired Runoff in the Yuba River at Smartsville in Thousand Acre-Feet or DWR Full Natural Flow Near Smartsville for the Water Year in Thousand Acre-Feet[1]
Wet	Greater than 3,240
Above Normal	2,191 to 3,240
Below Normal	1,461 to 2,190
Dry	901 to 1,460
Critically Dry	Equal to or Less than 900

[1] DWR rounds the Bulletin 120 forecast, which this condition relies on to establish water year types in February, March, April and May, to the nearest 1,000 acre-feet. DWR rounds its Full Natural Flow calculation, which this condition relies on to establish water year types in October, to the nearest acre-foot, and Licensee will round DWR's Full Natural Flow to the nearest 1,000 acre-feet.

In each of the months of February, March, April and May, the water year type shall be based on California Department of Water Resources (DWR) water year forecast of unimpaired runoff in the Yuba River at Smartsville as set forth in DWR's Bulletin 120 entitled "Water Year Conditions in California." DWR's forecast published in February, March and April shall apply from the 16th day of that month through the 15th day of the next month. From May 16 through October 15, the water year type shall be based on DWR's forecast published in May.

From October 16 through February 15 of the following year, the water year type shall be based on the sum of DWR's monthly (i.e., not daily) full natural flow for the full water year for the Yuba River near Smartsville, as made available by DWR on the California Data Exchange Center (CDEC) in the folder named "FNF Sum." Currently these data are available at: http://cdec.water.ca.gov/cgi-progs/stages/FNFSUM. If DWR does not make the full natural flow for the full water year available until after October 15 but prior to or on October 31, from 3 days after the date the full natural flow is made available until February 15 of the following year, the water year type shall be based on the sum of DWR's monthly full natural flow for the full water year as made available. If DWR does not make available the final full natural flow by October 31, the water year type from November 1 through February 15 of the following year shall be based on DWR's May Bulletin 120.

Rationale Statement in Support of YCWA's Condition WR2. This condition would provide five WY classifications pertaining to Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam. The WY classifications would use an index of DWR's forecasts for annual unimpaired flow volume at the Yuba River at Smartsville.[7] [8] For a given year, the WY classification would be adjusted five times - in February, March, April, May and October. Each of the WY classifications is described below, and a distribution of WY classifications over the 41-year relicensing Period of Record (WY 1970 through WY 2010) is shown in Figure 2-1.

- Critically Dry – This classification of WY has extremely low streamflows in all seasons as compared to median conditions, due to a negligible snowpack and a lack of spring rain events to augment the flow. This leads to a dry watershed throughout the spring and summer months.
- Dry – This WY classification is typified by relatively low streamflows in the late winter and early spring due to a limited snowpack, and with no spring rain events to augment the flow. This leads to a dry watershed throughout the late spring and summer months.
- Below Normal – The Below Normal WY classification has a similar hydrograph shape to the Dry WY in the late winter and early spring due to a similar snowmelt, but these years typically have higher volumes of spring and early summer runoff that help to recharge the watershed during those months.
- Above Normal – This WY classification includes a relatively large snowmelt that starts in early spring and lasts through early summer, along with several storm events that cause spikes in the hydrograph throughout the spring. A larger than normal amount of flow can still be seen in the watershed by the end of the summer. In contrast to the Wet WY classification, there are no severe events that appear to have caused significant flooding during an Above Normal WY.
- Wet – The Wet WY classification includes similar snowmelt characteristics to the Above Normal WY type, but is distinct in that it includes either several large spring storms or an especially large amount of snowmelt runoff. These runoff events often dwarf the remainder of the hydrograph and can act as geomorphic flushing flows. The late summer and fall portions of the Wet WY hydrograph are similar to an Above Normal WY.

[7] These water year types are referred to as the "Smartsville Index" in Exhibit E.

[8] The WY index proposed in YCWA's Condition WR2 is identical to the WY index that FERC staff, in its December 2014 FEIS, recommended for inclusion in a new license for Nevada Irrigation District's Yuba-Bear Hydroelectric Project (FERC Project No. 2266), which includes facilities on the Middle Yuba River upstream of the Project's Our House Diversion Dam.

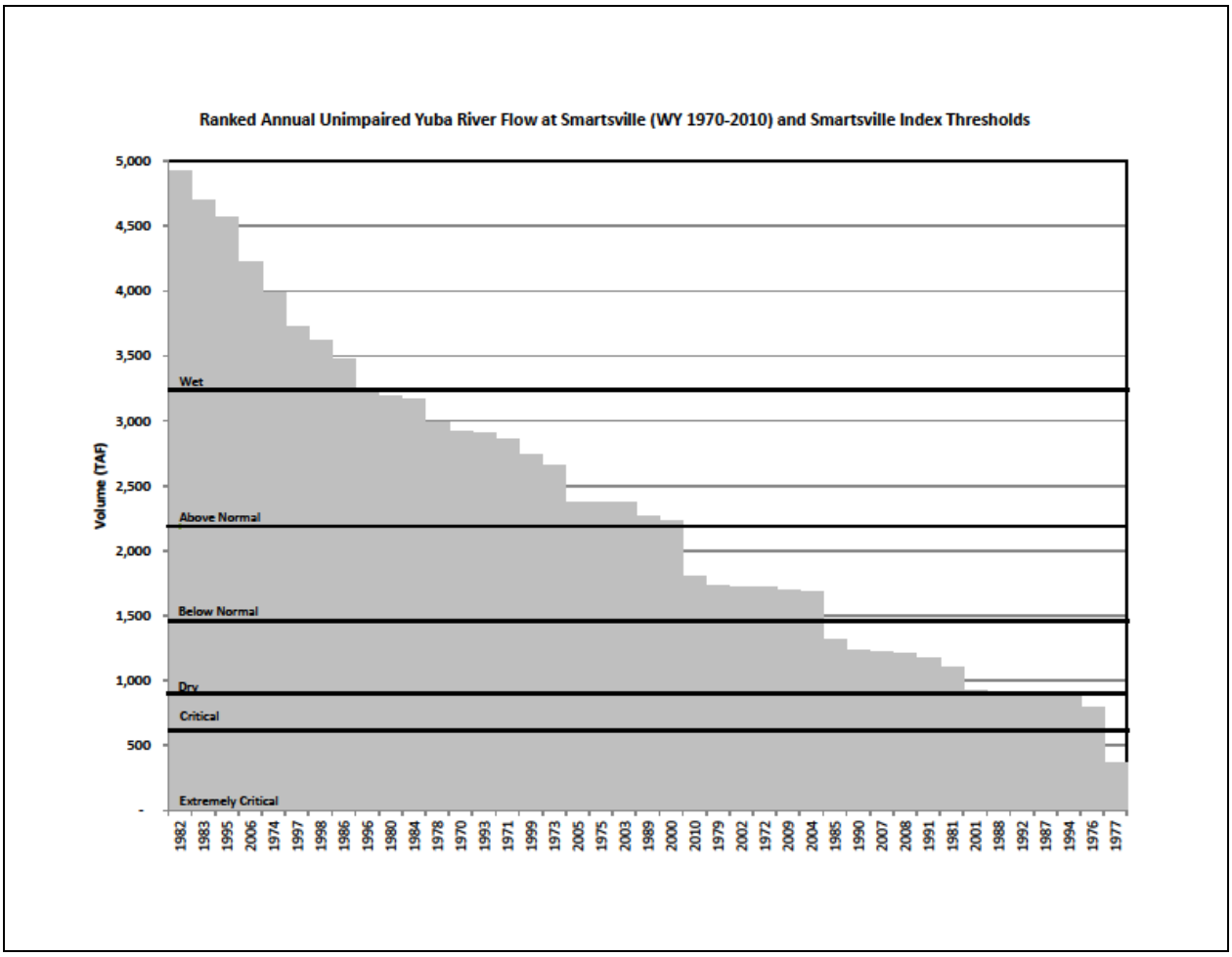

Figure 2-1. Distribution of WY classifications from WY 1970 through WY 2010 by WY type.

Table 2-1 provides a comparison between this WY type classification and the North Yuba Index, which is described in Condition WR3. Significantly, the index values are not directly comparable since each uses different components to calculate the index.

Table 2-1. Comparison between the WY types in YCWA's proposed Condition WR2 and the WY types in YCWA's proposed Condition WR3 over the 41-year long relicensing period of Record (WY 1970 through WY 2010) based on DWR's April 1 Bulletin 120.

YCWA's Proposed Condition WR2 for Our House, Log Cabin and New Bullards Bar Dams (aka, the Smartsville index)			YCWA's Proposed Condition WR3 for Narrows 2 Powerhouse and Full Bypass (aka, the North Yuba Index)		
Water Year Classification	**Index Value (Units = ac-ft)**	**Count (Number of WYs)**	**Water Year Classification**	**Index Value (No Units)**	**Count (Number of WYs)[1]**
Wet	≥3,240	9 (1974, 1980, 1982, 1983, 1986, 1995, 1997, 1998, 2006)	Schedule 1	≥1,400	20 (1970, 1971, 1973, 1974, 1975, 1978, 1980, 1982, 1983, 1984, 1986, 1989, 1993, 1995, 1996, 1997, 1998, 1999, 2000, 2006)
Above Normal	≥2,191	11 (1970, 1971, 1973, 1975, 1978, 1984, 1989, 1993, 1996, 1999, 2000)	Schedule 2	≥1,040	11 (1972, 1979, 1981, 1985, 2002, 2003, 2004, 2005, 2007, 2009, 2010)
Below Normal	≥1,461	9 (1972, 1979, 1985, 2002, 2003, 2004, 2005, 2009, 2010)	Schedule 3	≥920	5 (1990, 1991, 1994, 2008)
Dry	≥901	9 (1981, 1987, 1990, 1991, 1992, 1994, 2001, 2007, 2008)	Schedule 4	≥820	2 (1987, 2001)
Critically Dry	<901	3 (1976, 1977, 1988)	Schedule 5	≥693	1 (1976)
--	--	--	Schedule 6	≥500	1 (1988)
--	--	--	Conference Year	<500	1 (1977)
5 Classifications	**--**	**41 WYs**	**7 Classifications**	**--**	**41 WYs**

[1] Based on Operations Model Proposed Project Scenario Run. Changes to the Proposed Project Scenario Run may result in changes to New Bullards Bar Reservoir storage and, therefore, changes to the distribution of WYs shown in the table for Condition WR3.

YCWA's Proposed Project includes two conditions defining distinct WY-type classifications, one for reaches above Englebright Reservoir (WR2), and one for reaches below the Narrows 2 Powerhouse (WR3). Due to the different management approaches used for the two reaches, two WY classifications are needed.

In the Middle Yuba and North Yuba rivers, and Oregon Creek, operations for minimum flows does not necessitate a consideration for reservoir storage - the nature of operations of Our House Diversion Dam and the Log Cabin Diversion Dam is such that they are purely driven by inflow, there is no storage.

In the North Yuba River below New Bullards Bar Dam, overall basin wetness and inflows, as indicated by the Smartsville Index, is not a limiting factor for flow; the relative location of the intake to New Bullards Bar Dam's low level outlet and the Minimum Flow Powerhouse provides a large water supply for release to the North Yuba River. However, minimum flows on the North Yuba River below New Bullards Bar Dam are designed using the Smartsville Index as a framework to provide flows for rainbow trout habitat on the Yuba River above the New Colgate Powerhouse, and as further described under the rationale statement for Condition AR10.

Therefore, the Smartsville Index is an appropriate index to determine minimum flows on the North Yuba River below New Bullards Bar Dam.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.3.3 YCWA's Proposed Condition WR3: Determine Water Year Types for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass[9]

Beginning within the first 90 days of the new license term, Licensee shall, using the California Department of Water Resources (DWR)-published Bulletin 120, each year in each of the months of February, March, April and May, and then thereafter whenever DWR issues an update to the Bulletin 120, determine the applicable water year type as described in Table 1 of this condition. When the current water year type is a Schedule 5, 6 or Conference Year, the applicable water year type will not be re-evaluated in February. Licensee shall use this determination to implement articles and conditions of the license that are dependent on water year type and that concern flows in the Yuba River downstream of the combined releases of Narrows 2 Powerhouse and Narrows 2 Full Bypass. Water year types for these articles and conditions shall be based on the North Yuba Index as defined in Table 1 of this condition.

Table 1. North Yuba Index.

Water Year Type	Thousands of Acre-Feet
Schedule 1	Equal to or greater than 1,400
Schedule 2	Equal to or greater than 1,040 and less than 1,400
Schedule 3	Equal to or greater than 920 and less than 1,040
Schedule 4	Equal to or greater than 820 and less than 920
Schedule 5	Equal to or greater than 693 and less than 820
Schedule 6	Equal to or greater than 500 and less than 693
Conference Year	Less than 500

The North Yuba Index shall be defined as follows:

$$\text{North Yuba Index} = Sa^{NBB} + I^{NBB}$$

where Sa^{NBB} is the actual recorded amount of water in storage in New Bullards Bar Reservoir on September 30 of the previous water year as reported for USGS gage 11413515 minus 234,000 acre-feet; and I^{NBB} is calculated as follows:

$$I^{NBB} = \text{Total Actual Inflow to New Bullards Bar Reservoir from October 1 to the end of Month}^{i-1}$$

[9] The schedules in this proposed condition are the same as the schedules described in Exhibits 2, 4 and 5 of the Lower Yuba River Fisheries Agreement, with the exception of the exclusion in the condition of the February index evaluation when the current water year type is a Schedule 5, 6 or Conference Year. The instream flow requirements in the SWRCB's Corrected Order WR 2008-0014 are based on the flow schedules in the Lower Yuba River Fisheries Agreement (See SWRCB Corrected Order WR 2008-0014, p. 59, term 5).

+ Forecasted Inflow from the Beginning of Month^{i} to September 30
(Month^{i-1} is the previous month and Month^{i} is the current month)

where Total Actual Inflow to New Bullards Bar Reservoir from October 1 to the end of Month^{i-1} is the calculated inflow in thousands of acre-feet based on a monthly summation of inflow as follows:

Total Actual Inflow to New Bullards Bar Reservoir from October 1 to the end of Month^{i-1}
= Monthly change in stored water + Monthly outflow

and where the Forecasted Inflow from the Beginning of Month^{i} to September 30 is calculated as follows:

Forecasted Inflow to NBB^{i} = February NBB Inflow
+ March Inflow + April-July Inflow + August-September Inflow

Forecasted inflow to NBB shall be determined for each month using statistically-derived linear coefficients shown in Table 2 of this condition, applied to the measured inflow to New Bullards Bar Reservoir and the DWR's Bulletin 120 for February, March, April, and May, and subsequent updates of forecasts of unimpaired flow of the North Yuba River at Goodyears Bar (USGS Gage 11413000) and at the Yuba River at Smartsville (USGS Gage 11418000). DWR's forecast published in February, March, and April shall apply from the 16th day of that month to the 15th day of the next month. After May 16, the index will be recalculated for each subsequent Bulletin 120 update, and the index shall apply until two days after the next update. The index determined by the final Bulletin 120 update for the water year shall remain in effect until February 14 of the following water year.

Table 2. Coefficients for the calculation of Forecasted Inflow from the beginning of "Month^{i}" to September 30.

Forecast Month	Forecasted For	Constant (C) (ac-ft)	Total Actual Inflow to New Bullards Bar Reservoir[3] (C1) (no units)	Bulletin 120[2, 4] Forecasted Smartsville (C2) (no units)	Bulletin 120[2] Forecasted Goodyear's Bar (C3) (no units)
February	February	-2,146	0.01424	0.52533	--
	March	-3,221	0.02458	0.54787	--
	April-July	-30,416	0.01413	0.62473	-0.24081
	August-September	--	0.01593	0.64037	--
March	March	-23,495	0.00596	0.55386	--
	April-July	-31,134	0.01237	0.62162	-0.23266
	August-September	--	0.01473	0.59396	--
April	April-July	-30,665	0.00547	0.61332	-0.19623
	August-September	--	0.01409	0.53241	--
May[1, 5]	April-July	-31,652	0.01033	0.61645	-0.22353
	August-September	--	0.01298	0.50071	--

[1] For all subsequent forecast updates, the May coefficients shall be used, with the forecasted Goodyears Bar runoff equaling 0.273 times the current forecasted Yuba River unimpaired flow at Smartsville.

[2] The Bulletin 120 forecasted flow for Smartsville and Goodyears Bar shall use the 50-percent exceedance forecasted flow.

[3] Total actual inflow means inflow to date from October 1 of the previous year

[4] "Forecasted Smartsville" is the DWR forecast for "Yuba River at Smartsville Plus Deer Creek"

[5] The May calculation of Forecasted NBB Inflow and subsequent updated calculations shall be reduced by the actual NBB inflow between April 1 and the calculation date.

Formula terms are only applicable as shown in Table 2 (e.g., the March forecast does not include a term for forecasted February NBB Inflow). The following formula shall be used to calculate the terms of the formula for Forecasted Inflow to NBB^{i} using the corresponding coefficients from Table 2):

- February NBB Inflow = C + C1 x Total Actual Inflow to NBB + C2 x Forecasted $Smartville^{(February)}$
- March NBB Inflow = C + C1 x Total Actual Inflow to NBB + C2 x Forecasted $Smartville^{(March)}$
- April – July Inflow = C + C1 x Total Actual Inflow to NBB + C2 x Forecasted $Smartville^{(April - July)}$ + C3 x Forecasted $Goodyears\ Bar^{(April - July)}$
- August - September Inflow = C1 x Total Actual Inflow to NBB + C2 x Forecasted $Smartville^{(August - September)}$

Terms are calculated in ac-ft and the result is converted to thousands of ac-ft for use in the calculation of the Forecasted Total Inflow to New Bullards Bar (I^{NBB} (TAF)).

Rationale Statement in Support of YCWA's Condition WR3. The North Yuba Index was developed to be used to determine which of the various Yuba Accord instream flow schedules would be applicable at any particular time, and appropriate to use considering the availability of water in the current year and providing some basic water supply for the following year. These schedules specify the required minimum instream flows in the Yuba River downstream of the Narrows 2 Powerhouse. Implementation of the Yuba Accord flow schedules often requires large quantities of water to be released from storage in New Bullards Bar Reservoir. The nature of late summer and early fall water temperatures and the flow-related habitat in the Yuba River downstream of the Narrows 2 Powerhouse is such that storage within New Bullards Bar Reservoir is needed to supplement natural flows to provide substantially improved habitat conditions. The relative volume of water required to be released in the drier years can be more than 100 percent of the total of runoff and diversions into New Bullards Bar Reservoir, and averages 77 percent of these inflows into New Bullards Bar Reservoir during the driest one third of years. Therefore, to meet these high demands on reservoir operations, an accurate measure of the water available to meet instream flows is needed. The North Yuba River Index uses the sum of the annual inflow into the reservoir plus active storage in the reservoir. This sum is a measure of the water available to meet instream flows. Other potential indices such as amounts of unimpaired flows do not reflect the effect of water diversions and storage operations in the watershed. In the development of the Yuba Accord, many alternative indices were tested, and none of the other alternatives were able to provide the high occurrence of high volume instream flow schedules and maintain water supply reliability, as the North Yuba Index does.

The threshold values used in the North Yuba Index were set to assure more frequent occurrences of the higher streamflow schedules. As shown in Table 2-2, above, use of the North Yuba Index, combining New Bullards Bar Reservoir storage and inflow, provides for more years to be grouped into the wetter classifications (Schedules 1 and 2) as compared to the number of years similarly classified under the Smartsville Index (Wet WYs). The need for achieving the higher

streamflow schedules in more years was established during the development of the Yuba Accord by biologists examining the primary stressors for listed salmonids. The biologists tasked with developing the Yuba Accord flows determined that both flows and temperatures were important during various life stages for salmonids on the lower Yuba River and that the resulting flows achieved with the two highest flow schedules, Schedules 1 and 2, would provide a range of conditions thought to be optimal for the species of concern while preserving the ability to meet local water supply demands. The flow schedules developed for the Accord provided the pattern and quantity of flows to maintain fish in good condition, and the North Yuba Index ensures that the optimal range of flows (as identified by the biologists) will be achieved in most years.

This proposed condition has one change from the determination of water year type in the Yuba Accord Fisheries Agreement. This one change is to forego an evaluation of the North Yuba Index in February when the current water year type is a Schedule 5, 6 or Conference Year. The purpose of this change is to avoid the potential for a one month flow change to a higher flow schedule in drought conditions and then a subsequent flow reduction after the March evaluation is done due to the inaccuracy of the February runoff forecast. The index is determined from DWR's Bulletin 120 forecast of unimpaired flow. That forecast uses an assumption of average precipitation for future conditions. February is still early in the wet season and, in drought conditions, an assumption of average precipitation for the future condition can result a change to higher flow schedule year type that was meant for wetter conditions. Excluding the February index evaluation in the very dry year types of Schedules 5, 6 and Conference Years allows for more certainty about the hydrologic conditions for the current year before making a change to the water year type, and allows for more consistent flows and better water conservation in drier water years.

2.3.4 YCWA's Proposed Condition WR4: Implement Streamflow and Reservoir Level Compliance Monitoring Plan[10]

Licensee shall implement the Streamflow and Reservoir Level Compliance Monitoring Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition WR4. Compliance with YCWA's proposed streamflows and reservoir levels requires accurate and reliable gaging. Streamflow and reservoir level gages are in place and functioning to document compliance with current license conditions. The plan provided in Condition WR4 includes a description of the gages, including equipment, location, maintenance, review of data, and publication of data that YCWA would use to document compliance. In addition, the plan describes how YCWA would maintain gages to document compliance with the minimum streamflows proposed by YCWA, which in many cases are higher than streamflow requirements in the existing license. The plan also addresses, in part, Article 8 in FERC's Form L-5 Standard Articles, which states in part:

[10] This condition overlaps in part with Article 8 in FERC's Form-L5 Standard Articles.

> The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works.

This plan only addresses streamflow and reservoir gages necessary to monitor compliance with YCWA's proposed streamflows and reservoir levels (see YCWA's Proposed Conditions AR1, AR3 and AR9 regarding streamflow and WR6 regarding reservoir levels). Streamflow gages are used in YCWA's proposed Conditions GS2, AR2 and RR2, but the gages used in those conditions are the compliance gages, which are adequate for the purposes described in Conditions GS2, AR2 and RR2. No other YCWA-proposed conditions rely on streamflow or reservoir level gage information.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition (Table 2-1).

2.3.5 YCWA's Proposed Condition WR5: Maintain New Bullards Bar Reservoir Minimum Pool[11]

Licensee shall make a good faith effort to maintain a minimum pool in New Bullards Bar Reservoir at elevation 1,730 feet, except for drawdowns below this elevation that are necessary to meet the minimum streamflow requirements in this license.

Rationale Statement in Support of YCWA's Condition WR5. The primary purpose of the minimum pool is to ensure sufficient submergence of the New Colgate Powerhouse intake lower intake gate to ensure cold water releases to maintain suitable water temperatures in the Yuba River downstream of Narrows 2 Powerhouse for salmon spawning in the fall. The invert elevation of the lower intake gate used for water withdrawals from New Bullards Bar Reservoir through the penstock to the New Colgate Powerhouse is at 1,620 ft. The opening in the dam is 23 feet high, which results in a crown elevation of 1,643 ft for the intake. With a minimum pool elevation of 1,730 ft, the depth of water to the lower intake gate crown is 87 ft., which provides a measure of isolation from the warmest epilimnion waters in the reservoir.

The temperatures of water withdrawn from the reservoir typically range from 9°C to 11°C. Releases from the New Colgate Powerhouse of water withdrawn from New Bullards Bar Reservoir at these temperatures result in suitable water temperatures in the Yuba River for spawning of salmonids. A very large percentage of the water stored in New Bullards Bar Reservoir is in the hypolimnion, the deeper cold waters.

[11] The proposed minimum New Bullards Bar Reservoir minimum elevation is the same as in Article 34 in the existing license.

Modeling of the No Action Alternative shows that, under a repeat of WY 1977 hydrological conditions, New Bullards Bar Reservoir would be drawn down to the minimum pool elevation by mid-October. When that occurs, the modeled temperature profile results in a modeled water temperature range across the tunnel opening from about 11°C at the invert to 13°C at the gate crown. At this elevation range, the water temperature increases about 0.4°C for every 5 ft increase in water column elevation. At 20 ft above the tunnel inlet crown (1,663 ft elevation) the water temperature rise in the water column increases to approximately 0.8°C per 5 ft of elevation increase. This change in rate of water temperature rise from the tunnel intake elevation to just above the tunnel intake signifies a transition to the steep part of the thermocline temperature profile.

This examination of the reservoir temperature profile when the reservoir is drawn down to the minimum pool shows that reduction of storage below the minimum pool at this critical time in the early fall could result in a substantial increase in release temperatures with relatively small reductions in storage in the reservoir. Figure 2-2 is a graph of the modeled water temperature versus depth in New Bullards Bar Reservoir for several days from September 2, 1977 to January 7, 1978 for the No Action Alternative.

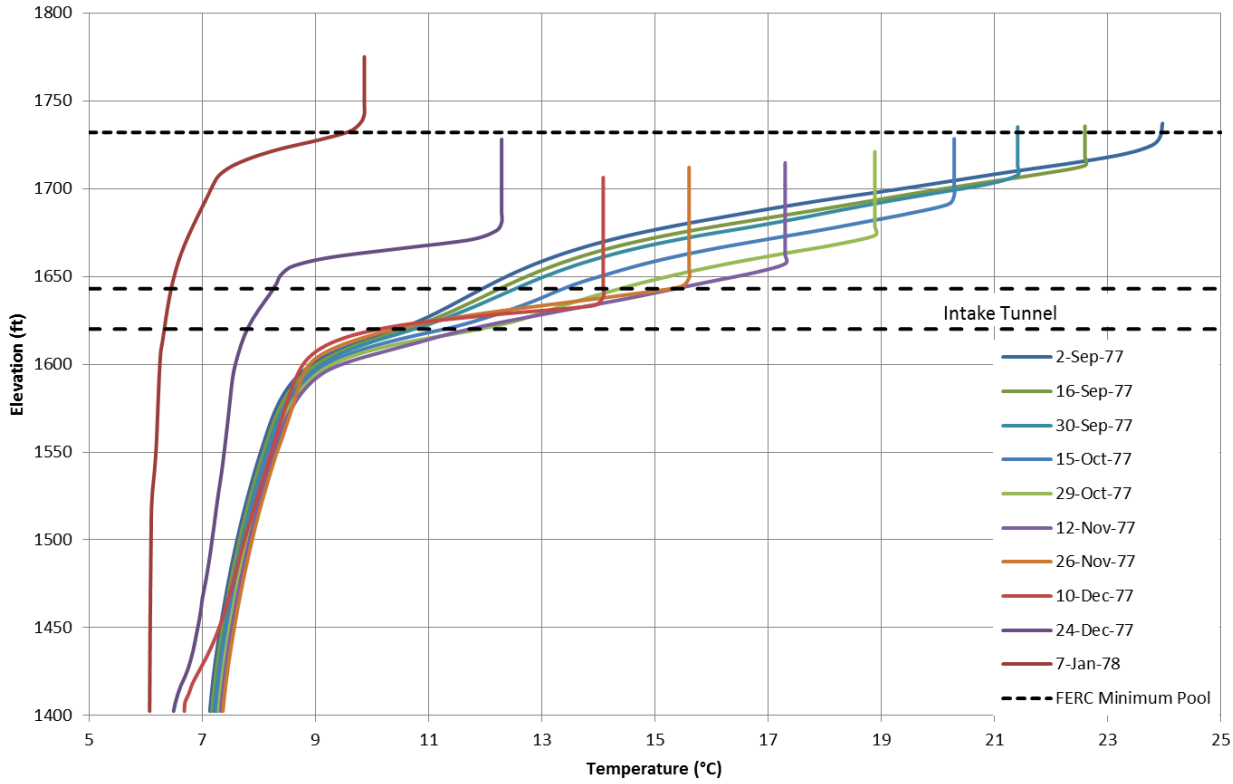

Figure 2-2. Modeled water temperature versus depth in New Bullards Bar Reservoir for several days from September 2, 1977 to January 7, 1978 for the No Action Alternative.

2.3.6 YCWA's Proposed Condition WR6: Operate New Bullards Bar Reservoir for Flood Control[12]

Licensee shall operate Project reservoirs for flood control in accordance with rules prescribed by the Secretary of the Army.

Rationale Statement in Support of YCWA's Condition WR6. The need for flood control on the Yuba River was the primary reason for the creation of YCWA and the construction of New Bullards Bar Dam. Historically, the Marysville-Yuba City area has experienced the ravages of a major flood about once every 10 years. The discharge of debris from placer mines in Nevada County compounded the flooding problems because it raised the Yuba and Feather River beds by many feet. Levees began providing flood control protection for Yuba City and Marysville as early as 1875 and are still heavily relied on for flood protection. The USACE contributed $12 million toward construction of New Bullards Bar Dam, under the condition that a maximum of 170,000 ac-ft of flood reservation space be maintained in the reservoir during the peak flooding season.

New Bullards Bar Dam and Reservoir are used to control about half of the flood flows of the Yuba River watershed, with the remainder of the runoff being largely uncontrolled, as there is no dedicated flood storage on the South Yuba River. The Project provides essential flood management by reducing the peak flood flow and reduces the duration of high water levels on levees on the Yuba River and the Feather River in the Yuba City/Marysville area downstream to the Sacramento River.

During the 1997 flood, the major levee break was on the Feather River on the Yuba County side in the Arboga area, and this break resulted in the flooding of the local residences and the surrounding rural and agricultural areas. During this flood, 1,000 ac of residential land, 15,500 ac of agricultural land and 1,700 ac of industrial lands were flooded, 322 homes were destroyed and 407 homes suffered major damage. The economic cost of this flood was estimated at $300 million. Only 11 years before, in 1986 a massive flood in Linda and Olivehurst, which was the result of a levee break on the Yuba River, flooded more than 3,000 homes and destroyed 895 homes.

[12] The proposed flood control condition is similar to Article 46 in the existing license.

Under the Without-Project condition, the estimated peak flow for the 1 in 100 year flood is 260,000 cfs on the Yuba River at Marysville, and would result in approaching the crest of the levee in this area. Under the With-Project condition, the peak flow for this flood event would be 153,000 cfs and be well below the levee crest. Under the Without-Project condition, floods greater than the 1-in-100 year unregulated condition would overtop the levee, while the Project reduces the flood peak to below the levee top for floods even larger than the 1 in 200 year event.

The reduction in flood flows by the Project primarily protects the areas of Marysville, Yuba City and reclamation District 784. The value of structures and contents in the Yuba City and Reclamation District 784, which includes the communities of Linda and Olivehurst, total more than $8.5 billion and the combined population of this area is about 110,000.

2.3.7 YCWA's Proposed Condition WR7: Implement Water Temperature Monitoring Plan[13]

Licensee shall implement the Water Temperature Monitoring Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1I, Water Temperature Monitoring Plan).

Rationale Statement in Support of YCWA's Condition WR7. Water temperature is one of the more important ecological parameters in the Project Area. Condition WR7 would require YCWA to install and maintain continuous water temperature recorders at 12 stream locations extending from just downstream of Our House Diversion Dam on the Middle Yuba River to just below the Yuba River confluence on the Feather River. The condition would also require that YCWA collect water temperature profiles in New Bullards Bar Reservoir and Englebright Reservoir once each month from April through September, and monitor water temperature in the margins of the Yuba River near Daguerre Point Dam. YCWA would file a report with FERC annually with the results of the previous year's water temperature monitoring. Implementation of this condition would result in a long-term record of water temperature conditions in the Project Area that would be useful as general information, and if needed to help explain any ecological perturbations observed during the license term.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition. Further, SWRCB staff was instrumental in preparing the Water Temperature Monitoring Plan.

2.3.8 YCWA's Proposed Condition WR8: Implement Water Quality Monitoring Plan

Licensee shall implement the Water Quality Monitoring Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1J, Water Quality Monitoring Plan).

[13] This proposed condition overlaps with the term that was added to YCWA's water-right permits by the SWRCB's Revised Decision 1644, adopted on July 16, 2003. (See RD-1644, p. 178, term 2(d).)

Rationale Statement in Support of YCWA's Condition WR8. While few if any water quality issues were identified during relicensing, implementation of the new license has the remote potential to adversely affect water quality. To assess this possibility, Condition WR8 would require YCWA to conduct *in situ* water quality monitoring for parameters such as dissolved oxygen, pH, turbidity and conductivity at 15 stream locations in each of the first 3 years of the new license; and in depth water quality sampling at each of the 15 locations in the third year of the new license. In addition, water quality sampling would occur in New Bullards Bar Reservoir and Englebright Reservoir. This intense, early in the license sampling would identify any unexpected water quality issues under the new license.

In addition, Condition WR8 would include in-depth water quality sampling periodically in the new license to check-in on water quality conditions.

Importantly, Condition WR8 also would include periodic bacteriological sampling in New Bullards Bar Reservoir to assure safe conditions for water contact recreation in these areas.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition. Further, SWRCB staff was instrumental in preparing the Water Temperature Monitoring Plan.

2.3.9 YCWA's Proposed Condition WR9: Implement Drought Management Plan

Licensee shall implement the Drought Management Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition WR9. The recent extended and severe California drought intensely highlighted the need for a mechanism to address drought conditions in FERC licenses. YCWA's proposed Condition WR9 would provide a map for how YCWA might address future droughts. The condition includes a discussion of conditions under which YCWA might request relief from certain license conditions to mitigate the adverse effects of future droughts, and which conditions in the new license might be affected. In addition, the condition describes a process under which drought relief could be swiftly implemented if needed and if all agencies agreed with YCWA's proposal.

2.4 Aquatic Resources

2.4.1 YCWA's Proposed Condition AR1: Maintain Minimum Streamflows below Our House Diversion Dam and Log Cabin Diversion Dam

Licensee shall meet the minimum streamflow requirements for the Middle Yuba River downstream of Our House Diversion Dam and for Oregon Creek downstream of Log Cabin Diversion Dam that are shown in Table 1 of this condition. Licensee shall record streamflow at

all of the gages listed in this table, as required by USGS (Article 8 of FERC's Form L-5, Standard Articles).

Minimum streamflows shall be measured in cubic feet per second (cfs) once every 15 minutes at the compliance gage, and these 15-minute measurements averaged into hourly measurements that will be recorded and reported to USGS and FERC.

Minimum streamflows may be temporarily modified as follows:

- For short periods and upon consultation with and approval by the Forest Service, USFWS, Cal Fish and Wildlife and SWRCB. Licensee shall provide notification to the Commission prior to implementing such modifications.
- Due to an emergency. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, California ISO or other regulatory agency staff, including actions to prevent the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of transmission lines or Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements, and shall notify the Forest Service, USFWS, Cal Fish and Wildlife and the SWRCB within 48 hours of the start of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.
- For one 4-hour period each calendar year at each dam to perform required testing of the low-level outlet (i.e., sluiceway) gates. Testing shall be performed when the dam is spilling and include rapidly fully opening and then fully closing the gate. To the extent practicable, Licensee shall coordinate the low-level outlet gate testing with other openings of the low-level outlet gate that may occur for Licensee's compliance with other conditions of the license. Licensee may forego testing of the valves in years when hydraulic conditions (e.g., sufficient spills) are not present.

Except as otherwise provided, Licensee shall implement the minimum streamflows shown in Table 1 of this condition beginning in the first 90 days of the new license term unless a facility modification or construction is necessary. Changes between minimum streamflow values may be made with one adjustment to the controlling valve (i.e., ramping from one minimum flow to another minimum flow is not required).

Where a facility must be modified or constructed to allow compliance with required minimum streamflows, including flow measurement facilities, then, except as otherwise provided, Licensee shall submit applications for permits to modify or construct the facility as soon as reasonably practicable but no later than within the first 2 years of the new license term, and Licensee will complete the work as soon as reasonably practicable but no later than within 2 years after receiving all required permits and approvals for the work. During the period before facility modifications or construction are completed, and within the first 90 days of the new license term,

Licensee shall make a good faith effort to provide the specified minimum streamflows within the reasonable capabilities of the existing facilities.

Table 1. Minimum streamflows in cubic feet per second (cfs) in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam by month and Water Year Type, the latter of which is defined in Licensee's Proposed Condition WR2.

Month	Wet Water Year	Above Normal Water Year	Below Normal Water Year	Dry Water Year	Critically Dry Water Year
MIDDLE YUBA RIVER - BELOW OUR HOUSE DIVERSION DAM (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11408880)					
October 1 - 30	60*	60*	55*	50*	40*
November 1-30	60*	60*	55*	50*	40*
December 1 - 31	70*	60*	55*	50*	40*
January 1 - 31	90*	75*	70*	50*	40*
February 1- 29	90*	75*	70*	50*	40*
March 1 - 31	100*	90*	80*	55*	45*
April 1 - 30	120*	100*	90*	70*	60*
May 1- 31	120*	100*	90*	70*	60*
June 1 - 30	120*	100*	90*	70*	60*
July 1 - 31	100*	80*	70*	60*	45*
August 1 - 31	80*	70*	60*	50*	45*
September 1- 30	70*	60*	55*	50*	45*
OREGON CREEK - BELOW LOG CABIN DIVERSION DAM (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11409400)					
October 1 - 30	8*	8*	6*	6*	6*
November 1-30	17*	15*	15*	10*	6*
December 1 - 31	17*	15*	15*	10*	6*
January 1 - 31	17*	15*	15*	10*	6*
February 1- 29	24*	19*	18*	12*	12*
March 1 - 31	30*	30*	18*	12*	12*
April 1 - 30	43*	43*	27*	18*	18*
May 1- 31	43*	43*	27*	18*	18*
June 1 - 30	43*	43*	27*	18*	18*
July 1 - 31	25*	20*	15*	10*	6*
August 1 - 31	13*	10*	8*	6*	6*
September 1- 30	13*	10*	8*	6*	6*

* Or stream inflow into the impoundment if stream inflow is less.

Rationale Statement in Support of YCWA's Condition AR1. YCWA's proposed minimum flow releases from Our House and Log Cabin diversion dams would provide between approximately 80 to 100 percent of habitat for adult, spawning and juvenile lifestages of rainbow trout, the primary fish species of concern in the Middle Yuba River downstream of Our House Diversion Dam and in Oregon Creek downstream of Log Cabin Diversion Dam. Tables 2-2 and 2-3 show, by WY type, the percent of maximum WUA by rainbow trout lifestage for YCWA's proposed minimum flows in the Middle Yuba River and in Oregon Creek, respectively.

Table 2-2. Percent of maximum WUA for rainbow trout adult, spawning and juvenile life stages in the Middle Yuba River that correspond with YCWA's proposed Our House Diversion Dam minimum flows.

Month	Critically Dry Water Year	Dry Water Year	Below Normal Water Year	Above Normal Water Year	Wet Water Year
RAINBOW TROUT – ADULT LIFESTAGE					
October	71%	81%	84%	87%	87%
November	71%	81%	84%	87%	87%
December	71%	81%	84%	87%	92%
January	71%	81%	92%	93%	97%
February	71%	81%	92%	93%	97%
March	76%	84%	95%	97%	99%
April	87%	92%	97%	99%	100%
May	87%	92%	97%	99%	100%
June	87%	92%	97%	99%	100%
July	76%	87%	92%	95%	99%
August	76%	81%	87%	92%	95%
September	76%	81%	84%	87%	92%
RAINBOW TROUT – SPAWNING LIFESTAGE					
April	93%	97%	100%	100%	98%
May	93%	97%	100%	100%	98%
June	93%	97%	100%	100%	98%
RAINBOW TROUT – JUVENILE LIFESTAGE					
October	100%	100%	99%	99%	99%
November	100%	100%	99%	99%	99%
December	100%	100%	99%	99%	97%
January	100%	100%	97%	96%	93%
February	100%	100%	97%	96%	93%
March	100%	99%	95%	93%	91%
April	99%	97%	93%	91%	87%
May	99%	97%	93%	91%	87%
June	99%	97%	93%	91%	87%
July	100%	99%	97%	95%	91%
August	100%	100%	99%	97%	95%
September	100%	100%	99%	99%	97%

[1] In the Middle Yuba River, YCWA developed two sets of flow versus WUA curves for rainbow trout adult, spawning and juvenile lifestages: one for the section of creek from Our House Diversion Dam to Oregon Creek, and the other from Oregon Creek to the North Yuba River. YCWA used the Our House Diversion Dam to Oregon Creek curve for this table.

Table 2-3. Percent of maximum WUA for rainbow trout adult, spawning and juvenile life stages in Oregon Creek that correspond with YCWA's proposed Log Cabin Diversion Dam minimum flows.[1]

Month	Critically Dry Water Year	Dry Water Year	Below Normal Water Year	Above Normal Water Year	Wet Water Year
RAINBOW TROUT – ADULT LIFESTAGE					
October	79%	79%	79%	85%	85%
November	79%	90%	97%	97%	98%
December	79%	90%	97%	97%	98%
January	79%	90%	97%	97%	98%
February	94%	94%	99%	99%	100%
March	94%	94%	99%	100%	100%
April	99%	99%	100%	98%	98%
May	99%	99%	100%	98%	98%
June	99%	99%	100%	98%	98%
July	79%	90%	97%	99%	100%
August	79%	79%	85%	90%	95%
September	79%	79%	85%	90%	95%
RAINBOW TROUT – SPAWNING LIFESTAGE					
April	79%	79%	91%	99%	99%
May	79%	79%	91%	99%	99%
June	79%	79%	91%	99%	99%

Table 2-3. (continued)

Month	Critically Dry Water Year	Dry Water Year	Below Normal Water Year	Above Normal Water Year	Wet Water Year
RAINBOW TROUT – JUVENILE LIFESTAGE					
October	89%	89%	89%	94%	94%
November	89%	97%	100%	100%	100%
December	89%	97%	100%	100%	100%
January	89%	97%	100%	100%	100%
February	99%	99%	100%	100%	98%
March	99%	99%	100%	97%	97%
April	100%	100%	97%	92%	92%
May	100%	100%	97%	92%	92%
June	100%	100%	97%	92%	92%
July	89%	97%	100%	99%	98%
August	89%	89%	94%	97%	99%
September	89%	89%	94%	97%	99%

[1] In Oregon Creek, YCWA developed two sets of flow versus WUA curves for rainbow trout adult, spawning and juvenile lifestages: one for the section of creek from Log Cabin Diversion Dam to Celestial Valley, and the other from Celestial Valley to the Middle Yuba River. Since the curves are very similar, YCWA used the Log Cabin Diversion Dam to Celestial Valley curve for this table.

In the Middle Yuba River, YCWA's proposed minimum lows would provide between 71 and 100 percent of maximum WUA for rainbow trout adults, 93 and 100 percent for rainbow trout spawning, and 87 and 100 percent for rainbow trout juveniles.

In Oregon Creek, YCWA's proposed minimum lows would provide between 71 and 100 percent of maximum WUA for rainbow trout adults, 79 and 99 percent for rainbow trout spawning, and 89 and 100 percent for rainbow trout juveniles.

YCWA understands that the Forest Service, Cal Fish and Wildlife and FWN agree with the specific wording in this proposed condition.

2.4.2 YCWA's Proposed Condition AR2: Control Project Spills at Our House Diversion Dam [14]

In non-tunnel closure years as described in Licensee's Proposed Condition AR11, Licensee shall, from April 1 through July 31 in Below Normal, Dry, and Critically Dry water years (WY) and from May 1 through July 31 in Wet and Above Normal WYs, as described in Licensee's Proposed Condition WR2, implement the spill reduction schedule described in this condition at Our House Diversion Dam. The spill reduction shall be performed by adjusting the opening of the Our House Diversion Dam low-level (5-foot diameter) outlet valve. "Spill flow" for the purpose of this condition shall be determined based on flow measurements at USGS streamflow gage 11408880 minus the required minimum streamflow at that time, as described in Licensee's Proposed Condition AR1. Specifically, Licensee shall follow these spill reduction steps:

[14] YCWA proposed this condition assuming that the maximum capacity of Our House Diversion Dam's low-level outlet valve is 463 cfs when the impoundment behind the dam is at the invert elevation of the Lohman Ridge Diversion Tunnel. YCWA plans to rate the outlet. Based on the rating, YCWA, in consultation with Forest Service and other interested agencies, may amend this proposed condition.

Reductions from Spills greater than 600 cfs

Step 1. When the previous day's mean daily flow below Our House Diversion Dam is greater than 600 cfs plus the required minimum streamflow and the mean hourly flow below the dam is less than 600 cfs plus the required minimum streamflow, by approximately noon Licensee shall fully open Our House Diversion Dam's low-level outlet valve.

Step 2. After a minimum of 48 hours with the low-level outlet valve fully open, Licensee shall reduce flows at a target rate of 100 cfs, but no less than 90 cfs and no greater than 110 cfs, every 48 hours using the low-level outlet valve until a mean daily flow of about 300 cfs plus the required minimum streamflow is achieved. Flow reductions shall be made relative to the mean hourly flow during the preceding hour at the time of the valve adjustment.

Step 3. After flow through the low-level outlet valve has been reduced below a mean daily flow of 300 cfs plus the required minimum streamflow, Licensee shall reduce flows at a target rate of 100 cfs, but no less than 90 cfs and no greater than 110 cfs, every 72 hours using the low-level outlet valve until a mean daily flow of less than 200 cfs plus the required minimum streamflow is achieved. Flow reductions shall be made relative to the mean hourly flow during the preceding hour at the time of the valve adjustment.

Step 4. After flow through the low-level outlet valve has been reduced below a mean daily flow of 200 cfs plus the required minimum streamflow, Licensee shall reduce flows at a target rate of 50 cfs, but no less than 45 cfs and no greater than 55 cfs, every 72 hours using the low-level outlet valve until the low-level outlet valve is fully closed. Flow reductions shall be made relative to the mean hourly flow during the preceding hour at the time of the valve adjustment.

Table 1 summarizes the spill reductions in Steps 1 through 4.

Table 1. Summary of Our House Diversion Dam spill reductions from approximately 600 cfs plus the required minimum streamflow.

Mean Daily Flow Measurement at USGS Gage 11408880	Frequency of Adjusting Low-Level Outlet Valve	Target Flow Reduction
600 - 300 cfs plus Required Minimum Streamflow	48 hours	100 cfs, but no less than 90 cfs and no greater than 110 cfs
299 - 200 cfs plus Required Minimum Streamflow	72 hours	100 cfs, but no less than 90 cfs and no greater than 110 cfs
199 – 0 cfs plus Required Minimum Streamflow	72 hours	50 cfs, but no less than 45 cfs and no greater than 55 cfs

Reductions from Spills of between 599 and 200 cfs

- When Licensee has not implemented Table 1 of this condition, and mean daily flows below the dam are less than 600 cfs plus the required minimum streamflow but greater than 200 cfs plus the required minimum streamflow and the flow appears to be receding, the next day Licensee shall open the low-level outlet valve to the point where water is no

longer spilling over the dam or a target rate of 100 cfs, but no less than 90 cfs and no greater than 110 cfs, less than the previous day's spill, whichever is greater. Subsequent low-level outlet valve adjustments shall occur at the frequency and magnitude shown in Table 1 of this condition. Flow reductions shall be made relative to the mean hourly flow during the preceding hour at the time of the valve adjustment.

The Dam Pool Elevation is Less than the Lohman Ridge Diversion Tunnel Invert Elevation

- If, during the time Licensee is implementing Table 1 of this condition, the dam pool elevation is below the invert elevation of the Lohman Ridge Tunnel (2,015 ft), Licensee shall adjust the low-level outlet valve opening a minimum of once daily so that the combined outflow of the low-level outlet valve plus the required minimum streamflow matches Our House Diversion Dam impoundment inflow. Any time that the fish valve can be used to release the total inflow to the impoundment, the Licensee shall close the low-level outlet and make all releases through the fish valve. If the pool inflow increases such that the water level increases above the elevation of the invert, the Licensee shall follow the flow reduction steps specified in Table 1. Spill cessation shall be considered complete once outflows below Our Diversion Dam are less than or equal to the required minimum instream flow.

Inflow Increases and Spill Re-initiates

- If, during the time Licensee is implementing Table 1 of this condition, inflow into the impoundment increases such that mean daily flow below the dam is more than 600 cfs plus the required minimum streamflow, Licensee shall fully close the low-level outlet valve until such time as Table 1 of this condition can commence again.
- If, during the time Licensee is implementing Table 1 of this condition inflow into the impoundment re-initiates spill over the dam of less than 600 cfs mean daily flow, Licensee shall open the low-level outlet valve to eliminate spill at the dam. Once inflow to the impoundment is receding, subsequent changes to the low-level outlet valve opening shall occur at a frequency and magnitude commensurate with Table 1 of this condition, and the procedure of stepwise closing of the valve as described above for "Reductions from Spills of between 599 and 200 cfs" shall commence.

Inflow Increases and Spill Does Not Re-initiate

- If, during the time Licensee is implementing Table 1 of this condition, inflow into the impoundment increases and does not cause spill over the dam, Licensee shall maintain the current opening of the low-level outlet valve until flows either cause spill or decrease to a level approximately equal to that occurring when the flow increase began. Once inflow to the impoundment is receding, subsequent changes to the low-level outlet valve opening shall occur at a frequency and magnitude commensurate with Table 1 of this condition, and the procedure of stepwise closing of the valve as described above for "Reductions from Spills of between 599 and 200 cfs" shall commence.

The Our House Diversion Dam fish release valve and the Lohman Ridge Diversion Tunnel may remain open throughout the above procedures.

Compliance and Reporting

For the purposes of this condition: 1) compliance for this condition shall be adjustments to the low-level outlet opening to achieve the target flow reductions within the specified range described above and specified in Table 1; 2) opening and closing low-level outlet valve between the valve settings described above may be made in one valve adjustment (i.e., ramping between settings is not required); and 3) the low-level outlet valve adjustments described in Table 1 of this condition shall be made by approximately noon each day, providing there is safe access to the site.

This condition is subject to temporary modification if required for repairs to the dam or associated equipment, by equipment malfunction, as directed by law enforcement authorities, or in emergencies. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, or other regulatory agency staff, including actions to prevent or reduce the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements and shall notify the Forest Service, SWRCB, and Cal Fish and Wildlife within 48 hours of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.

Licensee shall commence the dam spill reduction schedules in this condition within the first 90 days of the new license term unless facility modifications or construction is required. Where facilities must be modified or constructed to allow compliance with the required spill reduction schedule, including flow measurement facilities, except as otherwise provided, Licensee shall submit applications for permits to modify or construct the facilities as soon as reasonably practicable but no later than within the first 2 years of the new license term, and will complete the work as soon as reasonably practicable but no later than 2 years after receiving all required permits and approvals for the work. During the period before facility modifications or construction activities are completed, and starting within the first 90 days of the new license term, Licensee shall make a good faith effort to provide the specified spill reduction schedules within the reasonable capabilities of the existing facilities.

If Licensee makes a valve adjustment in compliance with this condition in the previous calendar year, prior to the Ecological Group's April meeting described in YCWA's Proposed Condition GEN1, in the next calendar year, Licensee shall file with FERC and make available to the Forest Service, SWRCB and Cal Fish and Wildlife: 1) a plot showing for each valve adjustment period during the previous calendar year the mean daily flow into the Our House Diversion Dam impoundment (i.e., sum of USGS gage 11408870 [Lohman Ridge tunnel flow] and USGS gage 11408880 [flow downstream of Our House Dam]) and the mean daily flow downstream of Our

House Diversion Dam (i.e., USGS gage 11408880); and 2) for each valve adjustment during the previous calendar year, the date and time the valve adjustment was made and the flow at USGS gage 11408880 immediately prior to and immediately after the valve adjustment.

Rationale Statement in Support of YCWA's Condition AR2. Condition AR2 would minimize the frequency and magnitude of flow changes in the Middle Yuba River downstream of Our House Dam that would have the potential to adversely affect FYLF. YCWA's proposed spill cessation schedule for Our House Diversion Dam would be in effect from April through July in Below Normal, Dry and Critically Dry WYs, and from May through July in Above Normal and Wet WYs. The spill cessation schedule would provide for a stepped reduction in spills so that down-ramping is gradual. Based on modeled application of the spill cessation measure to flows in the 41 year period of record, the proposed spill cessation would tend to prolong the total length of time during which high flows from spill occur and would reduce the magnitude of daily decreases in flow. In some years, low flow intervals between spills would be eliminated.

Condition AR2 encompasses the period during which FYLF breeding and early development is most likely to occur. High velocities are generally a deterrent to FYLF breeding (Kupferberg 1996, Wheeler and Welsh 2008). Therefore, a prolonged spill would minimize the likelihood that FYLF breeding occurs prior to a spill compared to a series of separate spill events.

In addition, Condition AR2 would minimize the frequency and magnitude of flow changes with the potential to adversely affect stream fish populations. YCWA's proposed spill cessation schedule encompasses the period during which rainbow trout spawning, incubation and emergence are most likely to occur. As described above, the spill cessation schedule would provide for a stepped reduction in spills so that down-ramping is gradual while prolonging the total length of time during which each spill event occurs.

Figures 2-3, 2-4 and 2-5 give examples of spill events where spill cessation would be implemented under Condition AR2 (red lines) as compared to the No Action Alternative (blue lines) and Without-Project (green lines) downstream of Our House Diversion Dam using output from the Operations Model. These examples show that YCWA's Proposed Project, with Condition AR2, would mimic the shape of the Without-Project hydrograph much better than under the No Action Alternative. Reductions in flow would be more gradual and spill periods are prolonged.

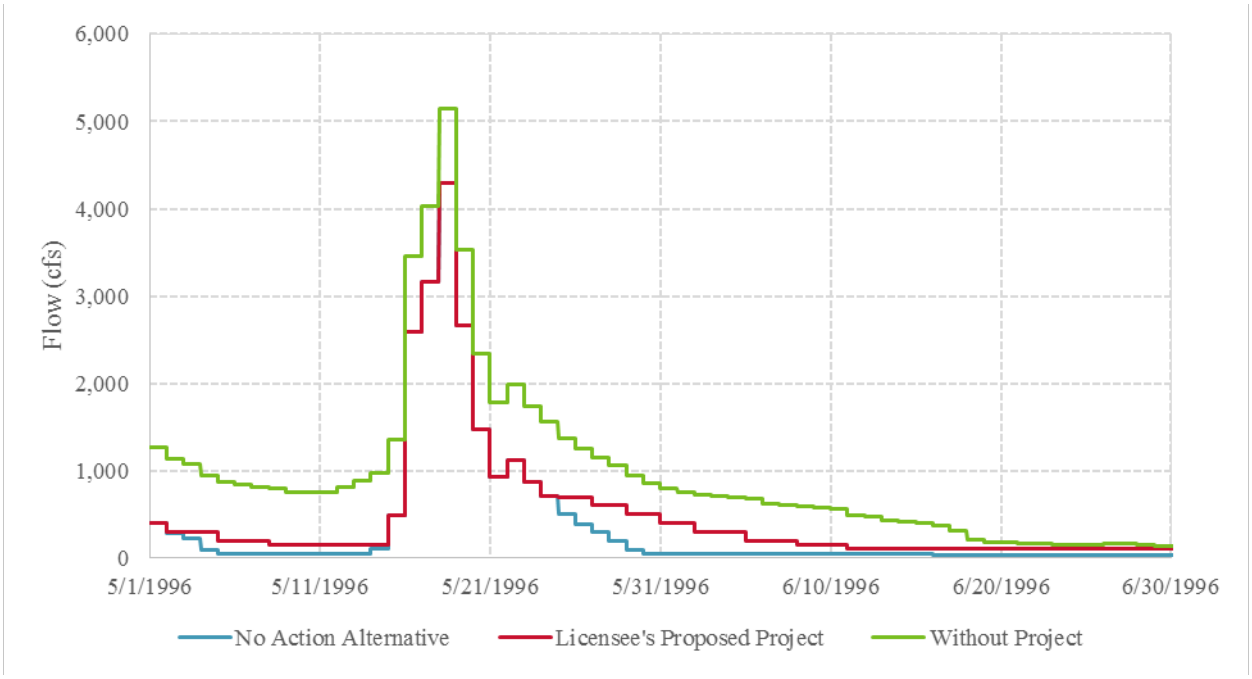

Figure 2-3. Example of spill cessation below Our House Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR2, and Without-Project from May 1 through June 30, 1996.

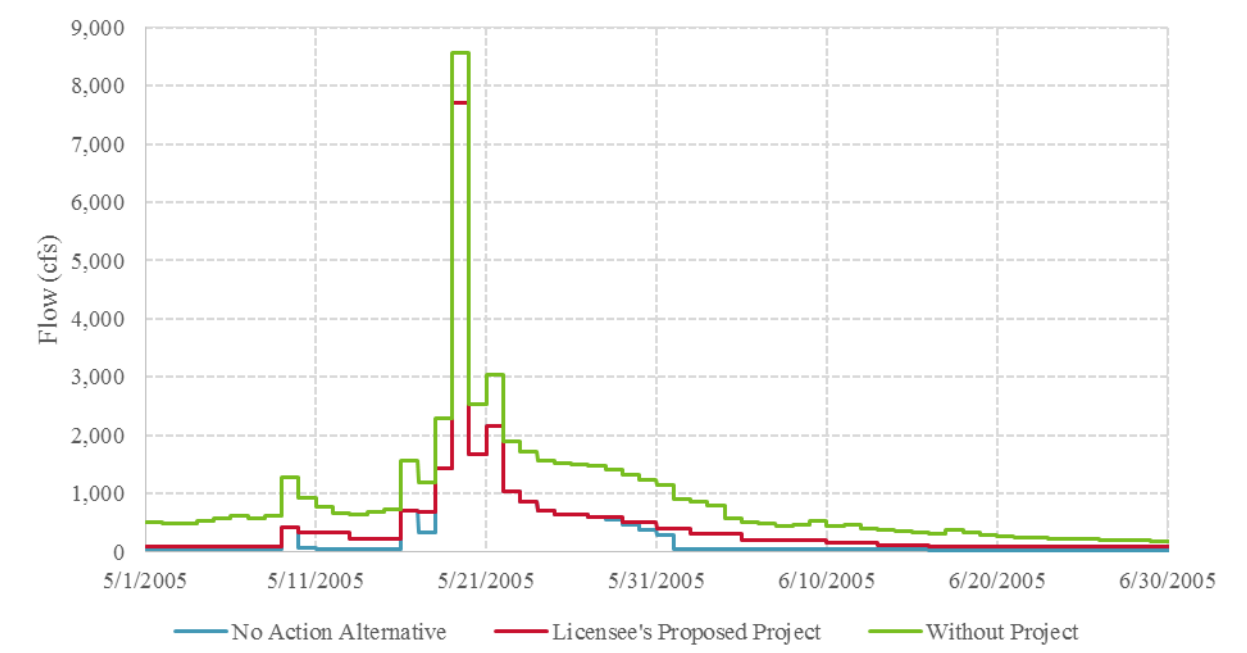

Figure 2-4. Example of spill cessation below Our House Dam under the No Action Alternative), YCWA's Proposed Project with Condition AR2, and Without-Project from May 1 through June 30, 2005.

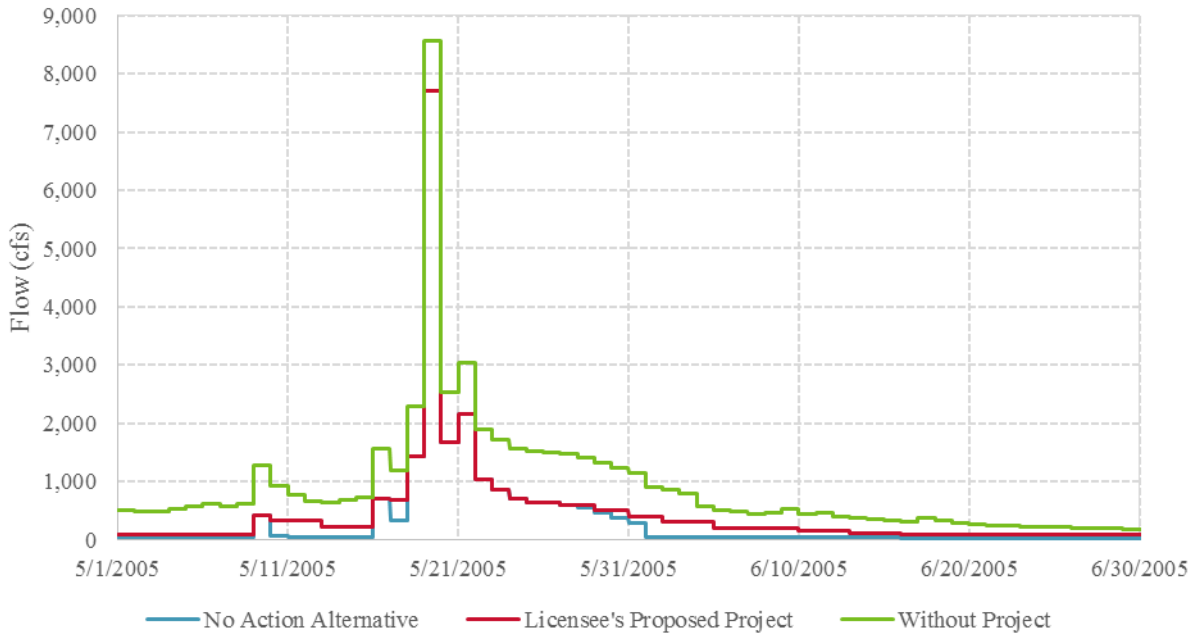

Figure 2-5. Example of spill cessation below Our House Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR2, and Without-Project from May 1 through June 30, 2009.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.4.3 YCWA's Proposed Condition AR3: Maintain Minimum Streamflows Downstream of Narrows 2 Powerhouse and Narrows 2 Full Bypass[15]

Licensee, in coordinated operations with the licensee for the Narrows Project (FERC No. 1403) under the coordinated operations agreement or Commission order described in Licensee's proposed Condition GEN4, shall meet the minimum streamflows in the Yuba River shown in Table 1 of this condition. These streamflows shall be measured at the indicated USGS gages, which are located downstream of the combined releases of the Narrows Project, the Narrows 2 Powerhouse and the Narrows 2 Full Bypass. Licensee shall record minimum streamflow at all gages as required by USGS (Article 8 of FERC's Form L-5, Standard Articles).

[15] If the Commission includes YCWA's Proposed Condition AR3 in YCWA's new license, then YCWA will ask the SWRCB to amend the provisions regarding Conference Year flows in YCWA's water-right permits so that they are consistent with the Conference Year requirements in YCWA's new license.

Table 1. Minimum Streamflows in cubic feet per second (cfs) for the Yuba River Development Project by month and Water Year Type, which is defined in Licensee's Proposed Condition WR3.

Month	Schedule 1	Schedule 2	Schedule 3	Schedule 4	Schedule 5	Schedule 6	Conference Year
YUBA RIVER - BELOW NARROWS 2 POWERHOUSE/NARROWS 2 FULL BYPASS (COMPLIANCE POINT: SMARTSVILLE - USGS STREAMFLOW GAGE 11418000)							
October 1 – 15	700	700	700	700	600	600	500
October 16 - 31	700	700	700	700	600	600	500
November 1 - 30	700	700	700	700	600	600	500
December 1 - 31	700	700	700	700	550	550	500
January 1- 15	700	700	700	700	550	550	500
January 16 – 31	700	700	700	700	550	550	500
February 1 - 29	700	700	700	700	550	550	500
March 1- 31	700	700	700	700	550	550	500
April 1 – 15	700	700	700	700	600	600	500
April 16 – 30	--	--	--	--	--	--	--
May 1 – 15	--	--	--	--	--	--	--
May 16 – 31	--	--	--	--	--	--	--
June 1 - 15	--	--	--	--	--	--	--
June 16 – 30	--	--	--	--	--	--	--
July 1 – 31	--	--	--	--	--	--	--
August 1 – 31	--	--	--	--	--	--	--
September 1 – 30	700	700	700	700	500	500	500
YUBA RIVER - BELOW NARROWS 2 POWERHOUSE/NARROWS 2 FULL BYPASS (COMPLIANCE POINT: MARYSVILLE - USGS STREAMFLOW GAGE 11421000)							
October 1 - 15	500	500	500	400	400	350	350
October 16 - 31	500	500	500	400	400	350	350
November 1 - 30	500	500	500	500	500	350	350
December 1 - 31	500	500	500	500	500	350	350
January 1- 15	500	500	500	500	500	350	350
January 16 – 31	500	500	500	500	500	350	350
February 1 - 29	500	500	500	500	500	350	350
March 1- 31	700	700	500	500	500	350	350
April 1 - 15	1,000	700	700	600	500	350	300
April 16 - 30	1,000	800	700	900	600	500	245
May 1 - 15	2,000	1,000	900	900	600	500	245
May 16 - 31	2,000	1,000	900	600	400	400	245
June 1 - 15	1,500	800	500	400	400	300	245
June 16 - 30	1,500	500	500	400	400	150	150
July 1 - 31	700	500	500	400	400	150	150
August 1 - 31	600	500	500	400	400	150	150
September 1 - 30	500	500	500	400	400	350	150

Minimum streamflows in this condition shall mean the 5-day running average of average daily streamflows, with the 15-minute flows not less than 90 percent of the specified flow requirement in Table 1 of this condition. In addition, 15-minute flows shall not be less than the applicable flow requirement specified in Table 1 for more than 48 consecutive hours.

Minimum streamflows in this condition may be temporarily modified for short periods, as necessary for powerhouse outages required for inspections and maintenance purposes, upon approval of the Commission.

Minimum streamflows may be temporarily modified due to an emergency. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, California ISO or other regulatory agency staff, including actions to prevent or reduce the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as earthquakes, landslides, storms, or wildfires; vandalism; malfunction or failure of transmission lines or Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition due to an emergency, Licensee shall make all reasonable efforts to promptly resume performance of the requirements, and shall notify the NMFS, USFWS, Cal Fish and Wildlife and the SWRCB within 48 hours of the start of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.

If any of the minimum flow requirements in YCWA's water right permits are temporarily modified by the SWRCB or its Deputy Director for Water Rights, and if Licensee, NMFS, USFWS and Cal Fish and Wildlife agree, then Licensee may make corresponding temporary modifications to the requirements in this condition. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such temporary modifications are made.

Rationale Statement in Support of YCWA's Condition AR3. From 2002 through 2005, representatives of YCWA, Cal Fish and Wildlife, NMFS, USFWS, and several NGOs negotiated a set of minimum flow requirements (flow schedules) for the Yuba River downstream of Englebright Dam. The flow schedules settled a contested SWRCB water rights hearing and related litigation regarding lower Yuba River minimum flow requirements that had been pending for many years. The flow schedules developed by this group then were included in the Yuba Accord Fisheries Agreement, which was one of three related agreements that together are known as the "Lower Yuba River Accord."

During 2005 through 2007, YCWA conducted a comprehensive CEQA/NEPA process to analyze the environmental effects of the Yuba Accord, and in late 2007 YCWA certified its final EIR for the Yuba Accord. On May 20, 2008, the SWRCB adopted its Corrected Order WR 2008-0014, which amended YCWA's water right permits to incorporate the Yuba Accord flow schedules.

The Yuba Accord Fisheries Agreement, which was executed by YCWA, Cal Fish and Wildlife and four NGO's, and was supported by NMFS and USFWS, contains the following language:

> The Parties intend that their monitoring and data-collection actions will produce a useful database for the proceedings of the Federal Energy Regulatory Commission regarding the relicensing of YCWA's FERC License for the Yuba Project, which expires in 2016. The Parties also intend that this monitoring and data-collection be used to evaluate the biological provisions of this Agreement.

In addition to conducting the analysis of the Yuba Accord that is in YCWA's Yuba Accord EIR, YCWA also has established the RMT, which is comprised of representatives of YCWA, Cal Fish and Wildlife, NMFS, USFWS, and NGO's. The primary purpose of the RMT is to evaluate the effects of implementation of the Yuba Accord on anadromous fish in the lower Yuba River. YCWA has funded a monitoring plan since 2007, and the RMT has issued Draft and Revised Draft Interim Monitoring and Evaluation reports (available on the RMT web site at http://www.yubaaccordrmt.com/Interim%20ME%20Report/Forms/AllItems.aspx). At this time, and based on the study work conducted to date, the RMT is not recommending any changes to the Yuba Accord flow schedules.

Throughout the relicensing process, YCWA has described the genesis of the Yuba Accord flow schedules to relicensing stakeholders, and has strongly suggested that these recently and collaboratively developed and thoroughly analyzed flow schedules should be incorporated into YCWA's new license as the new lower Yuba River minimum instream flow requirements.

For Schedule 1 through Schedule 6 years, the proposed minimum streamflows in Table 1 of the condition are the same as the corresponding minimum instream flow requirements in the Yuba Accord's Fisheries Agreement, as ordered by the SWRCB in its Corrected Order WR 2008-0014 on pages 56-57 in term 1. (See also, SWRCB Corrected Order WR 2008-0014, fig. 2.) For Conference Years, there are some differences between YCWA's proposed condition and the corresponding requirements in Corrected Order WR 2008-0014. (See SWRCB Corrected Order WR 2008-0014, p. 57 and fig. 7.) These differences are shown in the following Table 2-5 and the reasons for them are discussed below.

Table 2-4. Proposed changes in Conference Year minimum streamflows in cubic feet per second (cfs) for the Yuba River Development Project by month.

Month	Yuba Accord Conference Year Requirements	YCWA's Proposed Condition AR3 Conference Year Requirements
YUBA RIVER - BELOW NARROWS 2 POWERHOUSE/NARROWS 2 FULL BYPASS (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11418000 – YUBA RIVER NEAR SMARTSVILLE)		
October 1 – 15	--	500
October 16 - 31	600	500
November 1 - 30	600	500
December 1 - 31	600	500
January 1- 15	1,000	500
January 16 – 31	600	500
February 1 - 29	600	500
March 1- 31	600	500
April 1 – 15	--	500
April 16 – 30	--	--
May 1 – 15	--	--
May 16 – 31	--	--
June 1 - 15	--	--
June 16 – 30	--	--
July 1 – 31	--	--
August 1 – 31	--	--
September 1 – 30	--	500

Table 2-4. (continued)

Month	Yuba Accord Conference Year Requirements	YCWA's Proposed Condition AR3 Conference Year Requirements
YUBA RIVER - BELOW NARROWS 2 POWERHOUSE/NARROWS 2 FULL BYPASS (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11421000 – MARYSVILLE)		
October 1 - 15	400	350
October 16 - 31	400	350
November 1 - 30	400	350
December 1 - 31	400	350
January 1- 15	245	350
January 16 – 31	245	350
February 1 - 29	245	350
March 1- 31	245	350
April 1 - 15	245	300
April 16 - 30	245	245
May 1 - 15	245	245
May 16 - 31	245	245
June 1 - 15	245	245
June 16 - 30	245	150
July 1 - 31	70	150
August 1 - 31	70	150
September 1 - 30	70	150

The Yuba Accord Conference Year flow schedules are the same as the minimum flow schedules in Article 33 of YCWA's existing license, which was issued in 1963 and amended in 1966, without the critically dry WY reductions that are authorized by Article 33. The primary reason for including the Article 33 schedules as the Yuba Accord Conference Year schedules was that, when the Yuba Accord's minimum streamflows were being developed, there was no pending relicensing proceeding through which YCWA could have asked FERC to change the flow schedules in the existing license. Because YCWA must comply with these Article 33 requirements until they are superseded by new requirements in a new license, YCWA and the other parties to the Yuba Accord Fisheries Agreement agreed that the Yuba Accord Conference Year requirements would be the same as the Article 33 requirements, with the understanding that these requirements could be re-evaluated and possibly changed during YCWA's relicensing proceeding. YCWA now is proposing such a re-evaluation and the changes in these requirements that are shown in Table 2-2.

If these changes are made, then the total volume of water that will be required to flow past the USGS Marysville gage during Conference Years will increase from the 174,208 ac-ft required to meet the Yuba Accord Conference Year requirements to a new total of 197,445 ac-ft.

If implemented, the new proposed requirements will have some significant benefits over the current Conference Year requirements. First, the proposed new requirements at the USGS Smartsville gage will be in effect for an additional 45 days during September and the first part of October, and for an additional 15 days during the first part of April. In addition, there will be fewer month-to-month changes in these requirements. At the Marysville gage, the proposed new requirements will be constant from October 1 through March 31, while the current requirements have substantial reductions beginning on January 1. The potential for de-watering of Chinook salmon redds has been studied by YCWA and the RMT during the past 7 years. As a result of these studies, YCWA believes that the proposed, more-constant Conference Year flow requirements for the September through March timeframe (i.e., the spawning and the incubation

period for Chinook salmon in the Yuba River) will result in less potential for de-watering of the redds of these salmon than would occur under the current, Yuba Accord Conference Year flow schedules. These new flow schedules also will require an approximately 14 percent increase in the total volume of water that must flow past the Marysville Gage in Conference Years during the November through March period.

Second, for the July through September period, YCWA's proposed Condition AR3 would increase the minimum flows at the Marysville gage from 70 to 150 cfs. These higher flows will require an additional 14,598 ac-ft of water to pass the Marysville gage during these months in Conference Years, approximately a 114 percent increase for this period. YCWA believes that these higher minimum flows will provide better water temperature conditions in the Yuba River than would occur during Conference Years under the current requirements.[16]

2.4.4 YCWA's Proposed Condition AR4: Control Project Spills at New Bullards Bar Dam

Licensee shall, beginning in the first full calendar year after license issuance, reduce flows through the New Bullards Bar Dam spillway in the following manner after any spill releases that occur between May 1 and July 31 after water is no longer stored in the Flood Reservation Space. For spill events greater than approximately 2,000 cfs, when the spill has receded to approximately 2,000, Licensee shall reduce the spill at a target rate of approximately 250 cfs per day until the spill has ceased (i.e., releases from New Bullards Dam are equal to the minimum flow requirement at that time). If a spill of less than approximately 2,000 cfs occurs, Licensee shall reduce the peak spill at a target rate of approximately 250 cfs per day or a slower rate until the spill has ceased and releases from New Bullards Bar Dam are being made to provide flows within 20 percent of the minimum flow requirement downstream of New Bullards Bar Dam. The flows will be determined as described in Licensee's Proposed Condition WR4, Streamflow and Reservoir Level Compliance Monitoring Plan.

Licensee may make these spill cessation releases by either: 1) adjustments to the New Bullards Bar Dam spillway gate openings; or 2) adjustments to the New Bullards Bar Dam low level outlet valve openings; or both. When the spill cessations are made by adjustments to the New Bullards Bar Dam spillway gate openings, compliance with this measure will be made by a once daily adjustment to New Bullards Bar Dam spillway gate opening to meet the approximately 250 cfs per day cessation rate, as determined by Licensee's calculation of spillway gate release. When the spill cessations are made by adjustments to the New Bullards Bar Dam low level outlet valve openings, compliance with this measure will be made by a once daily adjustment to New Bullards Bar Dam low level outlet valve opening to meet the approximately 250 cfs per day cessation rate, as determined by Licensee's calculation of the low level outlet release.

[16] If the Commission includes YCWA's Proposed Condition AR3 in YCWA's new license, then YCWA will ask the SWRCB to amend the provisions regarding Conference Year flows in YCWA's water-right permits so that they are consistent with the Conference Year requirements in YCWA's new license.

This condition is subject to temporary modification if required for repairs to the dam or associated equipment, by equipment malfunction, as directed by law enforcement authorities, or in emergencies. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, or other regulatory agency staff, including actions to prevent or reduce the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements and shall notify the Forest Service, SWRCB, and Cal Fish and Wildlife within 48 hours of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.

Rationale Statement in Support of YCWA's Condition AR4. Condition AR4 would minimize the frequency and magnitude of flow changes that have the potential to adversely affect stream fish populations. YCWA's proposed spill cessation schedule for New Bullards Bar Dam will be in effect from May 1 through July 31 of each year. This period will encompass a significant portion of time during which rainbow trout spawning, incubation and emergence are most likely to occur. As described above, the spill cessation schedule provides for stepped reductions in spills so that down-ramping is gradual while prolonging the total length of time during which each spill event occurs. Condition AR4 will have no foreseeable effect on FYLF because this species is not known to occur downstream of New Bullards Bar Dam.

Figures 2-6 and 2-7 show examples of flow in the North Yuba River downstream of New Bullards Bar Dam, reflecting spills from New Bullards Bar Dam under the No Action Alternative, YCWA's Proposed Project, and the Without Project scenarios.

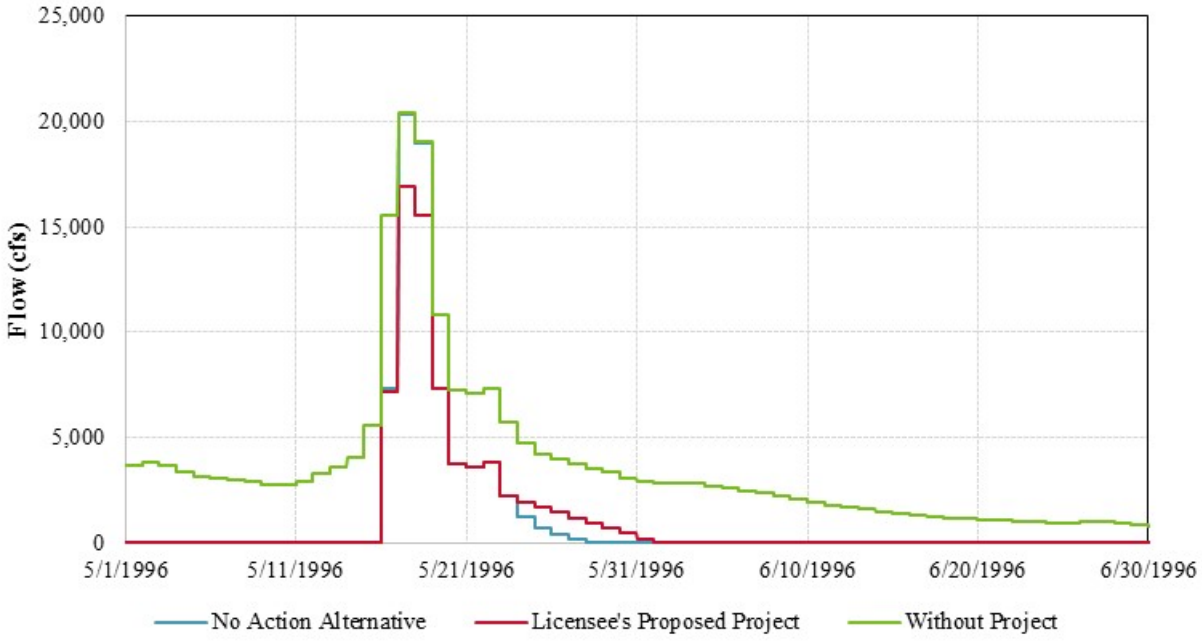

Figure 2-6. Example of spill cessation downstream of New Bullards Bar Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR4, and Without-Project from May 1 through June 30, 1996.

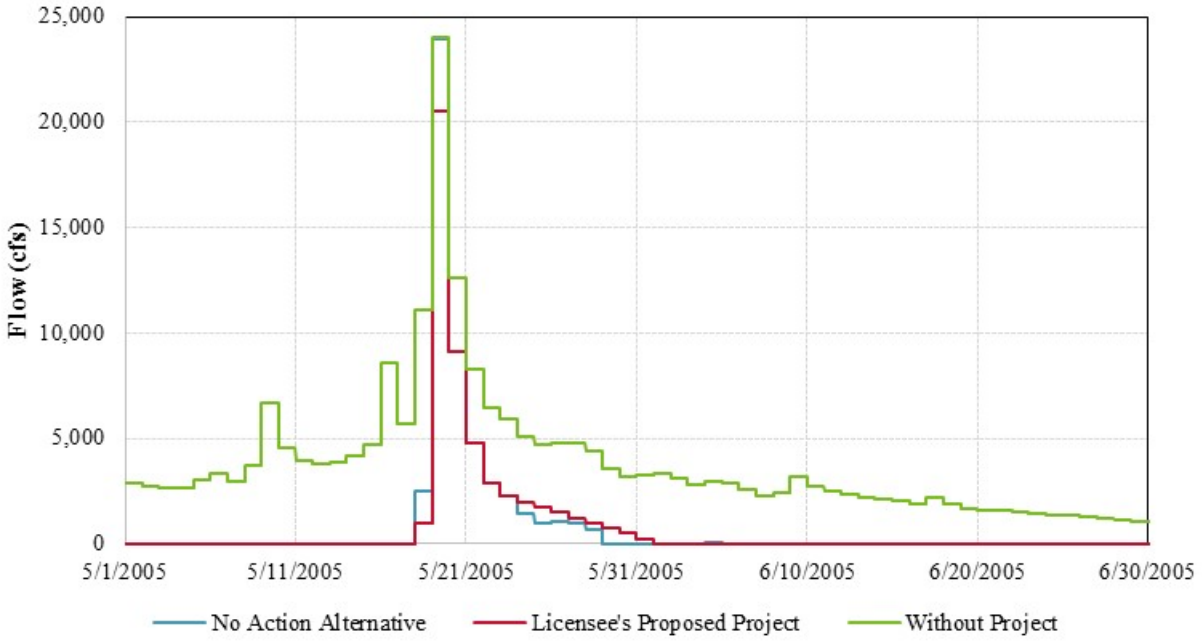

Figure 2-7. Example of spill cessation below New Bullards Bar Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR4, and Without-Project from May 1 through June 30, 2005.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.4.5 YCWA's Proposed Condition AR5: Implement Aquatic Invasive Species Management Plan

Licensee shall implement the Aquatic Invasive Species Management Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1G, Aquatic Invasive Species Plan).

Rationale Statement in Support of YCWA's Condition AR5. Aquatic invasive species are a potential threat to aquatic resources in areas affected by the Project, and could cause impairments of Project function. Implementing YCWA's proposed Aquatic Invasive Species Management Plan would help prevent the introduction and spread of these species by providing a public education and awareness program; implementing monitoring as an early warning in case of the spread of invasive species; and providing guidelines for Project O&M to prevent the spread of aquatic invasive species.
YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.4.6 YCWA's Proposed Condition AR6: Implement New Bullards Bar Reservoir Fish Stocking Plan

Licensee shall implement the New Bullards Bar Reservoir Fish Stocking Plan that was filed with the Commission by Licensee on December 2, 2016 (Accession #20161201-5304, Encl. 1A, New Bullards Bar Reservoir Fish Stocking Plan).

Rationale Statement in Support of YCWA's Condition AR6. New Bullards Bar Reservoir has a legacy of excellent recreational rainbow trout, kokanee (and spotted bass) fishing. This trout and kokanee fishery is in large part due to stocking programs and management as a Put-and-Grow fishery. Without this supplementation of natural production, the fishery and its associated recreational fishing experiences probably would decline. YCWA is committed to providing quality recreational opportunities for the public at New Bullards Bar Reservoir. A fish stocking program to maintain the rainbow trout and kokanee fisheries is an integral element of maintaining those opportunities.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.4.7 YCWA's Proposed Condition AR7: Implement Upper Yuba River Aquatic Monitoring Plan

Licensee shall implement the Upper Yuba River Aquatic Monitoring Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition AR7. Upstream of Englebright Dam, YCWA's proposes to increase minimum flows (YCWA's proposed Conditions AR1 and AR10) and manage spill cessation (YCWA proposed Conditions at AR2, AR4, and AR12) at Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam, which could affect habitat for resident fish species and FYLF resulting from changes in habitat suitability, water temperature, riparian vegetation, and channel morphology. YCWA also proposes to periodically close the Lohman Ridge Diversion Tunnel (YCWA proposed Condition AR11) to reduce fish entrainment into the tunnel. In addition, YCWA proposes a sediment and LWM pass-through program at Our House and Log Cabin diversion dams (YCWA's proposed Conditions GS2 and GS3), which could also affect habitat for fish species and FYLF.

YCWA's Proposed Condition AR7 would periodically monitor stream fish, BMI, WPT, channel morphology, LWM and riparian habitat in the Middle Yuba River, Oregon Creek, North Yuba River and Yuba River at representative locations, many of which overlap with locations that were monitored during relicensing, which would provide a comparison under pre-license conditions and new license conditions. To facilitate this comparison, Condition AR7 would use in many instances the same methods that were used during relicensing, and samples would be taken at the same time of year they were taken during relicensing.

With regard to stream fish populations, Condition AR7 would provide for sampling at eight locations: four in the Middle Yuba River; one in Oregon Creek; one in the North Yuba River; and two in the Yuba River. Most sampling locations are at sites that were sampled during relicensing and sampling would occur once in late summer/early fall, as it did in relicensing. Sampling at four of the locations would occur annually for the first 9 years of the new license to obtain fish data over a range of WY types, and then at a frequency of 2 years of annual monitoring followed by 3 years of no monitoring, which is generally the pattern of monitoring for the other three locations. Additionally, sampling would occur following high stress years (i.e., back-to-back dry WYs) to ascertain the effect of these years on fish populations. This sampling pattern and frequency is more than reasonable. Only four fish species were found during relicensing (i.e., rainbow trout, smallmouth bass, Sacramento sucker and Sacramento pikeminnow) in this transitional fishery area, and summertime water temperatures and flows in at least the Middle Yuba River and Oregon Creek, will continue to be as they were – low and warm (i.e., exceed 20°C).[17] So, a significant change in the transitional fish population is not expected.

YCWA's Condition AR7 would require BMI sampling at five locations: two in the Middle Yuba River; one in Oregon Creek; one in the North Yuba River; and one in the Yuba River. Most sampling locations are at sites that were sampled during relicensing and would be sampled for fish under Condition AR7, and sampling would occur once in late summer/early fall using the SWRCB's SWAMP protocol, as it did in relicensing. Sampling would occur annually for the first 3 year of the new license to obtain background information, and then every fifth year. This sampling pattern and frequency is reasonable given the level of fish and water quality sampling

[17] Water temperatures in these streams exceed 20°C for most of the summer under current conditions, which are normally inflow equals outflow from Our House and Log Cabin diversion dams. Since these facilities do not store water, conditions under the new license will also likely be inflow equals outflow, resulting in water temperatures over 20°C.

under Condition AR7. Further, YCWA is unaware of any instances in which changes in license conditions were based on BMI monitoring.

FYLF would be sampled at six locations: two in the Middle Yuba River; two in Oregon Creek; and two in the Yuba River. Most sampling locations are at sites that were sampled during relicensing, and sampling methods would be the same as those used during relicensing. Sampling at two of the locations would occur annually for the first 9 years of the new license to obtain data at sites where FYLF breeding is more likely to occur and over a range of WY types, and then at a frequency of 2 years of annual monitoring followed by 3 years of no monitoring, which is generally the pattern of monitoring for the other three locations. Additional sampling in the three lower-frequency locations would occur if wet or dry years do not occur within the first 5 years of the new license. This sampling pattern and frequency is reasonable, considering that YCWA's relicensing studies found FYLF at few locations, and summertime conditions under the new license are not expected to be significantly different than they are now.

Condition AR7 would require YCWA monitor for WPT at six locations: three in New Bullards Bar Reservoir; one in Our House Diversion Dam impoundment; one in Log Cabin Diversion Dam impoundment; and one in the Middle Yuba River. The preferred survey method is trapping with sampling overnight twice between late May and the end of July. Sampling would occur in License Year 3 and then once every fifth year thereafter. This sampling pattern and frequency is reasonable, given that few WPT were observed during relicensing and the low likelihood that the Proposed Project would affect WPT.

Since YCWA proposes to pass sediment through Our House and Log Cabin Diversion dams and excavate sediment as needed from those impoundments, YCWA's proposed Condition AR7 includes channel morphology monitoring within the two impoundments and downstream. Monitoring in the impoundments would occur once in the summer/fall period in the first, third, fifth, seventh and ninth sediment passage event years.

YCWA's proposed Condition AR7 would require sediment monitoring, along with LWM and riparian monitoring at five locations: two in the Middle Yuba River; one in Oregon Creek; one in the North Yuba River; and one in the Yuba River. Monitoring would occur once in two years in every 10 year period. Sampling methods are designed to provide a snapshot of channel morphological conditions and for comparison of conditions among years and to pre-new license issuance. This sampling pattern and frequency is reasonable, given that the river reaches are primarily transport reaches with steep sided banks and little riparian habitat.

Importantly, YCWA's proposed Condition AR7 includes specific locations for all sampling sites – in that way, YCWA will commence monitoring in the first full calendar year after license issuance because the monitoring plan is fully developed and agency consultation is not needed to select any sites or agree on methods.

The plan provides for reports in years that monitoring occurs, review of those reports with agencies, and filing the reports with FERC. Specifically, by January 15 of each year, YCWA would provide to the Forest Service, USFWS, Cal Fish and Wildlife and SWRCB a draft report

summarizing monitoring in the previous calendar year. A final report would be filed with FERC by March 15.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.4.8 YCWA's Proposed Condition AR8: Implement Lower Yuba River Aquatic Monitoring Plan

Licensee shall implement the Lower Yuba River Aquatic Monitoring Plan that was filed with the Commission by Licensee on December 2, 2016 (Accession #20161201-5304, Encl. 1C, Lower Yuba River Aquatic Monitoring Plan).

Rationale Statement in Support of YCWA's Condition AR8. YCWA's Proposed Condition AR8 would develop information regarding aquatic resources in the Yuba River downstream of Englebright Dam in response to flow conditions in the new license. To allow for comparison of post-license anadromous salmonid information with pre-license issuance information, the post-license issuance monitoring generally would use the same methods and be at the same locations as the pre-license issuance sampling, with some additional monitoring, as agreed upon by relicensing participants. The Lower Yuba River Aquatic Monitoring Plan incorporates numerous components including:

- Passage of fish by species at USACE's Daguerre Point Dam year-round
- Annual spawning population abundance for spring-run Chinook salmon, fall-run Chinook salmon and steelhead
- Temporal and spatial distributions and habitat use of spawning steelhead upstream and downstream of Daguerre Point Dam
- Abundance, size and timing of emigrating salmonids
- Interactions of anadromous fish with Narrows 2 Facilities and operations
- Channel substrate and LWM
- Riparian vegetation cover and community structure
- BMI community structure

Fish passage at Daguerre Point Dam would be monitored by maintaining a VAKI Riverwatcher™ system, or similar system, in each of the fish ladders at Daguerre Point Dam. For each year of monitoring the time series of VAKI Riverwatcher™ fish passage data would be evaluated to accomplish the technical objectives of characterizing:

- The temporal distributions of Chinook salmon and steelhead net daily passage upstream of Daguerre Point Dam annually

- The temporal distributions of adipose fin-clipped Chinook salmon and steelhead net daily passage upstream of Daguerre Point Dam
- The annual abundance of spring-run and fall-run Chinook salmon, and steelhead upstream of Daguerre Point Dam, for both adipose fin-clipped and non-clipped fish
- Multi-year trends in the abundance and temporal distributions of both adipose fin-clipped and non-clipped spring-run and fall-run Chinook salmon, and steelhead that pass upstream of Daguerre Point Dam
- Annual and multi-year temporal distributions of Chinook salmon and steelhead net daily passage upstream of Daguerre Point Dam and potential associations with corresponding time series of Lower Yuba River flows and water temperatures
- The annual length-frequency distributions of spring-run and fall-run Chinook salmon, and steelhead that pass upstream of Daguerre Point Dam

Carcass surveys will be conducted to:

- Estimate the total annual abundance of Chinook salmon downstream of Daguerre Point Dam
- Use recovered coded-wire tags (CWT) to determine the origin of Chinook salmon (i.e., hatchery and river of origin)
- Conduct biometric surveys to characterize Chinook salmon population demographics

The survey area for the mark-recapture carcass survey would be the Yuba River and side channel habitats from Daguerre Point Dam to the Simpson Lane Bridge (i.e., approximate distance of 10 mi), which includes all known Chinook salmon spawning habitat downstream of Daguerre Point Dam. Biometric sampling conducted concurrently with the mark-recapture surveys downstream of Daguerre Point Dam would be conducted in this same survey area. The survey area for biometric sampling of Chinook salmon carcasses upstream of Daguerre Point Dam would include the areas of Timbuctoo Bend and Parks Bar.

Each year of sampling, YCWA would commence monitoring for Chinook salmon spawning in mid-August and then begin weekly surveys approximately 10 to 14 days after the first Chinook salmon redd is observed in the survey area, and YCWA would continue until no carcasses are observed in the survey area during a weekly survey, or until January 31, whichever occurs first.

Mark-recapture surveys would be conducted during the first 10 years after license issuance, unless the Ecological Group (YCWA's Proposed Measure GEN1) decides to discontinue the surveys before the 10 years are complete. Thereafter, mark-recapture surveys downstream of Daguerre Point Dam would be conducted in conjunction with the biometric surveys downstream of Daguerre Point Dam. Thus, subsequent to the first 10 years, mark-recapture and biometric surveys downstream of Daguerre Point Dam would be conducted during 3 years of each 10-year block through the term of the license.

YCWA would conduct redd surveys to determine the location and timing of steelhead spawning activity upstream and downstream of Daguerre Point Dam in the lower Yuba River, and to estimate redd abundance and associated adult breeding population size (i.e., spawning stock escapement) downstream of Daguerre Point Dam. The steelhead redd survey would also include the following specific objectives:

- Describe the temporal and spatial spawning distribution of steelhead upstream and downstream of Daguerre Point Dam
- Characterize the size and shape of steelhead redds to assist in species-specific redd identification
- Provide an estimate or index of adult steelhead spawning abundance downstream of Daguerre Point Dam to compliment the VAKI Riverwatcher™-based annual abundance estimation upstream of Daguerre Point Dam

Steelhead redd surveys would extend from Englebright Dam downstream to the Simpson Lane Bridge.

YCWA would conduct steelhead redd surveys from January 1 to May 31 of each monitoring year, or until newly constructed redds are not seen over two consecutive survey periods. All survey sites would be visited at least once every 14 days during the active survey periods.

Steelhead redd surveys would be conducted during the first 5 years after license issuance. Subsequent to the first 5 years, steelhead redd surveys would be conducted during 3 years of each 10-year block through the term of the license, targeting schedule 5, 6 and conference years, based on the Yuba Accord NYI. It is recognized that water year type determinations by January 1 (when steelhead redd surveys are to commence) are uncertain, and that survey planning and permit applications would need to commence based upon available information (e.g., New Bullards Bar Reservoir storage, long-term weather forecasts).

Abundance, size and timing of emigrating juvenile salmonids would be characterized using data collected by rotary screw trapping (RST). Monitoring would be conducted to:

- Estimate and examine trends in the weekly, monthly, seasonal and annual abundances of emigrating juvenile Chinook salmon from the lower Yuba River
- Evaluate time-period specific size structure during juvenile Chinook salmon emigration

From one to three RSTs would be deployed in the lower Yuba River. In the past, Cal Fish and Wildlife and the RMT conducted RST sampling in the lower Yuba River near Hallwood Boulevard. If the previously used site or proximal site remains suitable for RST location, then efforts would be made to locate the RST(s) at this location. Once a suitable trap site has been found, the trap distance upstream from the mouth of the Yuba River would remain fixed each year unless changes in channel configuration or hydraulic conditions warrant adjustments.

In the first full calendar year following license issuance, YCWA would begin applying for the permits and approvals necessary to install, maintain and operate RSTs. RST sampling would be initiated during the immediately subsequent years after the permits and approvals are obtained. RST sampling would be conducted annually for the first 5 years of the license. Subsequent to the first 5 years, RST monitoring would be conducted during 3 consecutive years of each 10-year block through the term of the license. The RST monitoring period for juvenile Chinook salmon would be from November 15 through June 15 of each year of sampling.

Interactions of anadromous fish with Narrows 2 Facilities and operations would be characterized by monitoring from July through February of each year, or as superseded by a Biological Opinion from NMFS for the relicensing. YCWA would survey for stranded Chinook salmon and steelhead in the Yuba River when any of the following occurs:

- The Full Bypass ceases operations (i.e., flow through the Full Bypass is reduced to 0 cfs)
- At a starting flow of 1,500 cfs or greater, the combined discharge from the Narrows 2 Facilities decreases by more than 400 cfs within any 1-hour period
- At a starting flow of less than 1,500 cfs, the combined discharge from the Narrows 2 Facilities decreases by more than 250 cfs within any 1-hour period

Surveys would be conducted using binoculars from the Narrows 2 Powerhouse deck or, if flows allow safe access to the river channel, by walking or wading along or boating around the perimeter of the Full Bypass pool and then continuing along the bank opposite the Full Bypass slowly downstream searching edgewater, backwater, perched habitats, and exposed bars for stranded Chinook salmon and steelhead. Particular attention would be given to the area of the bank previously wetted by the Full Bypass and in spaces between large boulders.

The goal of substrate and LWM monitoring in the lower Yuba River would be to inform how sediment and LWM may be changing under the influence of new license terms and conditions. The objectives of the monitoring would be to: 1) characterize the spatial distribution of substrate in the lower Yuba River; 2) determine the location and distribution of areas of fine sediment, which may be more suitable for riparian recruitment and whether particle size distributions suitable for anadromous salmonid spawning habitat are changing over time; and 3) determine the spatial distribution and composition of LWM in the lower Yuba River.

Monitoring substrate and LWM changes in the lower Yuba River would be conducted from downstream of the Englebright Dam Reach to the confluence with the Feather River.

YCWA would monitor for the presence and function of LWM by conducting a census of all unrooted wood meeting minimum size requirements of greater than 3 ft in length and 4 in. in diameter at the large end within a sub-section of each reach following the methodologies utilized during Project relicensing for Study 6.2. All LWM below the 5,000 cfs line would be tallied by size and diameter class. Diameter classes would be: 4 in. to less than 12 in.; 12 in. to less than 24 in.; 24 in. to less than 36 in.; and greater than or equal to 36 in.

YCWA would monitor for substrate and LWM as described above once within the first 3 years of license issuance and then in License Year 10 and every 10 years thereafter (i.e., License Years 20 and 30) until a new license is issued.

The goal of riparian vegetation monitoring in the lower Yuba River would be to inform how riparian habitat and riparian habitat-related processes may be changing under the influence of new license terms and conditions. The objectives of the riparian habitat monitoring in the lower Yuba River would be to characterize:

- The spatial distribution and the magnitude of change in vegetation cover, and the structure of riparian vegetation as defined by height and species categories
- The spatial distribution of cottonwood seedling recruitment and cottonwood tree establishment to the riparian community

Monitoring riparian habitat changes in the lower Yuba River would be conducted in the reaches extending from Timbuctoo Bend to Marysville. This would make up the survey area for aerial photography and cottonwood field surveys.

YCWA would take aerial photography and monitor for cottonwood recruitment once within the first 3 years of license issuance, once in License Year 10 and every 10 years thereafter (i.e., License Years 20 and 30) until a new license is issued.

The goal of BMI monitoring in the lower Yuba River would be to inform how benthic macroinvertebrate communities and associated ecological processes may be changing under the influence of new license terms and conditions. The objective of the BMI monitoring would be to examine the community composition of BMIs in the lower Yuba River and how the community composition changes over time.

Monitoring BMI changes in the lower Yuba River would be conducted in four of the six reaches surveyed by YCWA during Project relicensing under Study 3.2, which are:

- Near the University of California Field Station (Timbuctoo Bend) (RMs 20.3 to 20)
- Parks Bar to Long Bar Area (RMs 17.8 to 17.5)
- Downstream of USACE's Daguerre Point Dam (RMs 11.4 to 11.1)
- Near Hallwood Boulevard (RMs 7.5 to 7.2)

Monitoring would be conducted once within the first 3 years of license issuance and then in License Year 10 and every 10 years thereafter (i.e., License Years 20 and 30) until a new license is issued. In addition, BMI monitoring would be triggered by consecutive Schedule 5, 6, and Conference Water Years. Specifically, monitoring would occur in the second year of two consecutive Schedule 5, 6, or Conference Years (i.e., two back-to-back Schedule 5 Years, two back-to-back Schedule 6 Years, two back-to-back Conference Years, or a combination of Schedule 5, 6, or Conference Years, as determined by the May Schedule Water Year

determination, unless monitoring will otherwise occur in that year (i.e., regularly scheduled monitoring), such as in License Year 2).

The plan provides for reports in years that monitoring occurs, review of those reports with agencies, and filing the reports with FERC. Specifically, by March 15 of each year, YCWA would file with FERC and provide to NMFS, USFWS, Cal Fish and Wildlife and SWRCB a Lower Yuba River Aquatic Monitoring Report. The report would include the information described in the plan for each resource that was monitored in the previous calendar year, and would document non-compliance with the plan during the performance of the monitoring surveys, if any. By January 15 of each year, YCWA would provide a draft of the report to NMFS, USFWS, Cal Fish and Wildlife and SWRCB for a 30 day-review period. If YCWA does not adopt a particular written recommendation by NMFS, USFWS, Cal Fish and Wildlife or SWRCB, the Report YCWA files with FERC on March 15 would include the reasons for not doing so.

YCWA understands that Cal Fish and Wildlife and NGOs agree with the specific wording in this proposed condition.

2.4.9 YCWA's Proposed Condition AR9: Control Project Ramping and Flow Fluctuation Downstream of Englebright Dam

This condition does not apply: (a) to Project operations during emergencies, (b) to releases required by USACE's flood control criteria, (c) to releases required to maintain a flood control buffer or for other flood control purposes, (d) to bypasses of uncontrolled flows into Englebright Reservoir, (e) during times when Englebright Dam is spilling, or (f) when releases are governed by the limits of Table 3 of this condition. When this condition applies, Licensee shall make reasonable efforts to operate New Bullards Bar Reservoir and Project facilities downstream of Englebright Dam and coordinate with the operator of the Narrows Project (FERC Project No. 1403) to avoid fluctuations in the flow of the Yuba River downstream of Englebright Dam and daily changes in Project operations affecting releases or bypasses of flow downstream of Englebright Dam shall be continuously measured at USGS Smartsville Streamflow Gage 11418000 and made in accordance with the following conditions:

- To minimize the potential for spring-run Chinook salmon redd dewatering, during the period from September 2 through December 31 (corresponding to the spring-run Chinook salmon spawning and incubation period), Licensee shall not reduce the flow downstream of Englebright Dam to less than the larger of: 1) the applicable minimum streamflow requirement specified in YCWA's Proposed Condition AR3; or 2) the flow that would result from applying the maximum flow reduction amount specified in Table 1 of this condition corresponding to the base flow range determined using the maximum 5-day average flow that occurred on days when this condition was in effect during that September 2 through December 31 period. During the period of September 2 through 5, the base flow range shall be determined by the average daily flow on September 1.

- To minimize the potential for steelhead redd dewatering, during the period from January 1 through May 31 (corresponding to the steelhead spawning and incubation period), Licensee shall not reduce the flow downstream of Englebright Dam to less than the larger of: 1) the applicable minimum streamflow requirement specified in YCWA's Proposed Condition AR3; or 2) the flow that would result from applying the maximum flow reduction amount specified in Table 2 of this condition corresponding to the base flow range determined using the maximum 5-day average flow that occurred on days when this condition was in effect during that January 1 through May 31 period. During the period of January 1 through 5, the base flow range shall be determined by the average daily flow on December 31. If this condition was not in effect on December 31, then the base flow range shall be the minimum flow authorized under the preceding paragraph on the latest date on which this condition was in effect. During the period from April 1 through May 31 when Flow Schedules 3 through 6 or Conference Years are in effect specified in YCWA's Proposed Condition WR3, Licensee may reduce the flow downstream of Englebright Dam to the applicable minimum streamflow requirement specified in YCWA's Proposed Condition AR3.
- To minimize the potential for salmonid fry and juvenile stranding year-round, streamflow downstream of Englebright Dam:
  - shall not exceed a rate of increase of more than 500 cfs per hour, nor a rate of decrease of more than 200 cfs per hour, measured at the beginning of each hour of the day;
  - shall not vary up or down by more than 15 percent of the average daily flow due to changes in Project operations, once the daily Project release is achieved; and
  - shall not be reduced to a daily average flow of less than 70 percent of the prior day's average daily flow.

Table 1. Maximum flow reductions corresponding to the maximum average release (Base Flow) that has occurred during the period extending from September 1 through December 31.

Base Flow Range (cfs)	Maximum Flow Reduction (cfs)
450 – 549	200
550 - 849	250
850 - 1049	300
1,050 – 1,349	350
1,350 – 1,599	400
1,600 – 1,849	450
1,850 – 2,199	500
2,200 – 2,549	550
2,550 – 2,899	600
2,900 – 3,199	650
3,200 – 3,549	700
3,550 – 4,130	750

Table 2. Maximum flow reductions corresponding to the maximum average release (Base Flow) that has occurred during the period extending from January 1 through May 31.

Base Flow Range (cfs)	Maximum Flow Reduction (cfs)
450 - 499	200
500 - 549	250
550 - 649	300
650 - 849	350
850 – 1,199	400
1,200 – 1,449	450
1,450 – 1,699	500
1,700 – 1,899	550
1,900 – 2,149	600
2,150 – 2,399	650
2,400 – 2,699	700
2,700 – 2,949	750
2,950 – 3,199	800
3,200 – 3,449	850
3,450 – 3,899	900
3,900 – 4,130	950

- To enhance riparian seedling recruitment, Licensee shall not reduce streamflow downstream of Englebright Dam during the period from April 1 through July 15 (the riparian seedling establishment period) to less than the larger of: 1) the applicable minimum streamflow requirement specified in YCWA's Proposed Condition AR3; 2) the flow that would result from applying the maximum flow reduction amount specified in Table 2 of this condition; or 3) the flow that would result from applying the maximum flow reduction amount specified in Table 3 of this condition for the previous day average flow. Releases required by this condition will not be used to determine the Base Flow under Table 2 above. Flow reductions greater than those listed in Table 3 may be used if needed to maintain Englebright Reservoir water surface elevation above 516 feet.

Table 3. Maximum flow reductions corresponding to the preceding day average flow that has occurred during the period extending from April 1 through July 15.

Previous Day Average Flow Range (cfs)	Maximum Flow Reduction (cfs)
400 - 999	79
1000 - 1999	150
2000 - 4,130	200

Rationale Statement in Support of YCWA's Condition AR9. For the reasons stated below, YCWA proposes that this condition be included in the new license. This condition is expected to minimize potential Project effects related to flow ramping and flow fluctuations on salmonids in the Yuba River downstream of Englebright Dam.

The maximum flow reductions possible for each flow range specified in Table 1 and Table 2 were developed by identifying the resultant decreased flow levels that would result in no more than 1.0 percent of expected spring-run Chinook salmon and steelhead redds being dewatered, respectively, using known spatial and depth distributions of spring-run Chinook salmon and steelhead redds and morphological unit-specific stage-discharge relationships (See Section 6 of the Applicant-Prepared Draft Biological Assessment). Because fall-run Chinook salmon spawning and embryo incubation extends from October 1 through March 31, Conditions 1 and 2,

which would restrict flow reductions during the spring-run Chinook salmon and steelhead spawning and embryo incubation periods, also would restrict flow reductions during the fall-run Chinook salmon spawning and embryo incubation period in the Yuba River downstream of Englebright Dam. Therefore, no additional conditions are proposed for fall-run Chinook salmon.

Studies conducted in the Yuba River downstream of Englebright Dam found no relationship between ramping rates in the lower Yuba River and the incidence of fry stranding on low gradient bars ("beaching") within the observed range of ramping rates (flow reductions of 100 to 200 cfs per hour at Narrows 2 Powerhouse) (B. Mitchell, ICF/JSA, pers. comm. 2012). Surveys conducted by YCWA indicate that the small size and strong association of young fry with substrates limit their ability to detect or respond to receding water levels, regardless of ramping rate. This finding is supported by Woodin (1984), who determined that any daytime ramping resulted in stranded Chinook salmon fry in Washington's Skagit River, and by Beck Associates (1989), who found no correlation between ramping rate and steelhead fry stranding during the summer in the Skagit River (WDF 1992).

Flow ramping rates of 100 to 200 cfs corresponded to changes in stage of 0.4 to 1 inch per hour at the study sites in the lower Yuba River (B. Mitchell, ICF/JSA, pers. comm. 2012), well within the rates of stage change considered to be protective of juvenile salmonids. A rate of 1 inch per hour is generally within the range of natural rates of stage reductions in unregulated rivers (Olson and Metzgar 1987), while Higgins and Bradford (1996) state that maximum recommended stage reduction levels for gravel bars of regulated rivers are typically 2.5–5 cm (1-2 inches) per hour (Sommer et al. 2005). Recommendations described in WDF (1992) suggest reductions in river stage of 1-2 in per hour are protective of anadromous salmonids. Therefore, a rate of flow reduction associated with Project releases or bypasses downstream of Englebright Dam of 200 cfs per hour would minimize the potential for fry stranding in the Yuba River downstream of Englebright Dam.

2.4.10 YCWA's Proposed Condition AR10: Maintain Minimum Streamflows below New Bullards Bar Dam

Licensee shall meet the minimum streamflow requirements for the North Yuba River downstream of New Bullards Bar Dam that are shown in Table 1 of this condition. Licensee shall record streamflow at the gage listed in this table, as required by USGS (Article 8 of FERC's Form L-5, Standard Articles).

Minimum streamflows shall be measured in cubic feet per second (cfs) once every 15-minutes at the compliance gage, and these 15-minute measurements averaged into hourly measurements that will be recorded and reported to USGS and the FERC.

Minimum streamflows may be temporarily modified as follows:

- For short periods and upon consultation with and approval by USFWS, Cal Fish and Wildlife and SWRCB. Licensee shall provide notification to the Commission prior to implementing such modifications.

- Due to an emergency. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, California ISO or other regulatory agency staff, including actions to prevent the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of transmission lines or Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements, and shall notify USFWS, Cal Fish and Wildlife and the SWRCB within 48 hours of the start of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.
- For one 4-hour period each calendar year at New Bullards Bar Dam to perform required testing of gates. Testing shall be performed when the dam is spilling and include rapidly fully opening and then fully closing the gate. To the extent practicable, Licensee shall coordinate the gate testing with other openings of the gate that may occur for Licensee's compliance with other conditions of the license. Licensee may forego testing of the gates in years when hydraulic conditions (e.g., sufficient spills) are not present.

Except as otherwise provided, Licensee shall implement the minimum streamflows shown in Table 1 of this condition beginning in the first 90 days of the new license term unless facility modification or construction is necessary. Changes between minimum streamflow values may be made with one adjustment to the controlling valve (i.e., ramping from one minimum flow to another minimum flow is not required).

Where a facility must be modified or constructed to allow compliance with required minimum streamflows, including flow measurement facilities, then, except as otherwise provided, Licensee shall submit applications for permits to modify or construct the facility as soon as reasonably practicable but no later than within the first 2 years of the new license term, and Licensee will complete the work as soon as reasonably practicable but no later than within 2 years after receiving all required permits and approvals for the work. During the period before facility modifications or construction activities are completed, and within the first 90 days of the new license term, Licensee shall make a good faith effort to provide the specified minimum streamflows within the reasonable capabilities of the existing facilities.

Table 1. Minimum streamflows in cubic feet per second (cfs) in the North Yuba River downstream of New Bullards Bar Dam by month and Water Year Type, the latter of which is defined in YCWA's Proposed Condition WR2.

Month	Wet Water Year	Above Normal Water Year	Below Normal Water Year	Dry Water Year	Critically Dry Water Year
NORTH YUBA RIVER - BELOW NEW BULLARDS BAR DAM (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11413517)					
October 1 - 30	13	13	13	13	7
November 1-30	13	13	13	13	7
December 1 - 31	13	13	13	13	7
January 1 - 31	13	13	13	13	7
February 1- 29	13	13	13	13	7

Table 1. (continued)

Month	Wet Water Year	Above Normal Water Year	Below Normal Water Year	Dry Water Year	Critically Dry Water Year
NORTH YUBA RIVER - BELOW NEW BULLARDS BAR DAM (COMPLIANCE POINT: USGS STREAMFLOW GAGE 11413517) (continued)					
March 1 - 31	11	12	13	13	7
April 1 - 30	5	5	5	5	5
May 1- 31	5	5	5	5	5
June 1 - 30	5	5	5	5	5
July 1 - 31	11	12	13	13	7
August 1 - 31	11	12	13	13	7
September 1- 30	11	12	13	13	7

Rationale Statement in Support of YCWA's Condition AR10. The minimum flow releases from the New Bullards Bar Dam affect the 2.4-m section of the North Yuba River from the New Bullards Bar Dam to the North Yuba River's confluence with the Middle Yuba River (i.e., New Bullards Bar Dam Reach). The overall gradient in the reach is 2 percent, with a maximum gradient of 5.5 percent at approximately RM 1. In the 1.1 mi of the reach that had on-the-ground habitat mapping done, there was 511 sq ft of trout spawning sized gravel. YCWA estimated this size gravel becomes mobile at a flow of 126 cfs, which has a similar return interval under the Without-Project hydrology (<1 year) as it does under With-Project hydrology (1.6 years). The steep and confined nature of the canyon, relatively high frequency of spill flows, as shown in Table 2-5, and lack of spawning size gravel without enormously expensive mechanical augmentation in this reach yield relatively poor habitat with little potential for practical lasting improvement. Even if fish did spawn in this reach, about every other year, most of the spawning substrate would be flushed out.

Table 2-5. Probability of maximum annual New Bullards Bar Dam spill under With-Project Hydrology (WY 1970-2010).

Maximum Annual Spill (cfs)	Number of Years Maximum Flow Exceeded (yrs)	Probability of Exceeding Maximum Annual Flow (%)
1,000	21	51%
5,000	17	41%
10,000	14	34%
20,000	10	24%
50,000	1	2%

YCWA's 2012 stream fish surveys found three fishes in the North Yuba River at the one site surveyed by snorkeling: RM 0.2 just upstream of the Middle Yuba River confluence. YCWA found Sacramento sucker, rainbow trout and smallmouth bass with calculated densities of 3,203 Sacramento sucker per mi, 567 rainbow trout per mi, and 14 smallmouth bass per mi. Rainbow trout lengths were estimated between 0 and 200 mm.

Using PHABSIM, YCWA developed WUA curves for the reach as part of the relicensing Instream Flow Study. For the rainbow trout adult life stage, the 100 and 80 percent of maximum static WUA were 600 and 90 cfs, respectively; for the rainbow trout spawning life stage the 100 and 80 percent of maximum static WUA were 120 and 53 cfs, respectively; and for the rainbow

trout juvenile life stage the 100 and 80 percent of maximum static WUA were 60 cfs and 15 cfs, respectively.

Table 2-6 shows the percent of maximum WUA in the New Bullards Bar Dam Reach for rainbow trout adult, spawning and juvenile life stages using YCWA's proposed minimum flow releases from New Bullards Bar Dam.

Table 2-6. Percent of maximum WUA for rainbow trout adult, spawning and juvenile life stages in the New Bullards Bar Reach that correspond with YCWA's proposed Condition AR10.

Month	Critically Dry Water Year	Dry Water Year	Below Normal Water Year	Above Normal Water Year	Wet Water Year
RAINBOW TROUT – ADULT LIFE STAGE					
October	13%	24%	24%	24%	24%
November	13%	24%	24%	24%	24%
December	13%	24%	24%	24%	24%
January	13%	24%	24%	24%	24%
February	13%	24%	24%	24%	24%
March	13%	24%	24%	22%	21%
April	10%	10%	10%	10%	10%
May	10%	10%	10%	10%	10%
June	10%	10%	10%	10%	10%
July	13%	24%	24%	22%	21%
August	13%	24%	24%	22%	21%
September	13%	24%	24%	22%	21%
RAINBOW TROUT – SPAWNING LIFE STAGE					
April	44%	44%	44%	44%	44%
May	44%	44%	44%	44%	44%
June	44%	44%	44%	44%	44%
RAINBOW TROUT – JUVENILE LIFE STAGE					
October	69%	83%	83%	83%	83%
November	69%	83%	83%	83%	83%
December	69%	83%	83%	83%	83%
January	69%	83%	83%	83%	83%
February	69%	83%	83%	83%	83%
March	69%	83%	83%	81%	80%
April	63%	63%	63%	63%	63%
May	63%	63%	63%	63%	63%
June	63%	63%	63%	63%	63%
July	69%	83%	83%	81%	80%
August	69%	83%	83%	81%	80%
September	69%	83%	83%	81%	80%

For hydrologic context, Table 2-7 compares the simulated mean monthly streamflows observed in the No Action Alternative to those resulting from Conditions implemented in the proposed Project downstream of New Bullards Bar Dam.

Table 2-7. Mean monthly flows (cfs) downstream of New Bullards Bar Dam for the Yuba River Index water year types from Water Year 1970 through Water Year 2010.

Month	Average Monthly Discharge (cfs)					
	NBB Node 0 (Dam)			NBB Node 1		
	No Action Alternative	Proposed Project	Change (% Change)	No Action Alternative	Proposed Project	Change (% Change)
October	8	14	6 (80.2%)	8	15	6 (78.7%)
November	8	14	6 (81.7%)	9	15	6 (73.4%)
December	267	245	-22 (-8.2%)	269	247	-22 (-8.1%)
January	602	521	-81 (-13.4%)	607	526	-81 (-13.3%)

Table 2-7. (continued)

Month	Average Monthly Discharge (cfs)					
	NBB Node 0 (Dam)			NBB Node 1		
	No Action Alternative	Proposed Project	Change (% Change)	No Action Alternative	Proposed Project	Change (% Change)
February	383	356	-28 (-7.2%)	388	361	-28 (-7.1%)
March	449	430	-19 (-4.3%)	454	435	-19 (-4.2%)
April	164	117	-47 (-28.4%)	168	121	-47 (-27.8%)
May	337	254	-83 (-24.7%)	339	256	-83 (-24.6%)
June	209	156	-53 (-25.3%)	210	157	-53 (-25.2%)
July	13	14	1 (4.3%)	13	14	1 (4.2%)
August	8	14	5 (62.8%)	8	14	5 (62.2%)
September	8	14	6 (68.1%)	8	14	6 (67.4%)

Table 2-8 shows an AUC summary comparison table which compares, for all WYs, the monthly average habitat that would occur under the proposed Project to habitat that would occur under No Action Alternative flow conditions at each hydrologic model node, where Node 0 represents the hydrologic conditions at the dam (i.e., no accretion) and Node 1 represents the hydrologic mid point of the stream reach between New Bullards Bar Dam (RM 2.4) and the confluence of the Middle Yuba River (RM 0.0). Figures 2-8 and 2-9 show the AUC values for the Proposed Project and No Action Alternative at Node 0 and Node 1, respectively.

Table 2-8. Percent of habitat under that corresponds with YCWA's proposed Project for all species and life stages as compared to the No Action Alternative in the New Bullards Bar Dam Reach of the North Yuba River. Comparison made using all water years in the period of record.

NEW BULLARDS BAR - NBB NODE 0 - ALL WATER YEARS - SUM OF AUC 1% to 100%												
Species/Life Stage	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Rainbow Trout Adult	74.5%	75.9%	62.4%	50.3%	50.7%	30.8%	-4.0%	-3.6%	-1.2%	44.4%	58.3%	63.4%
Rainbow Trout Juvenile	18.4%	18.7%	18.6%	17.2%	16.5%	13.9%	0.5%	1.1%	1.0%	12.4%	14.8%	16.0%
Rainbow Trout Spawning	--	--	--	--	--	--	0.7%	2.0%	1.6%	--	--	--
Sacramento Sucker Adult	9.0%	9.2%	8.9%	8.3%	7.9%	6.6%	0.2%	0.4%	0.3%	5.9%	7.2%	7.9%
Sacramento Sucker Juvenile	8.3%	8.4%	8.8%	8.0%	7.6%	6.9%	0.9%	1.6%	1.2%	5.8%	6.7%	7.2%
Hardhead/Pikeminnow Adult	14.7%	14.9%	13.4%	12.4%	12.6%	9.3%	-1.0%	-1.1%	-0.5%	9.7%	12.0%	12.8%
Hardhead/Pikeminnow Juvenile	5.8%	5.9%	6.0%	5.6%	5.1%	4.6%	0.6%	1.0%	0.8%	3.9%	4.7%	5.1%
NEW BULLARDS BAR - NBB NODE 1 - ALL WATER YEARS - SUM OF AUC 1% to 100%												
Rainbow Trout Adult	72.6%	66.8%	51.1%	37.0%	34.7%	22.3%	-2.8%	-2.6%	-1.1%	43.4%	57.5%	62.5%
Rainbow Trout Juvenile	17.8%	16.7%	15.1%	11.9%	10.0%	8.0%	0.7%	1.2%	1.1%	12.0%	14.5%	15.8%
Rainbow Trout Spawning	--	--	--	--	--	--	1.0%	2.1%	1.6%	--	--	--
Sacramento Sucker Adult	8.6%	7.9%	6.6%	5.0%	3.7%	2.6%	0.3%	0.5%	0.3%	5.6%	7.0%	7.7%
Sacramento Sucker Juvenile	8.2%	8.0%	8.2%	7.0%	6.5%	5.9%	1.0%	1.6%	1.2%	5.7%	6.6%	7.1%
Hardhead/Pikeminnow Adult	14.5%	14.0%	11.9%	10.1%	9.7%	7.0%	-0.8%	-0.9%	-0.4%	9.6%	11.8%	12.7%
Hardhead/Pikeminnow Juvenile	5.6%	5.3%	5.1%	4.1%	3.3%	2.9%	0.6%	1.1%	0.8%	3.7%	4.6%	5.0%

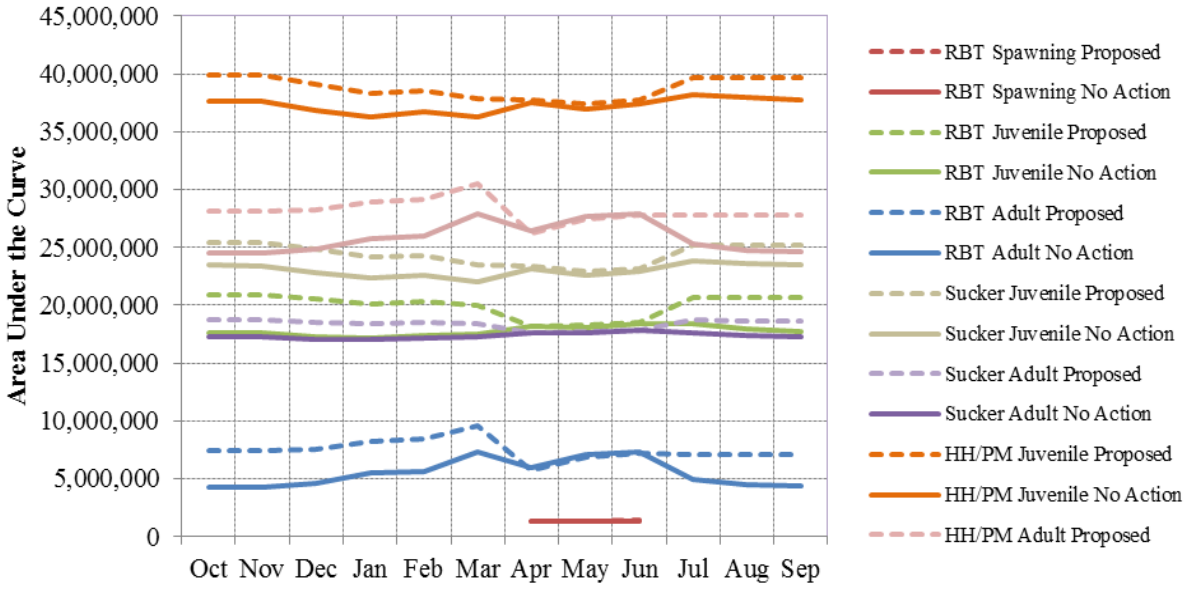

Figure 2-8. AUC for all life stages and species at Node 0 in the NBB Dam Reach based on YCWA's Proposed Project and the No Action Alternative.

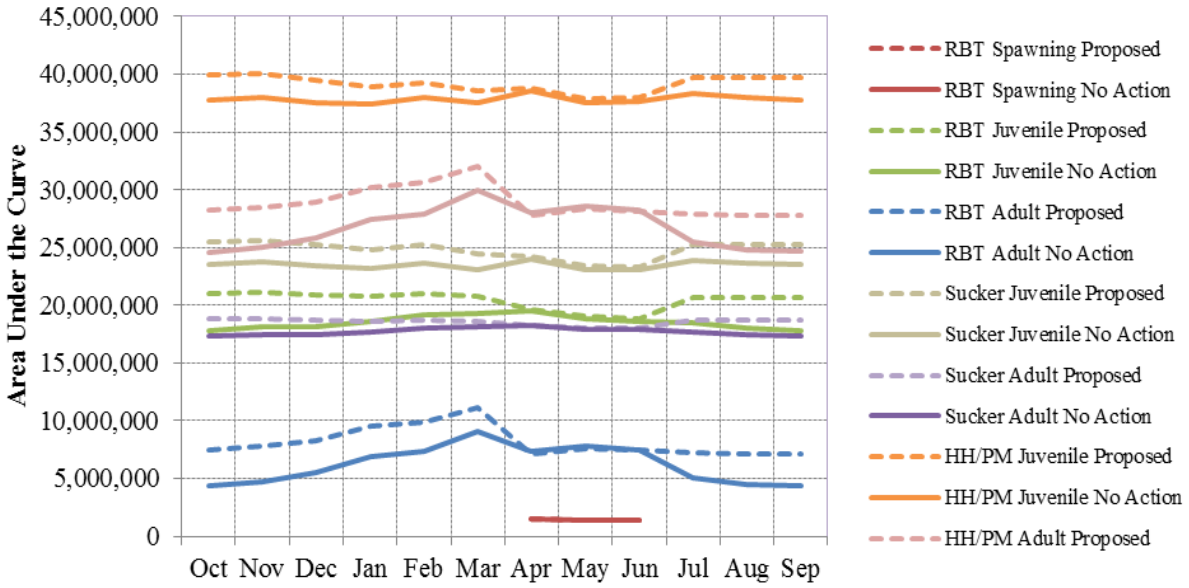

Figure 2-9. AUC for all life stages and species at Node 1 in the NBB Dam Reach based on YCWA's Proposed Project and the No Action Alternative.

YCWA's proposed Project releases at New Bullards Bar Dam resulted in an increase in available habitat for all species and life stages in most months. For example, due to increased minimum flow releases, significant increases in habitat result for both the adult and juvenile lifestages occur in July through March as compared to the No Action Alternative. Most species showed very little effect during the spring as streamflows did not change, on average by more than 1 cfs from the No Action Alternative.

YCWA's 2008 through 2012 water temperature monitoring occurred at two locations: RM 2.3 immediately below New Bullards Bar Dam from July 2008 through October 2012, and RM 0.1 immediately upstream of the Middle Yuba River confluence from July 2008 through October 2012. At RM 2.3, YCWA found that the mean and maximum daily water temperatures in July were 10.2°C and 11.7°C, respectively; and mean and maximum daily water temperatures in August were 10.3°C and 11.9°C, respectively. Mean daily water temperature never exceeded 20°C. At RM 0.1, YCWA found that the mean and maximum daily water temperatures in July were 21.6°C and 23.9°C, respectively; and mean and maximum daily water temperatures in August were 20.5°C and 23.5°C, respectively. Mean daily water temperatures exceeded 20°C in July and August 90 percent and 76 percent of the time, respectively.

Increased minimum flows downstream of New Bullards Bar Dam result in simulated average daily water temperatures that are the same or colder under the proposed Project Alternative than under the No Action Alternative (Table 2-9).

Table 2-9. Comparison of simulated mean monthly water temperatures in the North Yuba River downstream of New Bullards Bar Dam for the No Action Alternative and Proposed Project for WYs 1970 through 2010.

Month	No Action Alternative			Proposed Project Alternative			Change		
	Min °C	Mean °C	Max °C	Min °C	Mean °C	Max °C	Min °C	Mean °C	Max °C
October	6.1	7.1	9.2	6.1	7.0	9.1	0.0	-0.1	-0.1
November	6.1	7.1	9.1	6.1	7.0	9.1	0.0	-0.1	0.0
December	6.0	7.1	12.5	6.1	7.1	11.7	0.1	0.0	-0.8
January	5.8	7.0	10.9	5.8	7.0	10.9	0.0	0.0	0.0
February	5.8	6.8	10.4	5.8	6.8	10.3	0.0	0.0	-0.1
March	5.8	6.7	8.9	5.8	6.7	8.8	0.0	0.0	-0.1
April	5.9	6.8	9.5	5.9	6.8	9.5	0.0	0.0	0.0
May	5.9	7.0	11.7	5.9	7.0	11.6	0.0	0.0	-0.1
June	6.0	7.1	11.2	5.9	7.1	11.1	-0.1	0.0	-0.1
July	6.1	7.1	8.4	6.1	7.0	8.2	0.0	-0.1	-0.2
August	6.2	7.1	8.3	6.1	7.0	8.2	-0.1	-0.1	-0.1
September	6.1	7.1	8.3	6.1	7.0	8.1	0.0	-0.1	-0.2

Additional discussion on the proposed Project's potential effects to water temperature, including a more detailed description of temperature effects during dry, normal and wet water years, is provided in Section 3.3.2.2.3, *Effects on Water Quality in Stream Reaches*, of this Amended FLA.

No egg masses, tadpoles, juvenile or adult FYLF were found in the reach during YCWA's VES at one site surveyed in 2012, nor were any incidental observations of FYLF in the New Bullards Bar Reach recorded during other studies.

Yuba River – North/Middle Yuba Rivers Reach

Releases from Log Cabin Diversion Dam, Our House Diversion Dam and New Bullards Bar affect the 5.7 mi long Yuba River from the confluence of the Middle and North Yuba rivers to just above New Colgate Powerhouse (North/Middle Yuba River Reach). The overall gradient in

the reach is 2.0 percent, with some steeper sections near 5 percent. In the portion of the reach that had on-the-ground habitat mapping done, there was 1,373 sq ft of trout spawning sized gravel, and YCWA estimated this size gravel becomes mobile at a flow of 83 cfs, which has a return interval of less than 1 year under both Without-Project and With-Project hydrologies.

YCWA's 2012 stream fish surveys found two fishes in the Yuba River at the one site surveyed by snorkeling: RM 35.0 upstream of New Colgate Powerhouse. YCWA observed smallmouth bass and rainbow trout and calculated the abundances to be 1,409 smallmouth bass per mi and 108 rainbow trout per mi.

Using PHABSIM, YCWA developed WUA curves for rainbow trout adult and spawning life stages for the reach. The 100 and 80 percent of maximum static WUA for the rainbow trout adult life stage were 140 and 70 cfs, respectively; the 100 and 80 percent of maximum static WUA for the rainbow trout spawning life stage were 800 cfs and 415 cfs, respectively; and the 100 and 80 percent of maximum static WUA for the rainbow trout juvenile life stage were 40 and 22 cfs, respectively.

Table 2-10 shows the final percent of maximum WUA for the NYR/MYR Reach for rainbow trout adult and spawning life stages. Juvenile life stage information was included in the table below, though flow release decisions were not based on the juvenile habitat results.

Table 2-10. Percent of maximum WUA for rainbow trout adult, spawning and juvenile life stages in the North/Middle Yuba River Reach that correspond with YCWA's proposed Condition AR1.

Month	Critically Dry Water Year	Dry Water Year	Below Normal Water Year	Above Normal Water Year	Wet Water Year
RAINBOW TROUT – ADULT LIFE STAGE					
October	68%	80%	83%	87%	87%
November	68%	82%	87%	90%	90%
December	68%	82%	87%	90%	94%
January	68%	82%	93%	94%	98%
February	73%	83%	94%	95%	99%
March	77%	86%	96%	99%	100%
April	87%	91%	98%	100%	100%
May	87%	91%	98%	100%	100%
June	87%	91%	98%	100%	100%
July	72%	87%	93%	96%	99%
August	72%	80%	87%	91%	95%
September	72%	80%	84%	97%	92%
RAINBOW TROUT – SPAWNING LIFE STAGE					
April	83%	81%	75%	72%	70%
May	83%	81%	75%	72%	70%
June	83%	81%	75%	72%	70%
RAINBOW TROUT – JUVENILE LIFE STAGE					
October	100%	98%	97%	95%	95%
November	100%	97%	95%	94%	93%
December	100%	97%	95%	94%	91%
January	100%	97%	92%	90%	86%
February	99%	96%	91%	89%	84%
March	98%	96%	88%	83%	80%
April	95%	93%	85%	79%	74%
May	95%	93%	85%	79%	74%
June	95%	93%	85%	79%	74%
July	99%	95%	92%	88%	82%
August	99%	98%	95%	93%	90%
September	99%	98%	96%	95%	93%

In this reach, YCWA's proposed minimum flows would provide between 68 and 100 percent of maximum WUA for rainbow trout adults, 70 and 83 percent for rainbow trout spawning, and 79 and 100 percent for rainbow trout juveniles.

YCWA's 2008 through 2012 water temperature monitoring occurred at two locations in this reach: RM 39.7 immediately below the confluence of the Middle and North Yuba rivers from July 2008 through October 2012, and RM 34.4 immediately upstream of the New Colgate Powerhouse from July 2008 through October 2012. At RM 39.7, YCWA found that the mean and maximum daily water temperatures in July were 23.0 °C and 25.4°C, respectively, and mean and maximum daily water temperatures in August were 21.8°C and 25°C, respectively. In July and August, mean daily water temperature exceeded 20°C 94 percent and 93 percent of the time, respectively. At RM 34.4, YCWA found that the mean and maximum daily water temperatures in July were 23.0°C and 26.4°C, respectively; and mean and maximum daily water temperatures in August were 22.1°C and 25.7°C, respectively. Mean daily water temperature exceeded 20°C in July and August 94 percent and 93 percent of the time, respectively. Similar statistics for modeled water temperature data at these two sites for the entire 40-year period of record are available in the Minimum Flow Matrix on the Relicensing Website (link above).

YCWA's Operations Model and Upper Temperature Model were used to examine what releases from New Bullards Bar Dam would be needed to maintain water temperatures in this reach below 20°C. Proposed minimum flows below Our House and Log Cabin Diversion Dams were combined with various constant minimum flows below New Bullards Bar Dam ranging between 7 cfs and 300 cfs. Figure 2-12 shows the Yuba River location where temperatures from that point and upstream never exceed 20°C for the various flows.

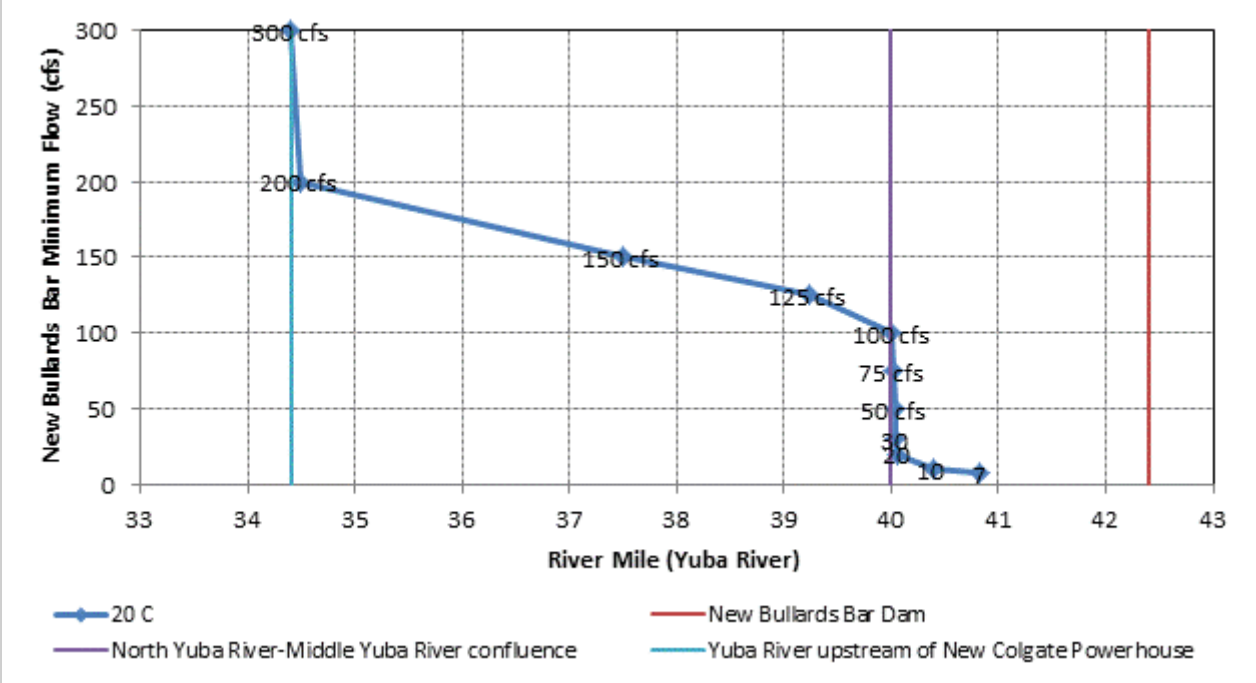

Figure 2-12. Yuba River location of the 100th percentile exceedance of 20°C per constant release below New Bullards Bar Dam.

The figure shows that New Bullards Bar Dam releases in excess of 100 cfs are needed before temperatures less than 20°C are maintained at any point in the Yuba River below the North and Middle Yuba River confluence. Flow from the Middle Yuba River regularly exceeds 20°C in summer. New Bullards Bar Dam releases in excess of 200 cfs are needed to maintain temperatures below 20°C for the entire 5.7-long reach, down to New Colgate Powerhouse.

In the reach downstream of the Middle Yuba and North Yuba confluence, YCWA's proposed Project would not adversely affect fish due to increases in stream water temperature. As shown above, increased minimum flows are not expected to reduce Middle Yuba River water temperatures below 20.0°C because historical inflows to Our House and Log Cabin diversion dams are above 20.0°C. Increased minimum flows downstream of New Bullards Bar Dam result in simulated average daily water temperatures that are the same or colder under the proposed Project Alternative than under the No Action Alternative. Combined, these releases result in a small reduction of summer water temperatures as shown in Table 2-11.

Table 2-11. Comparison of simulated mean monthly water temperatures in the Yuba River upstream of New Colgate Powerhouse for the No Action Alternative and Proposed Project for WYs 1970 through 2010. Water temperatures greater than 20°C are highlighted in yellow for visual reference.

Month	No Action Alternative			Proposed Project			Change		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
	°C	°C	°C	°C	°C	°C	°C	°C	°C
October	9.1	14.5	22.9	9.1	14.3	21.5	0.0	-0.2	-1.4
November	2.7	7.9	12.8	2.9	7.7	12.6	0.2	-0.2	-0.2
December	0.1	3.7	10.6	0.2	3.9	9.9	0.1	0.2	-0.7
January	0.2	3.7	9.6	0.3	3.9	9.5	0.1	0.2	-0.1
February	2.3	6.3	9.9	2.4	6.2	9.8	0.1	-0.1	-0.1
March	5.5	9.4	14.3	5.6	9.1	13.4	0.1	-0.3	-0.9
April	6.2	13.0	18.4	6.0	12.2	18.1	-0.2	-0.8	-0.3
May	8.4	16.6	22.8	7.7	15.6	22.5	-0.7	-1.0	-0.3
June	9.2	20.4	24.4	8.9	19.8	24.4	-0.3	-0.6	0.0
July	10.7	23.4	25.9	18.4	23.4	26.1	7.7	0.0	0.2
August	19.2	22.4	25.0	19.1	22.3	25.1	-0.1	-0.1	0.1
September	14.7	19.5	22.8	14.7	19.3	22.7	0.0	-0.2	-0.1

Additional discussion on the proposed Project's potential effects to water temperature, including a more detailed description of temperature effects during dry, normal and wet water years, is provided in Section 3.3.2.2.3 of this Amended FLA.

No egg masses, tadpoles, juvenile or adult FYLF were found in the reach during YCWA's VES at two sites in 2012 and a repeat survey of one of the sites in 2013, nor were any incidental observations of FYLF recorded during other studies.

2.4.11 YCWA's Proposed Condition AR11: Periodically Close Lohman Ridge Diversion Tunnel

License shall, beginning in the first full calendar year after license issuance, fully close the Lohman Ridge Diversion Tunnel as described in this condition.

Spring and Summer Tunnel Closures

If the end-of-March New Bullards Bar Reservoir storage is 775,000 acre-feet or greater and the subsequent April is a Wet Water Year, as defined in Licensee's proposed Condition WR2, Licensee shall close the Lohman Ridge Diversion Tunnel within 2 business days of when the California Department of Water Resources publishes that April Bulletin 120. The Lohman Ridge Diversion Tunnel shall remain fully closed through September 30 of that calendar year. Concurrent with the Lohman Ridge Diversion Tunnel closure, Licensee shall open the low-level outlet and fish release valve at Log Cabin Diversion Dam, but Licensee may leave the Camptonville Diversion Tunnel fully open.

Fall Tunnel Closures

If May is a Wet, Above Normal or Below Normal water year, as defined in Licensee's proposed Condition WR2, and the subsequent end-of-September New Bullards Bar Reservoir storage is 600,000 acre-feet or greater, Licensee shall fully close the Lohman Ridge Diversion Tunnel from October 1 through December 31 of that calendar year.

This condition is subject to temporary modification if required for repairs to the dam or associated equipment, by equipment malfunction, as directed by law enforcement authorities, or in emergencies. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, or other regulatory agency staff, including actions to prevent or reduce the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements and shall notify the Forest Service, SWRCB, and Cal Fish and Wildlife within 48 hours of the modification.

For fall tunnel closures, Licensee shall make a good faith effort to notify the Forest Service and SWRCB at least 5 business days prior to any anticipated tunnel closure. For spring tunnel closures, Licensee shall make a good faith effort to notify the Forest Service and SWRCB at least 1 business day prior (5 days prior, if tunnel closure appears likely based on the March California Department of Water Resources Bulletin 120 forecast and New Bullards Bar Reservoir elevation) to any anticipated tunnel closure. Coincident with these notifications, Licensee shall post a notice at Our House Diversion Dam and New Colgate Powerhouse public river access points, describing potential flow increases, and coordinate with the Forest Service to post the same notice at other recreation facilities and public river access points downstream of

Our House Diversion Dam on the Middle Yuba River. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such tunnel closures.

Where facilities must be modified or constructed to allow compliance with the required tunnel closures, except as otherwise provided, Licensee shall submit applications for permits to modify or construct the facilities as soon as reasonably practicable but no later than within the first 2 years of the new license term, and will complete the work as soon as reasonably practicable but no later than 2 years after receiving all required permits and approvals for the work. During the period before facility modifications or construction activities are completed, Licensee shall make a good faith effort to provide the specified tunnel closures in this condition within the reasonable capabilities of the existing facilities.

Licensee shall notify the Commission within 30 days of closing the Lohman Ridge Diversion Tunnel in compliance with this condition. The notification will include the date and time the tunnel was closed, and Licensee shall make the notice available to Forest Service and SWRCB.

Rationale Statement in Support of YCWA's Condition AR11. While YCWA believes it's Lohman Ridge and Camptonville diversion tunnel relicensing entrainment study demonstrates a very low level of entrainment, the Forest Service and other agencies expressed a concern. To mitigate this potential effect, the Forest Service and YCWA agreed that YCWA would periodically close the Lohman Ridge Diversion Tunnel. Specifically, under YCWA's proposed Condition AR11, if DWR's May Bulletin 120 forecast is for a Wet, Above Normal or Below Normal WY, as defined in YCWA's proposed Condition WR2, and the subsequent end-of-September New Bullards Bar Reservoir storage is 600,000 ac-ft or greater, YCWA would close the Lohman Ridge Diversion Tunnel from October 1 through December 31. Further, the condition specifies that YCWA would close the Lohman Ridge Tunnel within 2 business days of when DWR publishes it's April Bulletin 120 through September 30 when the Bulletin 120 April Forecast is a Wet WY, as defined in YCWA's proposed Condition WR2, and the end-of-March New Bullards Bar Reservoir storage is 775,000 ac-ft or greater. Concurrent with the Lohman Ridge Diversion Tunnel closure, the low level outlet and fish release valve at Log Cabin Diversion Dam will be fully opened.

YCWA's proposed Condition would result in having the tunnel closed beginning in April through December in seven years out of 41 years (17% of years), and from October through December in 17 years out of 41 years (41% of years). The average volume of water not diverted to New Bullards Bar Reservoir in the seven April through December years is 131,289 ac-ft per year. The average volume of water not diverted to New Bullards Bar Reservoir in the 17 years October through December years is 11,788 ac-ft per year.

YCWA believes its proposed condition more than adequately addresses the entrainment concern, especially given that: 1) no ESA-listed or anadromous fishes could be entrained; 2) a potential very low effect on special status species (only hardhead is in the area); 3) the fishes that are entrained do not suffer mortality (the tunnel does not terminate in a powerhouse or cone valve that could injure fish); 4) there are no unique fish communities in the area; 5) the local fishery has limited recreation/economic value and is not a subsistence fishery; and 6) any effect is to a limited rainbow trout transitional fishery.

YCWA's proposed Condition comes at a significant cost. The condition would require YCWA to install a new intake gate at the tunnel with an estimated capital cost of $5,000,000, and YCWA estimates annual O&M would be $198,000 (Table 4.3-2). Further, while periodically closing the tunnel would not affect water deliveries, it would impact generation by 1.2% at an estimated annual cost of $449,000.

The cost for a screen at Lohman Ridge Diversion Tunnel would be much greater. In 2012, MWH prepared a conceptual design and Opinion of Probable Construction Cost (e.g., range of -35% to +65% around average) for constructing a fish screen at the tunnel. Based on that cost estimate and escalating it to 2016 and adding permitting and operating costs, YCWA estimates the cost of the screen would be approximately $40,000,000. This high cost does not balance with the marginal benefits of such a screen.

Further, YCWA, the Forest Service and FWN agreed that screening the Camptonville Diversion Tunnel Intake was not warranted, and closing the Camptonille Intake beyond that described in Condition AR11 was not needed.

Figures 2-12 and 2-13 show examples of Middle Yuba River flows below Our House Dam during periods of tunnel closure under the No Action Alternative, YCWA's Proposed Project, and Without Project conditions.

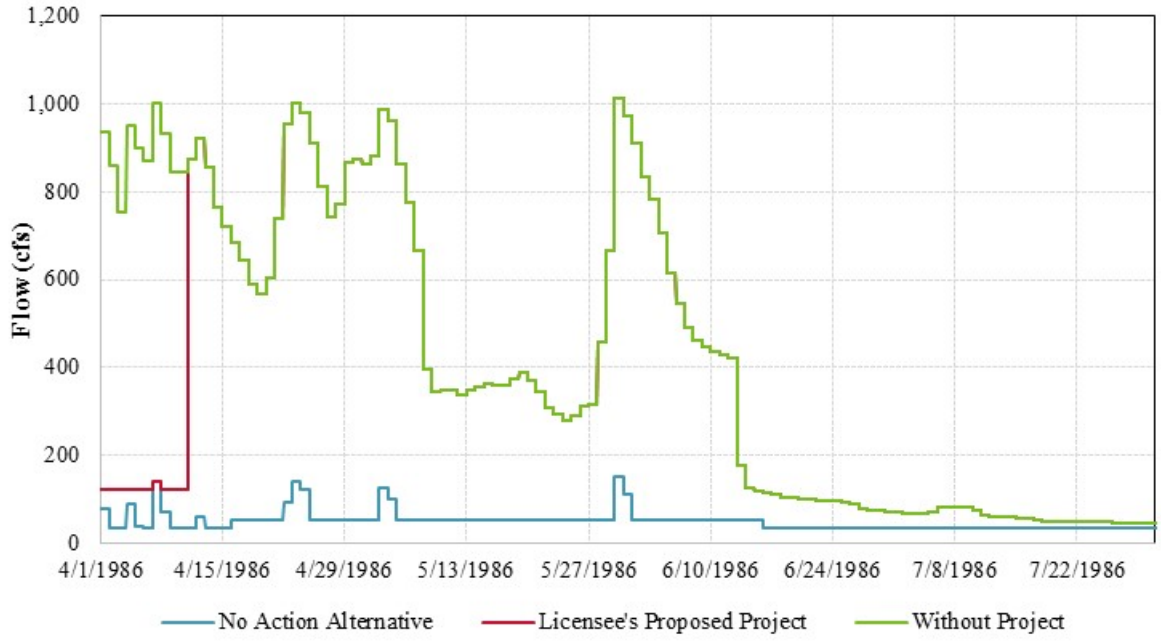

Figure 2-12. Example of flow below Our House Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR12, and Without-Project from April 1 through July 31, 1986. The line for YCWA's Proposed Project is under the Without-Project line for April 11 through July 31.

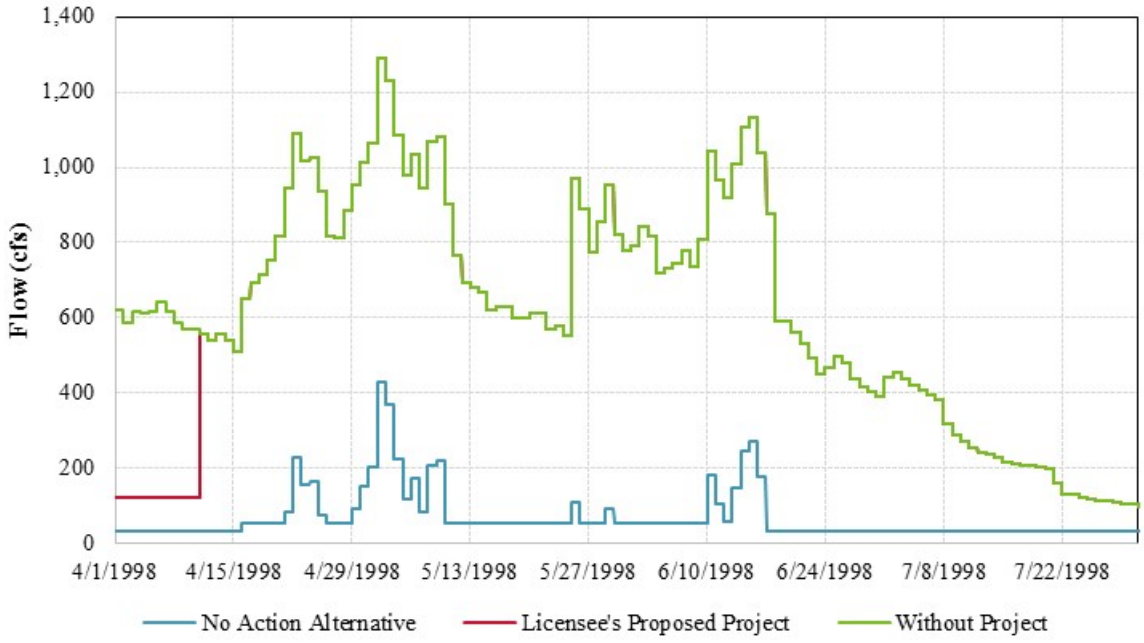

Figure 2-13. Example of flow below Our House Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR12, and Without-Project from April 1 through July 31, 1998. The line for YCWA's Proposed Project is under the Without-Project line for April 11 through July 31.

YCWA understands that the Forest Service and FWN agree with the specific wording in this proposed condition.

2.4.12 YCWA's Proposed Condition AR12: Control Project Spills at Log Cabin Diversion Dam

Licensee shall, from April 1 through July 31 of each year implement the spill reduction schedule described in this condition at Log Cabin Diversion Dam. The spill reduction shall be performed by adjusting the opening of the Log Cabin Diversion Dam low-level (5-foot diameter) outlet valve. "Spill Flow" for the purpose of this condition shall be determined based on flow measurements at USGS streamflow gage 11409400 (flow in Oregon Creek below Log Cabin Dam) minus the required minimum streamflow at that time, as described in Licensee's Proposed Condition AR1. The purpose of this condition is to reduce spills from approximately 100 cfs to the minimum flow requirement. Specifically, Licensee shall follow the spill reduction steps:

Reductions from Spills between Approximately 100 cfs and 50 cfs

Step 1. Licensee will implement Step 1 of the schedule when daily flows appear to be receding and the Licensee anticipates that a Spill Flow on the first day of the reduction schedule will be between 100 cfs and 50 cfs. Licensee shall open Log Cabin Diversion Dam's low-level outlet valve until spill over the dam is eliminated.

Step 2. After a minimum of 96 hours, Licensee shall reduce flows at a rate of approximately 20 cfs every 96 hours using the low-level outlet valve until flows below the dam are equal to the required minimum flow. Flow reductions shall be made relative to the mean hourly flow during the preceding hour at the time of the valve adjustment.

Table 1 summarizes the spill reductions in Steps 1 and 2.

Table 1. Summary of Log Cabin Diversion Dam spill reductions from approximately 100 cfs plus the required minimum streamflow.

Mean Daily Flow Measurement at USGS Gage 11409400	Frequency of Adjusting Low-Level Outlet Valve	Target Mean Daily flow Reduction
100 – 0 cfs plus Required Minimum Streamflow	96 hours	20 cfs

The Dam Pool Elevation is Less than the Camptonville Diversion Tunnel Invert Elevation

- If, during the time Licensee is implementing Table 1 of this condition, the dam pool elevation is below the invert elevation of the Camptonville Tunnel (1,952 ft), Licensee shall adjust the low-level outlet valve opening a minimum of once daily so that the combined outflow of the low-level outlet valve plus the required minimum streamflow approximately matches Log Cabin Diversion Dam impoundment inflow. If required outflows are less than or equal to the capacity of the minimum streamflow valve, the low level outlet valve may be closed and all releases made through the minimum streamflow valve. Spill cessation shall be considered complete once outflows below Log Cabin Diversion Dam are less than or equal to the required minimum instream flow.

Inflow Increases and Spill Re-initiates

- If, during the time Licensee is implementing Table 1 of this condition, inflow into the impoundment increases such that mean hourly flow below the dam is more than 100 cfs plus the required minimum streamflow during the preceding hour, and water is spilling over the dam, Licensee shall fully close the low-level outlet valve until such time as Table 1 of this condition can commence again.
- If, during the time Licensee is implementing Table 1 of this condition, inflow into the impoundment increases such that mean hourly flow below the dam is less than 100 cfs plus the required minimum streamflow during the preceding hour, and water is spilling over the dam, Licensee shall open the low-level outlet valve to eliminate spill at the dam. Subsequent changes to the low-level outlet valve opening shall occur at a frequency and magnitude commensurate with Table 1 of this condition. If flows through the low-level outlet value are increased by more than 20 cfs from the previous day, the count-of-hours within the 96-hour adjustment period is reset; otherwise the count-of-hours within the 96-hour adjustment period is maintained.

Inflow Increases and Spill Does Not Re-initiate

- If, during the time Licensee is implementing Table 1 of this condition, a 20 cfs step down in flow would cause additional spill below the diversion dam, the Licensee shall maintain the current low-level outlet valve setting until a 20 cfs step down in flow would not cause additional spill below the dam.

The Log Cabin Diversion Dam fish release valve, the Lohman Ridge Diversion Tunnel and Camptonville Diversion Tunnel may remain open throughout the above procedures.

For the purposes of this condition: 1) compliance for this condition shall be adjustments to the low-level outlet opening to achieve the target flow reductions within the specified range described above and specified in Table 1; 2) opening and closing low-level outlet valve between the valve settings described above may be made in one valve adjustment (i.e., ramping between settings is not required); and 3) the low-level outlet valve adjustments described in Table 1 of this condition shall be made by approximately noon each day, provided there is safe access to the site.

This condition is subject to temporary modification if required for repairs to the dam or associated equipment, by equipment malfunction, as directed by law enforcement authorities, or in emergencies. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, or other regulatory agency staff, including actions to prevent or reduce the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of Project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements and shall notify the Forest Service, SWRCB, and Cal Fish and Wildlife within 48 hours of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.

Licensee shall commence the dam spill reduction schedules in this condition within the first 90 days of the new license term unless facility modifications or construction is required. Where facilities must be modified or constructed to allow compliance with the required spill reduction schedule, including flow measurement facilities, except as otherwise provided, Licensee shall submit applications for permits to modify or construct the facilities as soon as reasonably practicable but no later than within the first 2 years of the new license term, and will complete the work as soon as reasonably practicable but no later than 2 years after receiving all required permits and approvals for the work. During the period before facility modifications or construction activities are completed, and starting within the first 90 days of the new license term, Licensee shall make a good faith effort to provide the specified spill reduction schedules within the reasonable capabilities of the existing facilities.

If Licensee makes a valve adjustment in compliance with this condition in the previous calendar year, prior to the Ecological Group's April meeting described in Licensee's Proposed Condition

GEN1, in the next calendar year, Licensee shall file with FERC and make available to the Forest Service, SWRCB and Cal Fish and Wildlife: 1) a plot showing for each valve adjustment period during the previous calendar year the mean daily flow into the Log Cabin Diversion Dam (i.e., sum of USGS gage 11409350 [Camptonville Diversion tunnel flows] plus USGS gage 11409400 [flow in Oregon Creek below Log Cabin Dam] minus USGS gage 11408870 [Lohman Ridge tunnel flow]) and the mean daily flow at USGS gage 11409400 (flow in Oregon Creek below Log Cabin Dam); and 2) for each valve adjustment during the previous calendar year, the date and time the valve adjustment was made and the flow at USGS gage 11409400 (flow in Oregon Creek below Log Cabin Dam) immediately prior to and immediately after the valve adjustment.

As background, the flow releases from the Log Cabin Diversion Dam directly affect the 4.1-mi section of Oregon Creek from the Log Cabin Diversion Dam to Oregon Creek's confluence with the Middle Yuba River (i.e., Log Cabin Diversion Dam Reach). The overall gradient in the reach is 2.3 percent, with a maximum gradient of 4.8 percent between RM 0.5 and RM 1.2. There is a low gradient section (i.e., 0.7%) on private land near the center of the reach at Celestial Valley. In the 4 miles of the reach that had on-the-ground habitat mapping done, there was 255 square feet (sq ft) of gravel that is the size appropriate for trout spawning (i.e., assumed to have a D50 of 20 millimeters (mm)). YCWA estimated this size gravel becomes mobile in the reach at a flow of 281 cfs, which has a return interval of 1.1 years under Without-Project conditions and 1.5 years under With-Project conditions

Rationale Statement in Support of YCWA's Condition AR12. Condition AR12 would reduce the magnitude of flow changes in Oregon Creek downstream of Log Cabin Dam. YCWA's proposed spill cessation schedule for Log Cabin Diversion Dam would be in effect from April through July in Below Normal, Dry and Critically Dry WYs. The spill cessation schedule would provide for a stepped reduction in spills so that down-ramping is gradual.

Figures 2-14 and 2-15 give examples of spill events where spill cessation would be implemented under Condition AR12 (red lines) as compared to the No Action Alternative (blue lines) and Without-Project (green lines) downstream of Log Cabin Diversion Dam using output from the Operations Model.

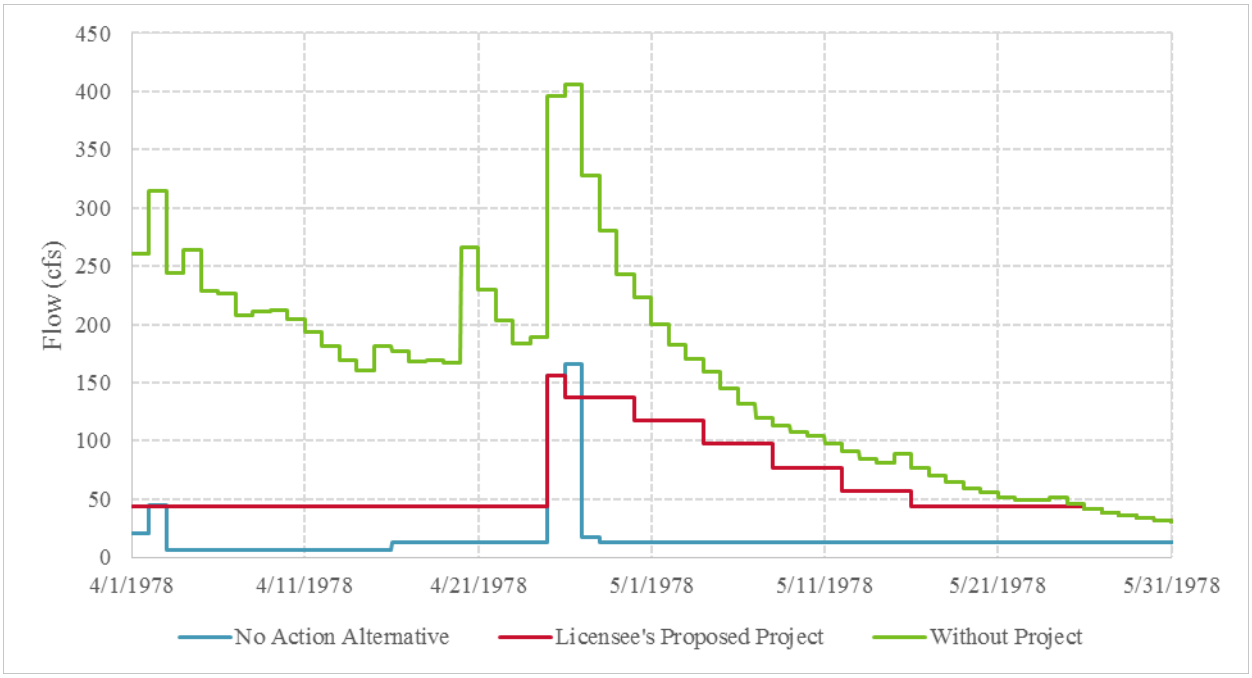

Figure 2-14. Example of spill cessation below Log Cabin Diversion Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR12, and Without-Project from April 1 through May 31, 1978.

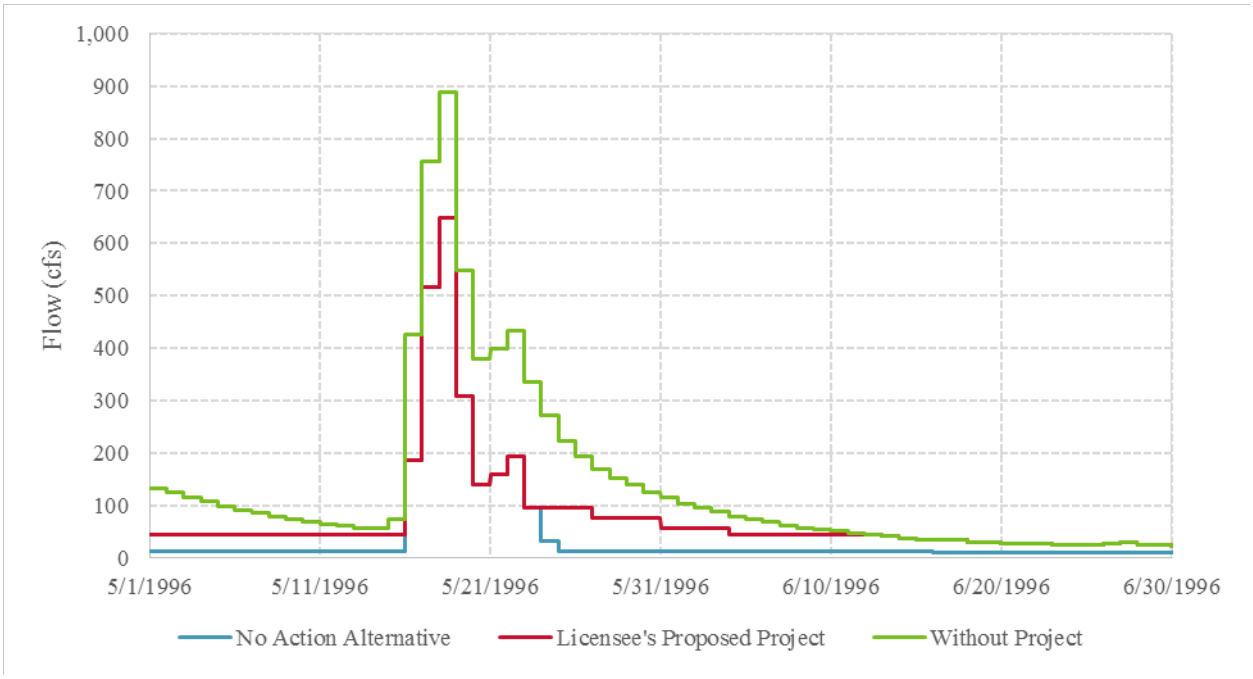

Figure 2-15. Example of spill cessation below Log Cabin Diversion Dam under the No Action Alternative, YCWA's Proposed Project with Condition AR12, and Without-Project from May 1 through June 30, 1996.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.5 Terrestrial Resources

2.5.1 YCWA's Proposed Condition TR1: Implement Integrated Vegetation Management Plan[18]

Licensee shall implement the Integrated Vegetation Management Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1K, Integrated Vegetation Plan).

Rationale Statement in Support of YCWA's Condition TR1. Integrating vegetation management activities under one comprehensive plan will result in better control of NNIPs, protection for special-status species and improved communication and coordination for all O&M vegetation management. YCWA's proposed Integrated Vegetation Management Plan contains provisions for NNIP management, re-vegetation, routine vegetation management and sensitive resource protection. Currently, 15 NNIPs are known to occur in the Project Area. Many of the NNIP species are documented as aggressive invaders that displace native plants and disrupt natural habitats. Project O&M activities, such as road grading and vegetation control, may increase the spread of NNIPs. YCWA believes that the components of this condition, including NNIP removal, monitoring, and re-vegetation, will prevent the further spread of NNIPs and improve the overall environment. Implementing revegetation and sensitive resource protection will also help protect and improve the environment, while allowing continued Project O&M throughout the term of the license. Approaching these activities with a coordinated team approach is efficient and reduces risk of unintended environmental impacts.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.5.2 YCWA's Proposed Condition TR2: Implement Bald Eagle and American Peregrine Falcon Management Plan

Licensee shall implement the Bald Eagle and American Peregrine Falcon Management Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1L, Bald Eagle and Peregrine Falcon Plan).

Rationale Statement in Support of YCWA's Condition TR2. Bald eagles have nested at New Bullards Bar Reservoir for more than 20 years. During this period, their protection has been accomplished through various agreements between YCWA, the Forest Service and USFWS (e.g., the USFWS 2004 BiOp and Closure of Tractor Cove). YCWA's proposed Bald Eagle and American Peregrine Falcon Management Plan is intended to consolidate protective measures,

[18] This condition overlaps in part with Articles 20 and 26 in FERC's Form-L5 Standard Articles.

such as closures and LOPs, into a single document in order to address Project effects. YCWA believes that this condition will promote the continued use of the Garden Point for bald eagle nesting by reducing disturbances associated with Project O&M and recreation. The condition also affords protection to any new nests constructed within or adjacent to the Project Area. In addition to bald eagles, the plan sets forth protective measures, such as surveys and LOPs, for recently reported and any new American peregrine falcon nests in or adjacent to the FERC Project Boundary.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.5.3 YCWA's Proposed Condition TR3: Implement Ringtail Management Plan

Licensee shall implement the Ringtail Management Plan that was filed with the Commission by Licensee on December 2, 2016 (Accession #20161201-5304, Encl. 1B, Ringtail Management Plan).

Rationale Statement in Support of YCWA's Condition TR3. Ringtail has been assigned the status of a Fully Protected Mammal under Cal Fish and Game Code Section 4700. Due to this status, ringtail is afforded the greatest protection prescribed to wildlife in California. Recent instances have occurred where ringtails have accessed the interior of Project powerhouses. In response, YCWA proposes a Ringtail Management Plan, which provides guidance for the exclusion of ringtail from Project facilities. Exclusion of ringtail will help to ensure YCWA's compliance with the protective status of this species in California.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.5.4 YCWA's Proposed Condition TR4: Implement Bat Management Plan

Licensee shall implement the Bat Management Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1M, Bat Plan).

Rationale Statement in Support of Condition TR4. Various bat species are known to occur throughout the Project Area, and they can be found utilizing Project facilities as night roosts and day roosts. While this generally does not create an issue, bats occasionally occupy areas where staff has routine presence, which could lead to human/bat interactions. Such interactions could result in the unnecessary exposure of staff to diseases, such as rabies, or unnecessary disturbances to roosting bats. Implementation of YCWA's proposed condition to manage bats at Project facilities by exclusion would reduce the likelihood of such interactions, thus protecting staff and roosting bats.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.6 Recreational Resources

2.6.1 YCWA's Proposed Condition RR1: Implement Recreation Facilities Plan[19]

Licensee shall implement the Recreation Facilities Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition RR1. Overall, implementation of the Recreation Facilities Plan will provide enhanced recreation opportunities while also minimizing recreation-use impacts to natural, historic, and prehistoric resources within the Project Area. As such, the plan includes the following objectives to help achieve these goals: 1) to provide recreation facilities that meet the needs of Project recreation users consistent with federal, state, and local legal requirements and guidelines; 2) to monitor recreation use over the term of the license to help ensure Project recreation users enjoy high quality recreation experiences and that recreation use impacts are minimized and remain within acceptable limits; and 3) to describe YCWA's responsibilities regarding recreation facilities and monitoring under the new license.

More specifically, recreation use of Project facilities during the existing license term has resulted in some facilities that need near-term rehabilitation, and the Plan has measures to address these near-term issues and improve the recreation experience and provide new and safe facilities for the public (e.g., aging recreational water supply delivery system, septic systems and restroom facilities). Further, the existing recreation facilities will need major rehabilitation (most within 10 years of the new license) and the Plan addresses when and how YCWA will rehabilitate the facilities to continue to provide safe, quality recreation opportunities for the public and also address current accessibility standards at all facilities.

Beyond the existing recreation use impacts, over the term of the new license recreation use/demand is expected to increase by as much as 50 percent, which YCWA has addressed in the Plan by providing expansion of existing recreation facilities and development of new facilities to provide for near-term recreation growth. The expanded and new facilities specifically address the existing and future demand at camping facilities where some are nearing capacity; shoreline day use facilities where demand is high, but supply is limited currently; and recreational trails to provide increased connectivity between facilities, particularly on the PNF side of the reservoir. The camping expansions and new facilities will meet the increased demand for large group camping, small group camping, RV camping and boat-in camping while also enhancing the facilities with modern amenities (e.g., RV hookups, showers and flush restrooms).

[19] This condition overlaps in part with Articles 17 and 18 in FERC's Form-L5 Standard Articles.

The Plan will address a critical element of recreation use at the Project - boating on New Bullards Bar Reservoir by monitoring and maintaining the current carrying capacity as recreation demand increases and additional facilities (i.e., campgrounds and boat launch parking) are developed or planned for development.

Finally, since the vast majority of the existing Project recreation facilities are located on NFS lands, it is critical for YCWA to meet Forest Service standards and also regularly consult/coordinate with the Forest Service to operate the recreation facilities and continue to provide high quality recreation facilities and opportunities for the public. The Plan specifically addresses how and when YCWA will meet and/or consult with the Forest Service over the license term.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.6.2 YCWA's Proposed Condition RR2: Provide Recreation Flow Information

Licensee shall, beginning as soon as reasonably feasible but not later than one year after license issuance, make the stream flow and reservoir elevation information identified in Table 1 of this condition available to the public.

Table 1. Stream flow and reservoir elevation information the Licensee shall make available to the public.

Stream/Location	Information to be Provided	Current Gage Identification[1]	
		USGS	CDEC
North Yuba River Upstream of New Bullards Bar Reservoir	Streamflow	11413100	NYS
North Yuba River New Bullards Bar Reservoir	Reservoir Level	11413515	BUL
North Yuba River Downstream of New Bullards Bar Dam and Spillway[2]	Streamflow	New Gage for reporting (sum of dam releases and spill)	
Middle Yuba River Lohman Ridge Diversion Tunnel	Tunnel Flow	11408870	To be Assigned
Middle Yuba River Downstream of Our House Diversion Dam[2]	Streamflow	11408880	OHR
Oregon Creek Downstream of Log Cabin Diversion Dam[2]	Streamflow	11409400	LCB
Yuba River At Smartsville[2]	Streamflow	11418000	YRS
Yuba River At Marysville[2]	Streamflow	11421000	MRY

[1] Refer to Licensee's Proposed Condition WR4 for a description of each gage.
[2] Gage required to document compliance with license flow requirements.

If the gage is required to document compliance with license flow requirements and is not USGS rated above the license compliance flow, Licensee shall make a good faith effort to estimate the flow above the USGS rating. If the gage is not required to document compliance with the license conditions, Licensee shall provide the information up to the rating of the gage described in Licensee's Proposed Condition WR4, and make a good faith effort to estimate the flow above the

USGS rating. The flow information shall be made available to the public on a real-time basis via the Internet; the publication of the information may be accomplished through a third party, such as USGS or the California Data Exchange Center (CDEC). The preference is that data shall be reported in 15-minute intervals; however, data that are reported no less than in hourly intervals is acceptable. It is understood this information will be provisional and subject to change because it will not have undergone a quality assurance or quality control review before it is made available to the public.

Rationale Statement in Support of YCWA's Condition RR2. There is existing demand for recreational opportunities in the Project affected reaches, and over the license term YCWA anticipates continued demand in Project affected stream reaches. Providing real-time flow information will allow recreationists to identify if there are suitable, opportunistic flows for their activities; and the information will help them to better plan their recreation trips.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.6.3 YCWA's Proposed Condition RR3: Provide Whitewater Boating Below Our House Diversion Dam

Licensee shall, beginning in the first full calendar year after license issuance and each year thereafter, provide on weekends between October 1 and March 31 a whitewater boating flow from at least 10:00 AM to 5:00 PM of between 600 cfs and 2,000 cfs, as measured at the USGS Streamflow Gage 11408880, on the schedule identified in Table 1 of this condition.

Table 1. Whitewater boating flows Licensee shall provide.

Water Year Type as Defined in Licensee's Proposed Condition WR2			Number of Weekend Whitewater Boating Days from October 1 through March 31
DWR's Full Natural Flow at Smartsville for the Full Water Year that Ended on September 30	DWR's Bulletin 120 February Forecast	DWR's Bulletin 120 March Forecast	
Wet, Above Normal, Below Normal or Dry	Any Water Year Type	Wet	8
Wet, Above Normal, Below Normal or Dry	Any Water Year Type	Above Normal	6
Wet, Above Normal, Below Normal or Dry	Any Water Year Type	Below Normal, Dry, or Critically Dry	4
Critically Dry	Wet or Above Normal	Any Water Year Type	2
Critically Dry	Below Normal, Dry, or Critically Dry	Any Water Year Type	0

If the conditions in the first three columns in the above table are met, then the number of weekend whitewater boating flow days to be provided by Licensee shall be the number shown in the last column, to the extent that inflow conditions to Our House Reservoir provide the Licensee the ability to meet the listed number of days (i.e. inflow is between 600 cfs and 2,000 cfs from 10 AM to 5 PM on weekend days). The whitewater boating flow may occur due to natural conditions or manipulation of Project facilities by Licensee.

The selection of which weekend days to provide the whitewater boating flow shall be at Licensee's sole discretion. However, if Licensee intends to manipulate Project facilities (e.g., partially close the Lohman Ridge Diversion Tunnel) for the purpose of providing a required whitewater boating flow day, prior to 5:00 PM on the previous day Licensee shall post to a publically-available website and notify the Forest Service of Licensee's intention to provide a whitewater boating flow on the next day.

For the purpose of compliance with this condition, a whitewater boating flow day will be any weekend day when mean hourly flow as measured at the USGS Streamflow Gage 11408880 is between 600 cfs and 2,000 cfs from 10:00 AM to 5:00 PM.

By May 1 of each year, Licensee will file with the Commission a letter that documents Licensee's compliance with this condition for the previous October through March period. The letter will state: 1) the number of whitewater boating flow days required by this condition during the previous October through March period; 2) the dates on which the required whitewater boating flow days occurred; and 3) the mean hourly flows as measured at USGS Streamflow Gage 11408880 from 10:00 AM through 5:00 PM on each of the dates.

If the Lohman Ridge Diversion Tunnel intake or other Project facilities must be modified to reasonably provide the whitewater boating flow, then, except as otherwise provided, Licensee shall submit applications for permits to modify the facility(ies) as soon as reasonably practicable but no later than within the first 2 years of the new license term, and Licensee will complete the work as soon as reasonably practicable but no later than within 2 years after receiving all required permits and approvals for the work. During the period before facility(ies) modification is complete, and beginning within the first 90 days of the new license term, Licensee shall make a good faith effort to provide the specified whitewater boating flow days within the capabilities of the existing facility(ies).

The condition is subject to temporary modification if required by equipment malfunction, as directed by law enforcement authorities, or in emergencies. An emergency is defined as an outage due to an event that is reasonably out of the control of Licensee and requires Licensee to take immediate action, either unilaterally or under instruction of law enforcement, emergency services, or other regulatory agency staff, including actions to prevent the imminent loss of human life or damage to property. An emergency may include, but is not limited to: natural events such as landslides, storms, or wildfires; vandalism; malfunction or failure of project works; or other public safety incidents. If Licensee temporarily modifies the requirements of this condition, Licensee shall make all reasonable efforts to promptly resume performance of the requirements, and shall notify the Forest Service, Cal Fish and Wildlife and the SWRCB within 48 hours of the start of the modification. Licensee shall provide notification to the Commission as soon as possible but no later than 10 days after such incident.

Rationale Statement in Support of YCWA's Condition RR3. Based on the results of Study 8.2, whitewater boating is popular and available downstream of the Project's dams and these opportunities generally occur during spring and early summer months, when river flow levels can vary greatly as a result rainfall and snowmelt. The study identified a high demand reach for whitewater boating below Our House Diversion Dam downstream to the confluence with Oregon

Creek. This reach had a high demand because of the desirable whitewater characteristics, length (8 mi), shuttle length (less than 30 minutes) and overall quality access for put-in and takeout. Further, this reach lacked the complicated and difficult to manage accretion issues that plagued some of the other reaches studied. However, the major constraint for boaters to utilize this reach was the lack of predictable flows to take advantage of the often flashy flows flowing down the nearly 32 miles of the Middle Yuba River upstream of Our House Diversion Dam with multiple tributaries. As a result, Condition RR3 was developed to provide predictable flows on this high demand reach on weekend days when boaters have the best opportunity to boat the reach. Condition RR2 above would still allow boaters to opportunistically boat the reach based on the real-time flows reported by YCWA.

2.7 Land Use

2.7.1 YCWA's Proposed Condition LU1: Implement Transportation System Management Plan

Licensee shall implement the Transportation System Management Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition LU1. YCWA's proposed Transportation System Management Plan provides guidance for the rehabilitation and maintenance of Primary Project Roads and Trails. Primary Project Roads and Trails are non-general use roads and trails, used primarily for the Project and are located within the FERC Project Boundary (and therefore will be under FERC's jurisdiction for the Proposed Project). General Access Roads are general use roads that are outside the FERC Project Boundary. YCWA has consulted with the Forest Service to determine which roads on NFS land are Primary Project Roads and which roads are General Access Roads. In addition, if a road providing primary access to Project facilities is a county road, it is included in a Road Maintenance Agreement (agreement) between YCWA and Yuba County. The agreement is not jurisdictional to the FERC license and is intended to remain as a separate agreement between YCWA and Yuba County that generally addresses shared responsibilities and funding. The agreement is presently being negotiated by YCWA and Yuba County and is consistent with the Primary Project Roads and Trails list and related technical memorandum. All Primary Project Roads are included in the Transportation System Management Plan for Primary Project Roads and described in Table 3.3.7-11, Section 3.3.7 (Land Use) of Exhibit E of this Application for New License. As a reference, the CSA county roads are also listed in Table 3.3.7-11, Section 3.3.7 (Land Use) of Exhibit E of this FLA.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.7.2 YCWA's Proposed Condition LU2: Implement Fire Prevention and Response Plan[20]

Licensee shall implement the Fire Prevention and Response Plan that is included in Appendix E3 to this Amended FLA.

Rationale Statement in Support of YCWA's Condition LU2. YCWA's proposed Fire Prevention and Response Plan would, among other things: provide a mechanism for preventing and reporting wildfires to appropriate agencies; provide information on fire ignition sources in the Project area; and provide for cooperation between YCWA and appropriate agencies for investigating fires that may be related to Project O&M.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

2.8 Cultural Resources

2.8.1 YCWA's Proposed Condition CR1: Implement Historic Properties Management Plan

Licensee shall implement the Privileged Historic Properties Management Plan that Licensee filed with the Commission on July 5, 2016 (FERC Filing Accession # 20160705-5039).

Rationale Statement in Support of YCWA's Condition CR1. The purpose of YCWA's HPMP is to prescribe specific actions and processes to manage historic properties within the Project APE. It is intended to serve as a guide for YCWA's operating personnel when performing necessary O&M activities and to prescribe site treatments designed to address ongoing and future effects to NRHP-eligible historic properties. The HPMP also describes a process of consultation with appropriate state and federal agencies, as well as with Indian tribes who may have interests in historic properties within the Project APE. YCWA's requirements detailed in the HPMP include: management measures; training for all O&M staff; routine monitoring of known cultural resources and, periodic review and revision of the HPMP.

As described in this Amended FLA, YCWA plans to complete consultation regarding the HPMP and file with FERC a final HPMP by the end of 2017. YCWA anticipates that FERC would then execute a Programmatic Agreement (PA) with SHPO and with the ACHP, should it choose to participate, to implement the HPMP. YCWA, Indian tribes and the Forest Service may be invited by FERC to participate in the PA as consulting parties.

YCWA understands that the Forest Service, other agencies and NGOs agree with the current version of the HPMP

[20] This condition overlaps in part with Article 28 in FERC's Form-L5 Standard Articles.

2.9 Aesthetic Resources

2.9.1 YCWA's Proposed Condition VR1: Implement Visual Resource Management Plan

Licensee shall implement the Visual Resource Management Plan that was filed with the Commission by Licensee on October 27, 2016 (Accession #20161027-5175, Encl. 1C, Visual Resources Plan).

Rationale Statement in Support of YCWA's Condition VR1. YCWA's proposed Visual Resources Management Plan would reduce the visual contrast of some Project facilities. The plan provides a schedule for when mitigation measures would be implemented and provides direction on how to address visual impacts from modifications to the Project that are not covered under the FERC license and are located on NFS land.

YCWA understands that the Forest Service, other agencies and NGOs agree with the specific wording in this proposed condition.

ATTACHMENT 1
TO ATTACHMENT A

Form L-5
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED MAJOR PROJECT AFFECTING NAVIGABLE WATERS AND LANDS OF THE UNITED STATES

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such

other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project and of any addition thereto or betterment thereof shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission my prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or

agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 22. Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

Article 23. The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

Article 24. The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

Article 25. The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

Article 26. Timber on lands of the United States cut, used, or destroyed in the construction and maintenance of the project works, or in the clearing of said lands, shall be paid for, and the resulting slash and debris disposed of, in accordance with the requirements of the agency of the United States having jurisdiction over said lands. Payment for merchantable timber shall be at current stumpage rates, and payment for young growth timber below merchantable size shall be at current damage appraisal values. However, the agency of the United States having jurisdiction may sell or dispose of the merchantable timber to others than the Licensee: Provided, that timber so sold or disposed of shall be cut and removed from the area prior to, or without undue interference with, clearing operations of the Licensee and in coordination with the Licensee's project construction schedules. Such sale or disposal to others shall not relieve the Licensee of responsibility for the clearing and disposal of all slash and debris from project lands.

Article 27. The Licensee shall do everything reasonably within its power, and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon the request of officers of the agency concerned, to prevent, to make advance preparations for suppression of, and to suppress fires on the lands to

be occupied or used under the license. The Licensee shall be liable for and shall pay the costs incurred by the United States in suppressing fires caused from the construction, operation, or maintenance of the project works or of the works appurtenant or accessory thereto under the license.

Article 28. The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

Article 29. The Licensee shall be liable for injury to, or destruction of, any buildings, bridges, roads, trails, lands, or other property of the United States, occasioned by the construction, maintenance, or operation of the project works or of the works appurtenant or accessory thereto under the license. Arrangements to meet such liability, either by compensation for such injury or destruction, or by reconstruction or repair of damaged property, or otherwise, shall be made with the appropriate department or agency of the United States.

Article 30. The Licensee shall allow any agency of the United States, without charge, to construct or permit to be constructed on, through, and across those project lands which are lands of the United States such conduits, chutes, ditches, railroads, roads, trails, telephone and power lines, and other routes or means of transportation and communication as are not inconsistent with the enjoyment of said lands by the Licensee for the purposes of the license. This license shall not be construed as conferring upon the Licensee any right of use, occupancy, or enjoyment of the lands of the United States other than for the construction, operation, and maintenance of the project as stated in the license.

Article 31. In the construction and maintenance of the project, the location and standards of roads and trails on lands of the United States and other uses of lands of the United States, including the location and condition of quarries, borrow pits, and spoil disposal areas, shall be subject to the approval of the department or agency of the United States having supervision over the lands involved.

Article 32. The Licensee shall make provision, or shall bear the reasonable cost, as determined by the agency of the United States affected, of making provision for avoiding inductive interference between any project transmission line or other project facility constructed, operated, or maintained under the license, and any radio installation, telephone line, or other communication facility installed or constructed before or after construction of such project transmission line or other project facility and owned, operated, or used by such agency of the United States in administering the lands under its jurisdiction.

Article 33. The Licensee shall make use of the Commission's guidelines and other recognized guidelines for treatment of transmission line rights-of-way, and shall clear such

portions of transmission line rights-of-way across lands of the United States as are designated by the officer of the United States in charge of the lands; shall keep the areas so designated clear of new growth, all refuse, and inflammable material to the satisfaction of such officer; shall trim all branches of trees in contact with or liable to contact the transmission lines; shall cut and remove all dead or leaning trees which might fall in contact with the transmission lines; and shall take such other precautions against fire as may be required by such officer. No fires for the burning of waste material shall be set except with the prior written consent of the officer of the United States in charge of the lands as to time and place.

Article 34. The Licensee shall cooperate with the United States in the disposal by the United States, under the Act of July 31, 1947, 61 Stat. 681, as amended (30 U.S.C. sec. 601, et seq.), of mineral and vegetative materials from lands of the United States occupied by the project or any part thereof: Provided, That such disposal has been authorized by the Commission and that it does not unreasonably interfere with the occupancy of such lands by the Licensee for the purposes of the license: Provided further, That in the event of disagreement, any question of unreasonable interference shall be determined by the Commission after notice and opportunity for hearing.

Article 35. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of non-power facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 36. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 37. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.