UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Yuba County Water Agency	**)**	**Project No. 2246-065**

RESPONSE OF THE YUBA COUNTY WATER AGENCY TO COMMENTS, RECOMMENDATIONS, PRELIMINARY TERMS AND CONDITIONS, AND PRELIMINARY FISHWAY PRESCRIPTIONS

October 9, 2017

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Yuba County Water Agency) Project No. 2246-065

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GLOSSARY OF TERMS

Defined Term	Definition
ac-ft	acre-feet
AFRP	U.S. Fish and Wildlife Anadromous Fish Restoration Program
AIS	Aquatic Invasive Species
Amended FLA	Yuba County Water Agency's Amendment to Final License Application, Project No. 2246-065 (filed June 5, 2017), and corrected in YCWA's July and September 2017 errata.
ARIS	Adaptive Resolution Imagery Sonar
BA	Biological Assessment
BAOT	boats-at-one-time
BE	Biological Evaluation
BiOp	Biological Opinion
BLM	U.S. Department of the Interior, Bureau of Land Management
CDEC	California Data Exchange Center
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
cfs	cubic feet per second
CM	Conditionally met
CNM	Conditionally not met
Commission	Federal Energy Regulatory Commission
CRLF	California red-legged frog
CVPIA	Central Valley Project Improvement Act
DEMs	digital elevation models
DOI	U.S. Department of the Interior
DSOD	California Division of Dam Safety
DWR	California Department of Water Resources
Ecological Group	The group that would be created by YCWA Proposed Condition GEN1
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
ESA	Federal Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLA	Yuba County Water Agency's Final

Defined Term	Definition
	License Application, Project No. 2246-065 (filed Apr. 28, 2014)
FOR	Friends of the River
FPA	Federal Power Act
FS	U.S. Department of Agriculture, Forest Service
FWN	Foothills Water Network
FWS	U.S. Department of the Interior, Fish and Wildlife Service
FYLF	foothill-yellow legged frogs
HDR	HDR Engineering, Inc.
ILP	integrated licensing process
Licensee	Yuba County Water Agency
Lidar	Light Detection and Ranging
Log Cabin Diversion Dam Reach	Approximately 4.3 miles of Oregon Creek from the Log Cabin Diversion Dam at RM 4.3 to the confluence of Oregon Creek with the Middle Yuba River at RM 0.0.
lower Yuba River	The 24.3-mile-long section of the Yuba River from Englebright Dam to the Yuba River's confluence with the Feather River
LWM	large woody material
Middle/North Yuba River Reach	Approximately 5.8 miles of the Yuba River from the confluence of the North Yuba River with the Middle Yuba River at RM 40.0 to the New Colgate Powerhouse at RM 34.2.
New Bullards Bar Dam Reach	The 2.4-mile-long section of the North Yuba River immediately downstream of New Bullards Bar Dam to the confluence with the Middle Yuba River.
NFS	National Forest System
NGO	non-governmental organizations
NMFS	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NMWSE	normal maximum water surface elevation
NPS	U.S. Department of the Interior, National Park Service
NYI	North Yuba Index

Defined Term	Definition
O&M	operations and management costs
Ops Model	Relicensing Water Balance and Operations Model
Our House Diversion Dam Reach	Approximately 7.9 miles of the Middle Yuba River from Our House Diversion Dam at RM 12.6 to the confluence of the Middle Yuba River with Oregon Creek at RM 4.7.
PM&E	protection, mitigation, and enhancement
Project	Yuba River Development Project, FERC Project No. 2246
REA Notice	June 26, 2017 Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendation, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions
RM	river mile
RMT	Lower Yuba River Accord's, River Management Team
Stakeholders	Federal and state agencies, local governments, Indian tribes, non-governmental organizations, businesses, and unaffiliated members of the public that have participated or are participating in the Project relicensing
SWRCB	California State Water Resources Control Board
SYRCL	South Yuba River Citizens League
Temp Model	Relicensing Water Temperature Models
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WQC	water quality certification
WSE	water surface elevation
WY	water year
YCWA	Yuba County Water Agency
YOY	young-of year
Yuba Accord	Lower Yuba River Accord

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RESPONSE OF THE YUBA COUNTY WATER AGENCY TO COMMENTS, RECOMMENDATIONS, PRELIMINARY TERMS AND CONDITIONS, AND PRELIMINARY FISHWAY PRESCRIPTIONS

Pursuant to Section 5.23(a) of the regulations of the Federal Energy Regulatory Commission ("Commission" or "FERC"),[1] and in accordance with the Commission's June 26, 2017 Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions ("REA Notice"), Yuba County Water Agency ("YCWA" or "Licensee"), licensee for the Yuba River Development Project, FERC Project No. 2246 ("Project"), hereby responds to the comments, recommendations, preliminary terms and conditions, and preliminary fishway prescriptions filed in response to its Final License Application, filed with the Commission on April 28, 2014,[2] as amended.[3]

[1] 18 C.F.R. § 5.23(a) (2017).

[2] Yuba County Water Agency's Final License Application, Project No. 2246-065 (filed Apr. 28, 2014) ("FLA").

[3] Yuba County Water Agency's Amendment to Final License Application, Project No. 2246-065 (filed June 5, 2017) ("Amended FLA"). In July and September 2017, YCWA filed with the Commission errata to the Amended FLA. Where "Amended FLA" is used in this Response, it refers to YCWA's June 2017 Amended FLA, as corrected by YCWA's Amended FLA errata.

I. INTRODUCTION

A. Background

On April 28, 2014, YCWA filed an application for a new license for the Project. Since that time, YCWA, federal and state resource agencies, and other Stakeholders[4] have worked diligently and collaboratively to develop proposed conditions for the new license. On August 22, 2016, YCWA filed a request with FERC to delay issuance of the REA Notice to provide additional time for the Stakeholders to continue their negotiations. YCWA ultimately reached agreement with the U.S. Department of Agriculture Forest Service ("FS") on potential resource conditions under Section 4(e) of the Federal Power Act ("FPA")[5] and associated management and monitoring plans to be incorporated into the license. YCWA also executed an off-license Recreation Settlement Agreement with the FS to provide funding for certain recreation facilities within the Tahoe National Forest and Plumas National Forest.[6] At the same time, YCWA worked with a broader group including the FS, U.S. Department of the Interior ("DOI") Fish and Wildlife Service ("FWS"), California Department of Fish and Wildlife ("CDFW"), Foothills Water Network ("FWN"),[7] and other Stakeholders to develop conditions to be

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[4] In this response, "Stakeholders" means federal and state agencies, local governments, Indian tribes, non-governmental organizations ("NGO"), businesses, and unaffiliated members of the public that have participated or are participating in the Project relicensing.

[5] 16 U.S.C. § 797(e) (2012).

[6] The Settlement Agreement is attached to FS's filing dated August 21, 2017. Forest Service Preliminary Terms and Conditions and Recommendations at Enclosure 5, Project No. 2246-065 (filed Aug. 25, 2017) ("FS Comments").

[7] FWN's comments and recommendations were filed on behalf of its member organizations: California Sportfishing Protection Alliance, Trout Unlimited, Sierra Club, South Yuba River Citizens League ("SYRCL"), American Whitewater, American Rivers, Northern California Federation of Fly Fishers, California Outdoors, Adventure Connection, Tributary Whitewater Tours, Friends of the River ("FOR"), and Gold Country Fly Fishers.

included in the new license. The California State Water Resources Control Board ("SWRCB") attended most of the meetings among these parties.

On June 5, 2017, YCWA filed its Amended FLA to memorialize the agreements reached with Stakeholders and to update its application. The Amended FLA proposed a number of changes to Project operations and more than 30 protection, mitigation, and enhancement ("PM&E") conditions for the new Project license, most of which were collaboratively developed with input from the Stakeholders. Under its proposal, YCWA would incur almost $140,000,000 in new expenditures on environmental and recreational measures over the first 30 years of the new license alone. In addition, YCWA proposed major infrastructure improvements, including the addition of a new tailwater depression system at the New Colgate Powerhouse totaling $14,453,000[8] and the addition of an auxiliary flood control outlet at New Bullards Bar Dam totaling $158,923,400.[9] Adding to this the over $31,000,000 value of lost generation under the new license that would result from streamflow requirements and other flow-related changes to benefit environmental resources,[10] YCWA's financial commitment to environmental, recreational, flood control, and other improvements under its proposal would total over $344,000,000 over 30 years, and would be substantially more under a 50-year new license term.[11] Importantly, YCWA's proposed Project would adopt into the new license

[8] Amended FLA, Exh. D at D-30 (Table 6.1-1).

[9] *Id*., Exh. D at D-5.

[10] *Id*., Exh. E, App. E4 at E4-3 (Table 4.3-1) (calculated by multiplying the change in energy value of $1,308,677 by 30 years).

[11] In preparing this Response, YCWA discovered an error in a spreadsheet used to calculate the change in Average Annual Gross Power Benefit of $1,308,677 between the No Action Alternative and YCWA's Proposed Project shown in the Amended FLA, Exh. D at D-47, Table 7.0-1. This value should be $1,056,085, which when multiplied by a 30 years equates to $31,682,550. YCWA will file with the Commission errata to the Amended FLA to correct this spreadsheet error.

the instream flow schedules and associated fisheries benefits of the award-winning Lower Yuba River Accord ("Yuba Accord"),[12] a 2007 settlement agreement developed by YCWA, local, state and federal agencies, and NGOs for the lower Yuba River.[13]

YCWA appreciates the tremendous efforts of the Stakeholders in diligently studying Project impacts, assessing and analyzing study results, attending relicensing meetings, understanding and working through differences, and ultimately collaborating on the precise wording of many of YCWA's proposed PM&E conditions, which in many cases include detailed implementation plans. On some issues, which are documented in the Amended FLA and addressed in the responses below, YCWA was unable to reach agreement with Stakeholders. Nevertheless, YCWA believes that its proposal reflects a balanced approach which would provide for substantial and well-supported environmental PM&Es and recreational improvements, while assuring that YCWA and the larger community continue to receive the benefits of this multi-purpose water supply, flood control, and power Project. YCWA believes that its proposal should be the preferred alternative for the Commission's preparation of an environmental document under the National Environmental Policy Act.[14]

B. Comments on Amended FLA

Eighty-four entities and individuals filed interventions and/or comments in response to FERC's REA Notice. YCWA does not object to any of the timely motions or

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[12] The Yuba Accord has been recognized as a conflict-resolution model, receiving the Association of California Water Agencies 2008 *Theodore Roosevelt Award for Environmental Excellence*, the National Hydropower Association's 2009 *Outstanding Stewards of America's Waters Award*, and the 2009 *Governor's Environmental and Economic Leadership Award* (in the ecosystem and watershed stewardship category).

[13] The "lower Yuba River" when used in this Response refers to the 24.3-mile-long section of the Yuba River from Englebright Dam to the Yuba River's confluence with the Feather River.

[14] 42 U.S.C. § 4321 et seq. (2012).

notices of intervention filed in response to the Commission's REA Notice, and welcomes these parties to this proceeding.

Thirty-nine commenters expressed full support for the conditions proposed in YCWA's Amended FLA, and did not propose any additional terms and conditions for inclusion in a new license or request a study.[15] These commenters included a number of water districts, local communities, and other beneficiaries of the Project.

Twelve commenters did not propose or recommend terms and conditions for inclusion in the new license.[16] The majority of these comments opposed increasing the number of houseboats on New Bullards Bar Reservoir, citing boater safety, crowding, parking and other concerns. YCWA does not propose to increase the number of houseboats on New Bullards Bar Reservoir.[17]

The remaining commenters provided recommendations, preliminary terms and conditions or fishway prescriptions, or comments on YCWA's proposal. Many of the comments were identical or nearly identical to YCWA's proposals, reflecting consensus on

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[15] A chart identifying comments in support of YCWA's proposal is included in Appendix 1.

[16] These commenters are Ken Zeal, Gary Watts, Jonathan Watts, Jerry and Donna Walton, John Schultz, Julietta and Raymond Forbes, Ron Ratto, Ronald Wilson, Sandra Schultz, SYRCL, Terrence Hansen, and United Auburn Indian Community of the Auburn Rancheria.

[17] Emerald Cove Marina, the marina concessionaire for the past 11 years at New Bullards Bar Reservoir,[17] and 19 individuals recommend an increase in the number of houseboats from the current allowed maximum of 80 to 120 and an increase in the maximum length of houseboats to 18 feet wide and 70 feet long, and that all of the new houseboats be for private use. The existing FERC license does not require that YCWA provide houseboats on New Bullards Bar Reservoir. Page 7-4 of the 1993 Revised Exhibit R states that YCWA will ensure that, if houseboats are allowed on New Bullards Bar Reservoir, no more than 80 houseboats would be moored on the reservoir, with no more than 60 houseboats occupied or in use at one time. In addition, the Yuba County Code of Ordinances limits houseboats on New Bullards Bar Reservoir to 60 feet in length or 15 feet in width. Yuba County Code of Ordinances § 8.50.070(a) (2017). YCWA has adhered to this requirement and YCWA does not propose to modify it in the new license.

YCWA's Amended FLA.[18] However, of the 218 recommendations filed, 85 would modify a YCWA-proposed condition or propose a new condition (i.e., not proposed in any form by YCWA in its Amended FLA).

YCWA appreciates this opportunity to respond to these comments and recommendations. In Section III *infra*, YCWA only responds to proposed conditions that differ in some respect from the Amended FLA. If no commenter disagreed with or proposed something different than a license condition proposed in the Amended FLA, that condition is not discussed below.

The SWRCB submitted a number of comments and preliminary water quality certification ("WQC") conditions in response to the REA Notice. Where there is no apparent disagreement, but YCWA has proposed a condition and the SWRCB indicates it will likely require a condition related to it, YCWA does not address that SWRCB condition below. In those cases, YCWA requests that the SWRCB adopt YCWA's proposed conditions into its final WQC.[19] Where the SWRCB offers a comment or preliminary condition appearing to differ in some respect with one of YCWA's proposed conditions, or offers preliminary conditions outside the scope of the Amended FLA, YCWA responds below.

Both FS and SWRCB submitted preliminary standard conditions under their respective authorities which are general or administrative in nature.[20] YCWA reserves

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[18] For a chart of proposed conditions for which the Stakeholders reached agreement, see Appendix 2. A chart identifying comments that propose to modify YCWA's proposed conditions or include new recommendations is included in Appendix 3.

[19] This applies to SWRCB preliminary WQC Conditions 1, 2, 4, 5, 6, 12, 13, 14, 15, 16, 18, 19, 20, 21, 24, 25, 26, 27, and 28.

[20] Although not included as a standard condition, WQC Condition 29 with respect to newly identified impacts or species is a reservation of authority that is similar to a standard condition and YCWA does not respond to it here.

the right to respond or object to these conditions in the future. However, YCWA will work with these agencies informally to attempt to resolve any concerns YCWA may have before FS and SWRCB file their final conditions with the Commission.

Finally, based on the comments and recommendations, YCWA is making changes to two of its proposed conditions in the Amended FLA: (1) Proposed Condition GS3, Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Large Woody Material Management Plan; and (2) Proposed Condition AR3, Maintain Minimum Streamflows at Narrows 2 Powerhouse and Narrows 2 Full Bypass. The rationale for these changes is explained *infra* Sections III.I and III.A. YCWA has included in Appendix 4 the revised proposed conditions showing blackline from the Amended FLA versions. In Appendix 12, YCWA has included a revised "Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Large Woody Material Management Plan" to implement its revised Proposed Condition GS3.

C. Overview of YCWA's Response

YCWA in its Amended FLA has proposed an extensive suite of PM&E measures including almost $140,000,000 in new expenditures on environmental and recreational improvements and over $31,000,000 in lost generation costs over 30 years. Those numbers will be substantially higher over the new 50-year license term. YCWA also proposed over $173,000,000 in project flood protection improvements with the vast majority of these costs for a new auxiliary spillway. YCWA firmly believes its relicensing proposal represents the best balance of environmental mitigation and enhancement, recreation improvements, flood protection improvements, water supply, and power production.

A cornerstone of YCWA's proposal is to incorporate in the new license the Yuba Accord instream flows, which dramatically increased minimum streamflows in the lower Yuba River below Englebright Dam and were negotiated just eight years ago with many of the very same state and federal agencies that are participating in this relicensing. Since 2006, under the Yuba Accord, the Project has been implementing minimum flow requirements from 220 percent to 300 percent of the required annual volume of the existing FERC license required flows.[21] This new flow regime was the result of years of careful study and negotiation that only recently culminated in these significant fishery habitat improvements. In addition, the combined minimum flow requirements from Our House, Log Cabin and New Bullards Bar dams would be two to three times greater under YCWA's Amended FLA than they are under the existing license.

YCWA's relicensing proposal is based on the best available scientific knowledge, generated from implementing a rigorous FERC-approved study plan as well as from YCWA's decades of operating the Project for public benefit. The study plan, consisting of 50 separate studies with numerous components and costing approximately $14,000,000, was developed and implemented collaboratively under the FERC integrated licensing process ("ILP") process through thousands of hours of meetings with FERC, the public, and Stakeholder technical working groups. In addition, the FERC-approved study plan was supplemented by $6,000,000 and eight years of scientific work by the River Management Team ("RMT"), composed of YCWA, federal and state resource agencies, and conservation groups, to study the beneficial effects on the fisheries of

[21] *See* Figure 1 *infra*.

increased lower Yuba River flows under the Yuba Accord. YCWA has submitted all of this scientific information into the relicensing record.

Following completion of the studies, YCWA achieved consensus with FS on PM&E measures affecting National Forest System ("NFS") lands, including $62,500,000 worth of improvements to recreation facilities over 15 years, periodic closing of the Lohman Ridge Diversion Tunnel to protect the Middle Yuba River trout fishery, and numerous other measures. YCWA also reached agreement with various other Stakeholders on a number of PM&E measures ranging from sediment management at Our House and Log Cabin Diversion Dams, to minimum streamflows below Our House and Log Cabin Diversion Dams, to New Bullards Bar Dam minimum reservoir levels, to wildlife management and aquatic monitoring plans.[22]

Unfortunately, YCWA was not able to reach closure with all of the agencies and other Stakeholders on the issues which are the subject of this Response. Those agencies and other Stakeholders have recommended modifications to YCWA's proposed conditions in the Amended FLA, as well as a number of new conditions which YCWA did not propose. Although a few of the modifications and new conditions seem relatively minor, many are sweeping in scope and collectively would have serious adverse—if not devastating—impacts on YCWA's mission to operate the Project for water supply, recreation and power production, and to improve the Project for flood protection.[23]

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[22] *See* Appendix 2.

[23] Yuba County Water Agency, Strategic Plan 2017-2022 (2016), *available at* http://www.ycwa.com/wp-content/uploads/2016/11/Strategic-Plan-2017-2022.pdf ("YCWA's core missions [are] flood risk management and water supply reliability . . . . Much has been accomplished, but much more must be done to protect the people of Yuba County from floods and ensure a reliable water supply. YCWA currently operates the [Project] to generate power and sell it into the marketplace. The revenue from power sales not only fund the ongoing operation of the Project, but serve as the lifeblood for the initiatives to continue to pursue the YCWA's mission on behalf of the people of Yuba County.").

What is further troubling is that the rationales these agencies and other Stakeholders offer in support of their recommendations for the most part ignore the extensive data and study results from the relicensing record that specifically relate to the Project. Rather, they routinely cite the general literature, and data and analyses developed for other river systems that bear a tenuous if any relationship to the Project and are not even in the record of this proceeding. In many cases, the agencies and other Stakeholders offer minimal or questionable explanations of how the recommendations are related in any way to the operation of the Project. Yet these same agencies and other Stakeholders collaborated on the development of YCWA's extensive ILP study plan including the study methodologies which YCWA employed and FERC approved. With very limited exceptions, they also did not use the computer models YCWA developed for the relicensing to model the environmental impacts of their recommendations, in order to see, for example, what the temperature or habitat impacts of their flow recommendations would be. Consequently, as demonstrated below and in the attached technical reports, many of their recommendations would have unintended adverse impacts on the very resources they are meant to protect.

In addition, the agencies and other Stakeholders recommend these modified and new conditions with little or no information or analysis of the cost of the recommendations, either in capital costs, operations and management ("O&M") costs, or lost power.[24] Even though the Commission is obligated by the FPA to balance the costs and benefits of proposed environmental measures to reach a licensing decision in the

[24] A limited exception is that CDFW states that it, FWS, and NGOs "used the Licensee's operations model to consider the quantitative impacts to Licensee's reservoir storage, water deliveries, and power generation" for flow proposals in the lower Yuba River. CDFW Intervention, Enclosure A at 109 (Section 3.4.8). CDFW provides the results of its runs of YCWA's models on pages 109 through 120 of its comment letter, but did not file the actual model runs.

overall public interest,[25] the agencies and other Stakeholders appear to have given little thought to the costs of their proposals or whether those costs are justified by the asserted environmental benefits. Not only the Commission, but YCWA as a public agency must consider the costs of environmental programs and whether their benefits outweigh those costs. YCWA's mission includes environmental stewardship, which is evidenced by the substantial environmental improvements it proposes in the Amended FLA—but its mission also includes water supply, flood control and recreation, and hydroelectric generation to help offset the cost of providing these public services. Two Yuba County levee breaches in the last 50 years resulted in loss of life and $500,000,000 in damage claims paid by the State of California. The Project is the only source of dedicated flood storage reservation on the entire Yuba River system and more flood protection is needed. Project revenues are the primary source of funds for Project flood protection and downstream levee improvements.

In preparing this Response, YCWA independently modeled and analyzed the environmental, recreation, and cost impacts of the agency and other Stakeholder recommendations. YCWA provides the results of its modeling and analyses below and in the attached technical reports. In some cases, the agency or other Stakeholder recommendation was too vague or open-ended to estimate costs, but where possible YCWA provides a cost estimate for each recommendation.

On the lower Yuba River, agencies and FWN would upset the careful balance of the Yuba Accord flow schedules by recommending spring floodplain inundation flows, as well as spring and winter pulse flows. Yet they provide no evidence that the additional

[25] *See* Section II.E *infra*.

flows are needed or would provide any significant benefits. On the contrary, YCWA's modeling and analysis demonstrate that these flow recommendations would not provide significant benefits and would come at an unacceptable cost in lost power and water supply.[26]

Agencies and FWN recommend additional restrictions on Project ramping and flow fluctuations downstream of Englebright Dam for protection of riparian seedlings. YCWA's modeling and analysis show the additional operational restrictions would not provide significant benefits, and would result in less suitable water temperatures for numerous life stages of federal Endangered Species Act ("ESA")-listed anadromous salmonids and jeopardize the Project's ability to provide stable flows for spring-run Chinook spawning. In addition, the restrictions would seriously impair the Project's flexibility in providing water supply when needed.[27]

NMFS recommends a condition requiring spring snowmelt pulse flows to create floodplain habitat for juvenile salmonids. YCWA's modeling and analysis show these pulse flows would not substantially increase floodplain inundation, and that inundation would not increase habitat due to the highly disturbed nature and limited enhancement potential of the floodplain below Englebright Dam. Moreover, the releases would result in overall less suitable water temperatures for numerous life stages of ESA-listed salmonids. The additional releases would come at a significant cost in terms of reduced Project operational flexibility, water supply, and power generation.[28]

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[26] *See* Appendix 7 at 45-49; Section III.A.2 *infra*.

[27] *See* Appendix 8 at 26; Section III.A.3 *infra*.

[28] *See* Appendix 10 at 31-35; Section III.A.4 *infra*.

Other lower Yuba flow recommendations would similarly have minimal environmental benefits and/or high costs that cannot be justified by the benefits.[29] The combined impacts of all of these flow recommendations would result in significant costs to YCWA in reduced operational flexibility, water supply, water transfers, and power generation. The power generation costs alone of the NMFS complete flow recommendation would be approximately $47,500,000 over 30 years. The power generation costs alone of the FWS, CDFW, and FWN complete flow recommendation would be approximately $64,200,000 over 30 years. These proposals would:

- Require extreme Project operations in some years to comply with the required flows at the Marysville Gage; and YCWA could not comply in some water years ("WY").

- Result in water delivery shortages to local farmers in some wetter WYs, and significantly reduce water supply reliability for farmers and farm operations in some years. This would result in increased groundwater pumping costs and put additional strain on the valley groundwater aquifer that is the sole source of municipal water supply.

- Significantly reduce, and in some years eliminate, April and early May water transfers, and reduce summer water transfers, with reductions in associated revenues.[30]

- Negatively affect power generation and associated Project revenues.[31]

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[29] *See* Sections III.A.5 and III.A.7 *infra*; Appendix 11.

[30] Under California law, transferring water from one region of the state to another is a favored resource tool for meeting statewide water supply needs. Cal. Water Code § 475 ("The Legislature hereby finds and declares that voluntary water transfers between water users can result in a more efficient use of water, benefiting both the buyer and the seller. The Legislature further finds and declares that transfers of surplus water on an intermittent basis can help alleviate water shortages, save capital outlay development costs, and conserve water and energy. The Legislature further finds and declares that it is in the public interest to conserve all available water resources, and that this interest requires the coordinated assistance of state agencies for voluntary water transfers to allow more intensive use of developed water resources in a manner that fully protects the interests of other entities which have rights to, or rely on, the water covered by a proposed transfer.").

[31] *See* Appendix 9 at 7-8, 27-28, 31; Appendix 10 at 5-6, 31-36.

In addition, the combined flow recommendations would have significant adverse impacts on recreation by lowering reservoir levels in New Bullards Bar Reservoir.[32] The Commission should reject all of these flow recommendations for the lower Yuba River.

Agencies and FWN also make a number of non-flow recommendations for the lower Yuba River. The most significant and far-reaching of these is the recommendation to develop a plan for physical habitat modifications in the lower Yuba River, including lowering of floodplain surfaces, planting of riparian vegetation, and installation of large woody material ("LWM"). As explained below, the Project is not responsible for the geomorphic and riparian conditions of the lower Yuba River, which have been severely degraded as a result of hydraulic mining during the Gold Rush era, dam building by the federal government for sediment control, and flood control channelization. Since the recommended habitat improvement measures cannot change the fundamental reshaping of the geomorphic and riparian conditions in lower Yuba River that occurred as a result of these historic influences, any improvements would be transitory at best. Moreover, the costs of the measures would be enormous. YCWA estimates the costs over 30 years would be approximately $300,000,000.[33] This recommendation for a physical habitat modification plan is clearly unjustified given the lack of nexus to a Project effect, the very high cost, and the minimal if any benefits it would provide.[34]

In the New Bullards Bar Dam Reach, agencies and FWN propose to substantially expand YCWA's proposed minimum flows ostensibly to increase cold water habitat downstream below the confluence with the Middle Yuba River. The recommendation is

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[32] Section III.E *infra*.

[33] *See* Section III.B.1.e *infra*.

[34] Section III.B.1 *infra*.

flawed because, as amply demonstrated by relicensing studies, the Project does not reduce coldwater habitat in this reach. Moreover, as shown by YCWA's modeling, the increased cold water releases would result in only minor improvements in small reaches of the river for rainbow trout, which would be more than offset by the adverse impacts from water that is too cold for rainbow trout and foothill yellow-legged frog (*Rana boylii*) ("FYLF") in the reach immediately below New Bullards Bar Dam. The high dollar cost of this measure cannot be justified by the minimal, at best, environmental benefits.[35]

Also in the New Bullards Bar Dam Reach, agencies and FWN propose an LWM and gravel placement program for fish habitat. As with the minimum flow proposal, this recommendation would have little overall benefit because the 2.4-mile reach is a boulder-strewn, steep-gradient, steep-sided reach subject to very high flows which would quickly transport LWM and sediment out of the reach.[36] Further, the total cost of placing the LWM and gravel in the reach would be enormous, approximately $20,000,000 over 30 years, because of severe access limitations to this reach. The cost simply cannot be justified given the negligible benefits of this recommendation.[37]

In the Our House and Log Cabin Diversion Dam reaches, agencies and FWN propose to expand YCWA's proposal to close the Lohman Ridge Diversion Tunnel periodically to avoid entrainment of rainbow trout in the tunnel, and to minimize situations where water is diverted from the Middle Yuba River into New Bullards Bar Reservoir, only to spill and be unavailable for water supply or generation. They recommend closing the tunnel more in spring than under YCWA's proposal, and closing

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35 Section III.C.1 *infra*.

36 *See* Appendix 13.

37 Section III.C.2 *infra*.

it every fall whereas YCWA would only close the tunnel at certain times in the fall. As YCWA explains in detail below, despite YCWA's agreement with FS to close the tunnel periodically, the fall tunnel closures would have small environmental benefits because entrained rainbow trout are not harmed by entering the tunnel, just relocated, and because the entrainment that now occurs has little impact on the Middle Yuba River rainbow trout population. Further, YCWA's modeling shows that the additional spring closures recommended by the agencies would only partially have their intended effect and would unnecessarily eliminate water diversions into New Bullards Bar Reservoir that could be used for power generation. Since each tunnel closure is extremely costly in terms of lost power generation, the minimal environmental benefits of this recommendation are far outweighed by the costs.[38]

In summary, and as demonstrated conclusively below, the recommendations of the agencies and other Stakeholders suffer from a variety of flaws ranging from failure to support their recommendations with evidence of nexus to a Project effect, failure to provide evidence of a problem that needs to be mitigated, failure to provide evidence that their recommendations will result in significant environmental benefits, failure to recognize that in many cases the recommendations would have redirected adverse environmental impacts, and failure to show that the environmental benefits, if any, outweigh the substantial costs that YCWA would incur to implement them as well as the loss of water supply to the water users who YCWA serves. We encourage the Commission to closely weigh these additional costs against the limited biological benefits of the proposals. The Commission should not adopt their proposals.

[38] Section III.D.1 *infra*.

II. LEGAL FRAMEWORK

YCWA concurs with FS's Section 4(e) resource conditions and does not object to the FWS and the National Marine Fisheries Service ("NMFS") reservations of authority under FPA Section 18.[39] Therefore, the following discussion addresses the standards for recommendations under Section 10(a) and 10(j) of the FPA.[40] Recommendations issued under Section 10(a) or 10(j) must meet certain general standards to be included in a license. These general standards are explained below.

A. Substantial Evidence Standard

Section 10(j) and 10(a) recommendations must be supported by substantial evidence in the record pursuant to Section 313(b) of the FPA.[41] The "substantial evidence" test is a threshold evidentiary standard requiring agencies or other entities to support their recommendations with a rational evidentiary basis to ensure that FERC's adoption of such recommendations is appropriately supported. If a recommendation fails to meet the substantial evidence test, the Commission must reject it.[42]

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[39] 16 U.S.C. § 811.

[40] *Id.* §§ 803(a) and 803(j).

[41] *Id*. § 825*l*(b).

[42] *Henwood Assocs.*, 50 FERC ¶ 61,183 (1990); *see also Gustavus Elec. Co.*, 110 FERC ¶ 61,334 at P 30, *reh'g denied*, 111 FERC ¶ 61,424 (2005) (citing *U.S. Dep't of the Interior v. FERC*, 952 F.2d 538, 544 (D.C. Cir. 1992); *FPL Energy Me. Hydro, LLC*, 95 FERC ¶ 61,016 (2001)); *Bangor Hydro-Elec. Co. v. FERC*, 78 F.3d 659 (D.C. Cir. 1996); *Pub. Util. Dist. No. 1 of Pend Oreille Cty.*, 112 FERC ¶ 61,055 at P 65 (2005) (rejecting recommendations for bald eagle perching where there was no evidence that the amount of perching at the project was limiting or more was necessary); *Grand River Dam Auth*., 116 FERC ¶ 62,112 at P 29 (2006) (rejecting recommendation for off-site wetland restoration to mitigate for project impacts to wetlands along the shoreline, finding no information in the record on the quality of project shoreline habitat or quantifying project effects on habitat quality from reservoir drawdowns or shoreline use); *S.D. Warren Co*., 105 FERC ¶ 61,009 at PP 24-29 (2003) (rejecting FWS recommendation to require a year-round minimum flow of 57 cfs in the bypassed reach to benefit the trout fishery during the winter, finding that there was insufficient evidence to indicate that the flow is necessary over the winter period to support a winter fishery that may develop in the reach).

B. Nexus to Project Effect

Section 10(a) or 10(j) recommendations must have a nexus to (or address) a project effect.[43] Under this standard, the proponent must establish a nexus between the need for the measure and the resources affected by the project.[44] If the proponent cannot establish such a nexus, the Commission will reject the measure.[45] For example, the Commission has rejected a recommendation to expand a project boundary to include additional lands within 100 feet on each side of the tributaries upstream of a project, finding that its proponent had failed to establish a nexus between the need for the measure and the resources affected by the project.[46]

C. Specificity of Recommendations

Recommendations must contain specific measures to protect, mitigate damages to, or enhance the resource.[47] The recommendation cannot be too vague to determine what measures would be implemented. For example, the Commission has rejected a recommendation that a licensee "continue its support of aquatic restoration within the

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[43] *Georgia Power Co*., 149 FERC ¶ 62,210, at P 59 (2014); *Alabama Power Co*., 153 FERC ¶ 61,298 at P 69 & n.61 (2015).

[44] *Georgia Power Co*., 149 FERC ¶ 62,210 at P 70.

[45] *See also City of Kaukauna*, 135 FERC ¶ 62,149 at PP 63-34 (2011) (rejecting recommendation that the licensee provide swale habitat for turtles to place their eggs, finding it did not relate to project effects, but rather to pre-project construction activities or natural conditions); *Duke Energy Carolinas, LLC*, 153 FERC ¶ 62,134 at PP 168-69 (2015) (rejecting recommendation that licensee map and protect all known populations of the endangered Schweinitz's sunflower on licensee-owned, non-project land and implement a propagation and restoration plan for the species, finding that populations of the sunflower on lands not influenced by the project or otherwise needed for project purposes is beyond the scope of the license, and instituting a propagation plan does not address a project-specific effect), *order on reh'g and clarification*, 156 FERC ¶ 61,010 (2016).

[46] *Georgia Power Co*., 149 FERC ¶ 62,210 at P 70.

[47] *See, e.g., Pub. Util. Dist. No. 1 of Chelan Cty.*, 107 FERC ¶ 61,280 at p. 62,329 (2004) (rejecting a 10(j) recommendation as unduly vague); *Georgia Power Co*., 149 FERC ¶ 62,210 at P 59; *Portland Gen. Elec*., 148 FERC ¶ 62,142 at P 33 (2014) (noting that a condition requiring the licensee to establish a $250,000 Resident Fish Mitigation Fund to provide funding for habitat mitigation and enhancements to benefit resident fish does not provide any specific measures to be implemented and is too vague).

[basin]" and "identify suitable habitats (primarily tributaries) for species reintroductions" as too vague to implement.[48] In another instance, the Commission rejected a recommendation prohibiting unspecified project activities during the winter hibernation period of a sensitive bat species for these same reasons.[49]

D. Need for the Measure

The Commission will reject a 10(a) or 10(j) recommendation if it determines that the measure is not needed. For example, the Commission has rejected a recommendation for Geographic Information System mapping and development of a digital database for sensitive species, noxious weeds, and habitat restoration sites to assist in tracking mitigation progress and associated management activities at a project, finding that sufficient information already existed to assess project effects and these measures were not needed.[50] The Commission also will reject recommendations that are sufficiently addressed under the Commission's standard fish and wildlife reopener article, which is included in every license.[51] For example, the Commission has rejected a recommendation that after five years of flow monitoring at a project, the licensee be required to provide an unspecified minimum flow in the bypassed reach if the agencies recommend such a flow, finding that inclusion of the Commission's standard fish and wildlife reopener article was sufficient.[52]

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[48] *Alabama Power Co.*, 153 FERC ¶ 61,298 at P 69 & n.60 (2015).

[49] *See, e.g., Pub. Util. Dist. No. 1 of Okanogan Cty.*, 144 FERC ¶ 62,018 at P 84 (2013) (rejecting recommendation prohibiting unspecified project activities during the winter hibernation period to protect Townsend's big-eared bats as too vague).

[50] *Id.* at P 95.

[51] *See, e.g.*, Form L-5 at Standard Article 15, 54 F.P.C. 1792 (1975), *available at* https://www.ferc.gov/industries/hydropower/gen-info/comp-admin/l-forms/l-05.pdf.

[52] *City of Petersburg*, 104 FERC ¶ 62,151 at PP 25-26 (2003).

E. Consistency with Comprehensive Development Standard

Sections 10(a)(1) and 4(e) of the FPA require the Commission to balance all public interest considerations relative to the comprehensive development of the waterway when determining whether and, if so, under what conditions to issue a license. This is known as the comprehensive development or public interest standard. If the Commission believes that a proposed condition is inconsistent with the comprehensive development standard of Sections 4(e) and 10(a), it will reject the condition, unless it is a mandatory condition or prescription under Section 4(e) or 18.[53] The Commission may reject a recommendation as inconsistent with the comprehensive development standard where the cost of the measure significantly outweighs its expected environmental benefit.[54]

F. Commission Standards for Agency 10(j) Recommendations

Section 10(j)(1) of the FPA requires the Commission, when issuing a license, to include PM&E measures for fish and wildlife resources affected by the project based on the recommendations of state and federal fish and wildlife agencies. The Commission's regulations define a "fish and wildlife recommendation" under 10(j) as:

> any recommendation designed to protect, mitigate damages to, or enhance any wild member of the animal kingdom, including any migratory or non-

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[53] *See, e.g., Alabama Power Co.*, 153 FERC ¶ 61,298 at P 67 (rejecting recommendation that the licensee increase the total shoreline buffer width to at least 100 feet, finding it inconsistent with the comprehensive planning standard; rejecting recommendation for minimum flows to enhance long-term habitat conditions for rainbow trout, finding that they were not high enough to bring temperatures within the tolerance ranges for trout and would substantially reduce annual generation at the project); *id.* at P 66 (rejecting recommendation to seasonally lower reservoir to improve rainbow and brown trout spawning, finding that the $3,000,000 per year cost would have only a minor effect on habitat conditions with very little benefit to trout); *Pac. Gas & Elec. Co.*, 120 FERC ¶ 62,001 at PP 55-57 (2007) (rejecting recommendation for a water quality monitoring plan at cost of $106,580 annually, finding that there was no evidence of project-related water quality problems to justify the measure).

[54] *See, e.g., Pub. Util. Dist. No. 1 of Pend Oreille Cty.*, 112 FERC ¶ 61,055 at P 64 (rejecting DOI recommendation that that licensee fund and mitigate project-related wildlife habitat losses anticipated to occur during the term of the new license, at a cost of $108,000 annually, based on the high cost of the measure); *Pac. Gas & Elec. Co.*, 120 FERC ¶ 62,001 at PP 55-57 (rejecting Interior recommendation for water quality monitoring plan based, in part, on high cost of the measure).

> migratory mammal, fish, bird, amphibian, reptile, mollusk, crustacean, or other invertebrate, whether or not bred, hatched, or born in captivity, and includes any egg or offspring thereof, related breeding, or spawning grounds, and habitat.[55]

The agency must specifically identify and explain the recommendations, the relevant resource goals and objectives, and the evidentiary or legal basis in the recommendations.[56]

If the Commission believes that a 10(j) recommendation is inconsistent with the purpose and requirements of Part I of the FPA or other applicable law, and the Commission cannot resolve the inconsistency with the agency, it may modify or reject the recommendation.[57] The Commission may consider recommendations that fall outside the scope of 10(j) recommendations under the broader public-interest standard of Section 10(a) of the FPA, but is not required to seek agreement with the agencies pursuant to Section 10(j)(2). Recommendations that fall outside the scope of Section 10(j) include requests for studies that could have been conducted prior to licensing, recommendations for recreation facilities, funding requests, or requests that an agency be consulted in the development of plans.[58]

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[55] 18 C.F.R. § 4.30(b)(9)(ii).

[56] *Id*. § 5.26(b).

[57] Before rejecting a 10(j) condition, the Commission and the agencies must first attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies. If the agencies cannot resolve the inconsistency, the Commission may reject the recommendation, but must explain how the recommendation is inconsistent with Part I of the FPA or other applicable law, and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources. 16 U.S.C. § 803(j)(2).

[58] *Merimil Ltd. P'Ship*, 110 FERC ¶ 61,240 at P 28 n.30 (2005).

III. RESPONSE TO RECOMMENDATIONS

A. Lower Yuba River – Flow Recommendations

1. Introduction

During 2002 through 2005, YCWA, CDFW, NMFS, FWS, and NGO representatives participated in a rigorous and collaborative scientific process during which they examined all of the stressors to lower Yuba River salmonids by species, life stages and locations, and then developed new minimum flow requirements for the lower Yuba River to best protect and enhance these species, within the limits of available water supplies.

After these new requirements were developed, YCWA, CDFW, and four NGOs[59] executed the Yuba Accord Fisheries Agreement in October 2007.[60] In this Agreement, to which NMFS and FWS gave a formal written statement of support, YCWA committed to operate the Project to meet these minimum flow requirements.

The Yuba Accord Fisheries Agreement's lower Yuba River minimum flow requirements were developed to achieve the following objectives:

- Maximize "optimal" flows and minimize the occurrence of sub-optimal flows, within the bounds of hydrologic variation and available water storage capacity;
- Maximize the occurrence of appropriate flows for Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) immigration, spawning, rearing, and emigration;
- Provide month-to-month flow sequencing in consideration of Chinook salmon and steelhead life history periodicities;

[59] Those conservation groups were SYRCL, FOR, Trout Unlimited, and the Bay Institute.

[60] YCWA implemented these agreements in 2006 and 2007 pursuant to interim orders issued by the SWRCB pending final approval.

- Provide appropriate water temperatures for Chinook salmon and steelhead immigration and holding, spawning, embryo incubation, rearing and emigration;

- Promote a dynamic, resilient, and diverse fish assemblage;

- Minimize potential stressors to fish species and lifestages; and

- Develop flow regimes that consider all freshwater lifestages of salmonids and allocate flows accordingly.[61]

YCWA and the Bureau of Reclamation then prepared a Draft Environmental Impact Report/Environmental Impact Statement ("EIR/EIS") for the Yuba Accord and circulated it for public review and comments in June 2007. YCWA certified the Final EIR/EIS (as an EIR under the California Environmental Quality Act) on October 23, 2007.[62] The Yuba Accord EIR/EIS evaluated each salmonid run and each lifestage over the relevant months and the full range of Yuba River hydrologic conditions.[63]

On May 20, 2008, the SWRCB adopted its Corrected Order WR 2008-0014, which added these requirements to YCWA's water-right permits. YCWA now operates the Project to meet these requirements, though they were not adopted into the existing FERC license. The minimum instream flows for the lower Yuba River under the Yuba Accord are subtantially higher than the minimum streamflows for the lower Yuba River in the existing Project license.

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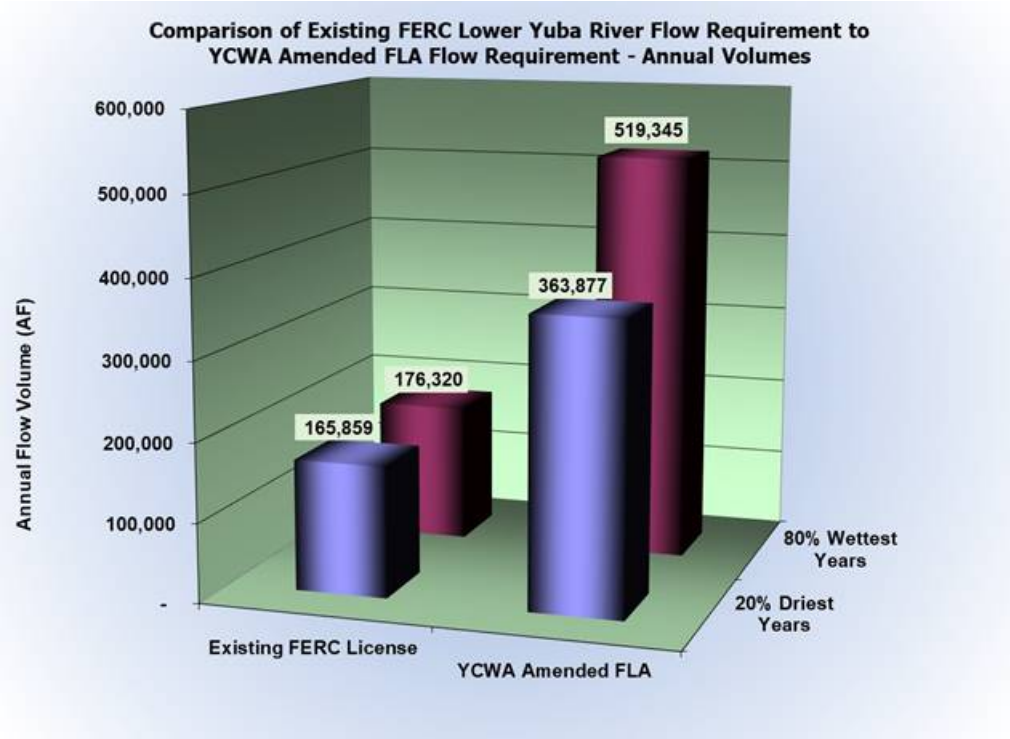
[61] River Management Team, Aquatic Resources of the Lower Yuba River – Past, Present & Future, Yuba Accord Monitoring and Evaluation Program, Draft Interim Report at 1-3 (Apr. 2013), *available at* http://www.yubaaccordrmt.com/Interim%20ME%20Report/ME%20Interim%20Report_Draft_April%202013.pdf.

[62] SWRCB Corrected Order WR 2008-0014 at 5-6 (May 20, 2008), *available at* https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2008/wro2008_0014corrected.pdf.

[63] Final Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Yuba River Accord (Oct. 2007), *available at* http://www.ycwa-relicensing.com/Comprehensive%20Plans/Non-Qualifying%20Plans/2007%20-%20Lower%20Yuba%20River%20Accord%20EIR-EIS.pdf.

The figure set forth below depicts the comparative annual quantities of water required to meet the minimum instream flows in typical wet and dry years under: (1) the existing Project license; and (2) the Yuba Accord.

Figure 1: Comparative Lower Yuba River Annual Required Minimum Flow Volume



The figure shows these annual quantities of water required to meet the minimum instream flows in typical wet and dry years:

(1) Existing Project license: dry – 180,327 acre-feet ("ac-ft") annually; wet – 175,208 ac-ft annually; and

(2) Yuba Accord: dry – 422,306 ac-ft annually; wet – 546,952 ac-ft annually.

Therefore, the Yuba Accord flow requirements are approximately 242,000 ac-ft annually greater in a typical dry year (about 134 percent greater), and approximately 372,000 ac-ft annually greater in a typical wet year (about 212 percent greater), than under the existing Project license. In other words, the Yuba Accord provides almost 300 percent of the required annual volume of the flows required in the FERC license in wetter years and

over 220 percent of the required annual volume of flows required in the FERC license in drier years.

Prior to adoption of the Yuba Accord, YCWA expended in excess of $10,000,000 in related costs for the technical work to support development of the lower Yuba River flow requirements in the Yuba Accord Fisheries Agreement, environmental analysis of these flow proposals, and the SWRCB regulatory process under which these requirements were approved. Other parties to the Yuba Accord Fisheries Agreement also incurred significant costs in the development, analysis, approval and implementation of these flow requirements.

Section 1.2.1 of the Yuba Accord Fisheries Agreement states:

> The Parties intend that their monitoring and data-collection actions will produce a useful database for the proceedings of [the 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.[64]

As contemplated by the Agreement, YCWA established the RMT in 2006. The RMT's primary role has been to conduct a program of monitoring and evaluation studies to assess fisheries conditions in the lower Yuba River. In addition to YCWA, the RMT includes representatives of CDFW, NMFS, FWS, California Department of Water Resources ("DWR"), FOR, the Bay Institute, SYRCL, Trout Unlimited, and other parties. The RMT's science-based program was designed to evaluate the following:

- The effectiveness of the implementation of the updated flow schedules in protecting anadromous salmonids;

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[64] Yuba County Water Agency, Lower Yuba River Fisheries Agreement at 1 (Oct. 2007), *available at* http://www.ycwa-relicensing.com/Lower%20Yuba%20River%20Accord/2007%20-%201108%20-%20Lower%20Yuba%20River%20Accord%20Fisheries%20Agreement.pdf ("Yuba Accord Fisheries Agreement").

- The condition of fish resources in the lower Yuba River; and
- The viability of lower Yuba River fall-run Chinook salmon, and any subpopulations of the Central Valley steelhead distinct population segment and spring-run Chinook salmon evolutionarily significant unit that may exist in the lower Yuba River.

YCWA has provided funding in excess of $6,000,000 since 2006 for the RMT's science program. The RMT science program has been augmented by scientific analyses conducted for the FERC relicensing of the Project.

YCWA Proposed Condition AR3 in the Amended FLA contains the same minimum instream flow requirements for the lower Yuba River for the WYs during which Flow Schedules 1 through 6 will be in effect. The minimum flow schedules in this proposed condition for Conference Years (the driest WYs, expected to occur approximately one percent of the time) have some changes from the corresponding Yuba Accord requirements.[65] These changes are shown in Table E2-5 in the rationale statement for this proposed condition;[66] the rationale statement explains the reasons for these changes and the benefits that the proposed new requirements will have over the current Conference Year requirements.[67]

These lower Yuba River flow requirements, including the proposed changes in Conference Year requirements, are based on the best available scientific information and will provide a contemporary "functional flow" program for anadromous salmonids in the lower Yuba River. The Delta Independent Science Board in its February 23, 2017 review of the SWRCB's "Working Draft Scientific Basis Report for New and Revised Flow

[65] After FERC issues a new license for the Project, YCWA will petition the SWRCB to amend the instream-flow requirements in YCWA's water-right permits to be consistent with the new license requirements.

[66] Amended FLA, Exh. E, App. E2 at E2-42 to E2-43.

[67] Amended FLA, Exh. E, App. E2.

Requirements on the Sacramento River and Tributaries, Eastside Tributaries to the Delta, Delta Outflow, and Interior Delta Operations" described functional flows as follows:

> Functional flows are a mechanistic approach for estimating flow needs and trade-offs (Yarnell, et al. 2015; DISB 2015). Flows needed are based on field observations of life stages and computer and conceptual models of hydrodynamics, habitat, and ecological conditions for different flows. Environmental flows are then chosen to support different ecological functions and life stages of selected species.

YCWA provides the following responses to recommendations regarding flows in the lower Yuba River.

2. Maintain Minimum Streamflows at Narrows 2 Powerhouse and Narrows 2 Full Bypass

YCWA's Amended FLA includes Proposed Condition AR3, which would require YCWA to operate the Project to maintain specified minimum flows in the lower Yuba River according to Flow Schedules that would vary depending on the WY type. As discussed above, the minimum flow requirements for the WYs during which Flow Schedules 1 through 6 would be in effect are the same as the corresponding requirements in the Yuba Accord Fisheries Agreement, while the requirements for Conference Years (the driest WYs, expected to occur approximately one percent of the time) have some changes from the corresponding Fisheries Agreement requirements that will have some fisheries benefits.

CDFW, FWS, BLM, and FWN propose three types of recommended changes to YCWA Proposed Condition AR3. Their recommended changes would require: (a) significantly higher minimum flows for March 23 through April 30 of Schedule 1 Years and for April 1-30 of Schedule 2 Years (referred to as "Spring Floodplain Inundation

Flows");[68] (b) higher minimum flows for May 1-15 of Schedule 2, 3, 5, 6, and Conference Years (referred to as "Spring Pulse Flows");[69] and (c) significantly higher minimum flows for February 1-6 of Schedule 5, 6, and Conference Years in which such higher flows had not already occurred during the previous December 1 through February 1 period (referred to as "Conditional Winter Pulse Flows").[70] The SWRCB similarly comments that "Proposed Condition AR3 may not achieve a level of Yuba River protection adequate to offset Project impact."[71]

YCWA's technical consultants prepared a technical report that analyzes and responds to these commenters' recommendations. This report is titled "Response to Comments on Flow Requirements for the Yuba River Downstream of Englebright Dam (YCWA Proposed Condition AR3)," and is attached as Appendix 7. The following paragraphs discuss these recommended changes and summarize the conclusions in this technical report.

a. Spring Floodplain Inundation Flows

The commenters' proposed spring floodplain inundation flows would increase the required minimum flows above the Amended FLA flows, measured at the Marysville Gage, in Schedule 1 Years by 2,800 cubic feet per second ("cfs") (50,000 ac-ft) during March 23-31 and by 2,500 cfs (150,000 ac-ft) during April 1-30, and they would increase the required minimum flows in Schedule 2 Years by 1,800 cfs (54,000 ac-ft) during April

[68] California Department of Fish and Wildlife Notice of Intervention, Enclosure A: CDFW 10(j) Recommendations at 103, Project No. 2246-065 (filed Aug. 25, 2017) ("CDFW Intervention").

[69] *Id.*

[70] *Id.* at 101.

[71] State Water Resources Control Board Comments on Ready for Environmental Analysis and Preliminary Terms and Conditions at 22, Project No. 2246-000 (filed Aug. 28, 2017) ("SWRCB Comments").

1-15 and by 1,700 cfs (51,000 ac-ft) during April 16-30.[72] The commenters' proposed spring floodplain total flow increase range from 2,500 to 2,800 cfs (200,000 ac-ft) in Schedule 1 Years and from 1,700 to 1,800 cfs (105,000 ac-ft) in Schedule 2 Years. CDFW's rationale states that these recommended higher minimum flows would increase floodplain inundation and productivity, which would benefit salmonids in the lower Yuba River, and fill the "spring gap" during which flows otherwise would drop before rising again later in the spring.[73] FWS and FWN's rationales contain similar statements.[74]

As discussed in detail in the technical report, FERC should not change Condition AR3 to include these commenters' proposed spring floodplain inundation flows because: (i) the recommendation does not recognize the interactions in the lower Yuba River between flow and physical habitat structure or the lack of nexus between the Project and their recommendation; (ii) the commenters' rationale for their recommendation does not demonstrate that the current effective flow requirements (based on the Lower Yuba River Accord and reflected in the Amended FLA) adversely affect lower Yuba River salmonid populations or that their recommendation would have any benefits to these populations; (iii) their recommendation actually would decrease the magnitude of floodplain inundation and would not substantially increase juvenile salmonid rearing habitat; [75] and, as discussed above, (iv) their recommendation would have a very significant water cost of 200,000 ac-ft in Schedule 1 Years and 105,000 ac-ft in Schedule 2 Years.

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[72] CDFW Intervention, Enclosure A at 103 (Section 3.4.8).

[73] *Id.* at 101-03 (Section 3.4.8).

[74] U.S. Department of the Interior Comment, Recommendations, Terms and Conditions, and Prescriptions at 50-51, Project No. 2246-065 (filed Aug. 25, 2017) ("DOI Comments"); Comments on Ready for Environmental Analysis and Recommendations of the Foothills Water Network at 29-31, Project No. 2246-065 (filed Aug. 25, 2017) ("FWN Comments").

[75] Appendix 7 at 8-9, 14-27.

b. Spring Pulse Flows

The commenters' proposed spring pulse flows would increase the required minimum flows above the Amended FLA flows, measured at the Marysville Gage, by 400 cfs (12,000 ac-ft) during May 1-15 of Schedule 2 Years, by 200 and 250 cfs (19,500 ac-ft) during April 16 to May 15 of Schedule 3 Years, by 250 cfs (7,500 ac-ft) during May 1-15 of Schedule 5 and 6 Years, and by 150 cfs (4,500 ac-ft) during May 1-15 of Conference Years.[76] CDFW states that these pulse flows would "attract adult spring-run Chinook salmon and further help close the spring gap."[77] FWS and FWN's letters contain similar statements.[78]

YCWA's technical report explains in detail why the Commission should not make these recommended changes to YCWA Proposed Condition AR3. As discussed in that report, these recommended changes: (i) are not needed to attract adult spring-run Chinook salmon into the lower Yuba River during Schedule 5, 6, and Conference Years; (ii) are unlikely to cause such attraction and would be contrary to NMFS's 2014 Recovery Plan; (iii) are inconsistent with commenters' other statements favoring a more-natural hydrograph;[79] and, as discussed above, (iv) would have a water cost ranging from 4,500 ac-ft to 12,000 ac-ft.

c. Conditional Winter Pulse Flows

The commenters' proposed conditional winter pulse flows would require YCWA to operate the Project to maintain pulse flows, measured at the Smartsville Gage, of up to

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[76] CDFW Intervention, Enclosure A at 103 (Section 3.4.8).

[77] *Id.*

[78] DOI Comments at 50-51; FWN Comments at 32-33.

[79] Appendix 7 at 9-10, 28-33.

3,000 cfs in Schedule 5 Years, 2,850 cfs in Schedule 6 Years, and 2,745 cfs in Conference Years.[80] YCWA would have to operate the Project to create these flows starting on February 1 of all such years when flows had not reached 3,000 cfs for at least two consecutive days during the preceding December 1 through February 1 period.[81] CDFW states that these winter pulse flows would be for the purposes of "attracting steelhead into the upper reaches of the lower Yuba River, and "providing migration cues for juvenile salmonids to migrate out of the Yuba River."[82] FWS and FWN's letters contain similar statements.[83]

YCWA's technical report explains in detail why FERC should not make these changes to YCWA Proposed Condition AR3. As discussed in that report, the commenters have not: (i) provided substantial evidence regarding the need for winter pulse flows to facilitate upstream adult steelhead passage; (ii) demonstrated that there is any relationship between their recommended pulse flows and adult steelhead upstream passage rate; or (iii) discussed potential re-directed impacts to lower Yuba River steelhead.[84] Regarding migration cues for juvenile salmonids, the commenters have not: (i) provided substantial evidence regarding the need for such pulse flows; (ii) established any relationship between the proposed pulse flows and juvenile Chinook salmon outmigration rates; or (iii) considered potential re-directed impacts to juvenile spring-run Chinook salmon associated with downstream displacement.

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80 CDFW Intervention, Enclosure A at 101 (Section 3.4.8).

81 *Id.*

82 *Id.* at 100 (Section 3.4.8).

83 DOI Comments at 49-50; FWN Comments at 31-32.

84 Appendix 7 at 9-10, 34-40.

d. Hydrological Impacts

CDFW's rationale statement discusses the average annual changes in end-of-September New Bullards Bar Reservoir storage and in-basin water deliveries that would occur with implementation of CDFW's recommended changes.[85] FWS and FWN's comments do not contain any statements about these impacts. However, these average annual changes gloss over the much more substantial changes that would occur in certain years. As shown by Table 3.4.8-19 in CDFW's statement, the reductions in in-basin water deliveries would occur in only four years of the 41-year period of record (1970, 1997, 2004, and 2007), but the reductions in those years would be much more severe than the annual averages, ranging from nine to 33 percent.[86]

YCWA's technical report explains in much more detail the severity of the hydrological impacts of implementing these commenters' recommended changes to YCWA Proposed Condition AR3. As discussed in that report, implementing the commenters' recommended 3,500-cfs spring flow requirement would require extreme and unconventional Project operations in some Schedule 1 years, because the 3,500-cfs required minimum flow would be greater than the release capacity of YCWA's Narrows 2 Powerhouse, and would require YCWA either to direct its Member Units to stop diverting water for irrigation during the time when the requirement would be in effect, or to release sufficient water from New Bullards Bar Reservoir to force Englebright Dam to spill.[87] These impacts would occur in wet years, three of which would be Schedule 1 years and one of which would be a Schedule 2 year. In all of these years, there was lower

[85] CDFW Intervention, Enclosure A at 109-21 (Section 3.4.8).

[86] *Id.* at 116 (Section 3.4.8).

[87] Appendix 7 at 45-46.

than normal spring runoff, with April-to-July unimpaired flows being less than 65 percent of average.[88]

Because YCWA must maintain a 170,000 ac-ft flood-control pool from November through March in New Bullards Bar Reservoir, YCWA must bypass much of the runoff into the reservoir that occurs during the winter storm season, and YCWA may not store this water. In a water year when most of the winter precipitation comes as rain and a large snowpack does not develop due to warmer conditions (which has become a more common condition in recent years), the lower reservoir storage and the spring runoff may not be sufficient to provide enough water so that YCWA could meet both the commenters' recommended flows and its Member Unit's water needs for Yuba County farms. As a result, water shortages would occur even in these wetter years.

Local farmers would have to pump groundwater to make up for these shortages, which would result in significant costs to YCWA and to the local farmers. These costs would reach $2,700,000 in the worst year and would average $145,000 over the 41-year period of record.[89] Moreover, implementation of these recommended changes to Condition AR3 actually would result in more severe impacts than those shown by the modeling. This is because YCWA makes its water-supply allocations in April, using a 90-percent exceedance forecast for future runoff conditions, which would result in more-frequent and larger shortages than those shown by the modeling results.[90]

The commenters' changes to Condition AR3 also would significantly reduce Yuba Accord water transfers and associated revenues, an impact not discussed at all in

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[88] *Id.* at 46.

[89] *Id*.

[90] *Id*.

CDFW's rationale statement. These impacts would occur in two ways. First, because the regulatory minimum instream-flow requirements would be significantly higher for March 23 through April 30 in Schedule 1 years and for April 1 through May 15 in Schedule 2 years, almost all of the water that YCWA otherwise would be able to transfer during those times no longer would be available for transfer. Second, because these changes would require YCWA to release more water during these times, less water would be available for transfer during the summer. YCWA estimates that, if these changes had been in effect, YCWA would have lost about $2,500,000 in water-transfer revenues in 2013 and about $40,000,000 in 2014.[91] The resulting water shortages would not only have impacted Yuba County, but distant other areas of California and environmental water uses that depend on such transfers.

e. Impacts on the Value of Hydroelectric Power Generation

CDFW's rationale statement states that overall Project power generation would be "largely unaffected" by implementation of CDFW's recommendation, but concedes that there would be "a shift in timing" of this generation.[92] However, CDFW's statement does not discuss the monetary impacts of this shift in timing.

As discussed in YCWA's technical report, this shift in timing would result in substantial reductions in total power generation revenues, because the shift in timing would be from months of higher electricity demand, and therefore higher prices, to March and April, when prices are 20 percent lower than the average prices for the rest of the year. This shift also would reduce the Project's capacity to provide ancillary services during the times of higher required flows because a higher percentage of the generation

[91] *Id*. at 47.

[92] CDFW Intervention, Enclosure A at 116-17 (Section 3.4.8).

capacity of the New Colgate Powerhouse would have to be allocated to generation associated with the required releases of water; and some water that otherwise could be used for generation might have to spill.[93] The greatest single-year decrease in revenue would be 17 percent, equal to $7,000,000, relative to the Base Case. The average annual reduction would be $375,737.[94]

Because these commenters' proposed changes to YCWA Condition AR3 would not have any significant fisheries benefits, but would have significant water supply and environmental impacts, as well as revenue impacts to YCWA, the Commission should not make these changes.

3. Control Project Ramping and Flow Fluctuations Downstream of Englebright Dam

YCWA's Amended FLA includes Proposed Condition AR9, which would require YCWA to operate the Project to comply with various maximum authorized flow fluctuations and flow reductions during the September 1 through July 15 period. FWS and CDFW have proposed that FERC change this condition to extend the schedule in Condition AR9 for maximum authorized flow reductions during the April 1 to July 15 period to also apply during July 16 to September 30.[95] CDFW and FWS state that this recommended change is because riparian vegetation seedlings are "at risk of desiccation

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93 Appendix 7 at 46-48.

94 *Id.* at 48.

95 CDFW Intervention, Enclosure A at 23-26 (Section 2.12); DOI Comments at 96-97. CDFW and FWS also propose changes to YCWA Condition AR9 to except their proposed spring floodplain inundation flows for Schedule 1 and 2 WYs. CDFW Intervention, Enclosure A at 24 (Section 2.12); DOI Comments at 94. For the reasons discussed above, the Commission should not amend YCWA Condition AR3 to require these spring floodplain inundation flows, so these changes to YCWA Condition AR9 are not necessary.

associated with rapid recession during the summer period."[96] The SWRCB suggests that FERC "evaluate Proposed Condition AR9 and a riparian recession rate from April 1 through August 31."[97]

YCWA's technical consultants prepared a technical report that analyzes and responds to these commenters' recommendation. This report is titled "Response to Comments on Project Ramping and Flow Fluctuation Downstream of Englebright Dam (YCWA Proposed Condition AR9)," and is attached as Appendix 8. As discussed in this technical report, FERC should not make the commenters' recommended changes to YCWA Condition AR9 because the recommended changes:

- Would not accomplish the stated objective of reducing the risk of desiccation of riparian vegetation by extending the duration of the recession limitations.[98]
- Are not based on substantial evidence regarding the need for extending the duration of recession rate limitations beyond the end date proposed in YCWA Proposed Condition AR9.[99]
- Would not provide any substantial benefit represented by increased riparian vegetation seedling establishment, relative to the Base Case or the Amended FLA.[100]
- Would result in numerous unaccounted for redirected impacts by resulting in overall less suitable water temperature conditions for numerous lifestages of spring-run Chinook salmon, fall-run Chinook salmon and steelhead in the lower Yuba River.[101]
- Would restrict YCWA's ability to operate the Project during late August to achieve a stable flow by September 1 for spring-run Chinook salmon spawning.

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96 CDFW Intervention, Enclosure A at 132 (Section 3.4.12); DOI Comments at 97.

97 SWRCB Comments at 28.

98 Appendix 8 at 11-13.

99 *Id.* at 11-14.

100 *Id.*

101 *Id.* at 15-26.

- Would result in the need for a longer ramp-down period, and less flexibility to adjust to changing irrigation diversions by extending the recession rate limits to September 30. A longer ramp-down period would require setting a higher flow during the summer to result in the same amount of storage release by September 1. This change in operation would have an impact on Project operations, and would limit Project operational flexibility to respond to changing runoff and diversion conditions.[102]

For all of these reasons, the Commission should not adopt these recommendations.

4. Spring Snowmelt Pulse Flow and Recession

NMFS 10(j) Recommendation 1 proposes a new license condition that would require YCWA to operate the Project to maintain flows of at least 3,500 cfs, measured at the Marysville Gage, for 60 continuous days sometime between March 1 and June 15 in Schedule 1 Years, and flows of at least 2,500 cfs, measured at the Marysville Gage, for 30 continuous days during Schedule 2 Years.[103] This condition also would require YCWA to operate the Project so that, from the onset of these flows through September 30, flows measured at the Smartsville Gage would not be reduced by more than five percent each day.[104] NMFS's rationale states that there is a "positive relationship between salmonid growth and survival when juvenile salmonids have access to off-channel areas and floodplains" and floodplain habitat "should be inundated annually for between 30 and 90 days to allow for primary productivity derived from inundated

[102] *Id.* at 26.

[103] NOAA Fisheries' Notice of Intervention, Preliminary Federal Power Act Fishway Prescriptions, § 10(j) Conditions, and § 10(a) Recommendations at 29, Project Nos. 2246-065 et al. (filed Aug. 25, 2017) ("NMFS Comments").

[104] *Id*.

habitat."[105] NMFS's letter does not discuss the water-supply or monetary impacts of its recommendation.

YCWA's technical consultants prepared a technical report that analyzes and responds to NMFS's recommendation. This report is titled "Response to NMFS FPA Section 10(j) Recommended Conditions," and is attached as Appendix 10. As discussed in this technical report, FERC should not include NMFS's proposed condition in YCWA's new license for a number of reasons.

First, NMFS's recommendation would not accomplish the stated objective of enhanced juvenile salmonid rearing habitat.[106] This is because NMFS does not recognize the interactions between flow and physical habitat structure, or the fact that the juvenile rearing habitat conditions are primarily due to factors that do not have a direct nexus to the Project (e.g., hydraulic mining legacy effects on floodplain substrate, channelization and reduction in meander, limited habitat diversity and complexity, and channel relocation and reconfiguration).[107] As a stressor, flow-dependent rearing habitat availability in the lower Yuba River is distinct from rearing habitat physical structure. Although flow-dependent fry and juvenile rearing habitat availability under existing conditions represents a low stressor to anadromous salmonids, physical habitat structure components providing instream object and overhead cover, as well as high channel sinuosity and hydraulic complexity, can be generally characterized as limited in the lower Yuba River.[108] Fry and juvenile salmonid rearing physical habitat structure pertains to

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[105] *Id.* at 30.

[106] Appendix 10 at 11-12, 16-17, 21-22.

[107] *Id.* at 5.

[108] Amended FLA, Exh. E, Applicant-Prepared Draft Biological Assessment at BA8-17 ("Applicant-Prepared Draft BA").

habitat complexity and diversity. The concepts of habitat complexity and diversity pertinent to the lower Yuba River were described by CALFED and YCWA (2005).[109] Habitat complexity and diversity refer to the quality of instream physical habitat including, but not necessarily limited to, the following physical habitat characteristics:

- Allochthonous material contribution;[110]
- Escape cover;
- Alternating point-bar sequences;
- Feeding cover;
- Pool-to-riffle ratios;
- Sinuosity;
- Overhanging riparian vegetation; and
- Instream object cover.

The geomorphic conditions caused by hydraulic and dredge mining since the mid-1800s, and the construction of Englebright Dam continue to limit habitat complexity and diversity in the lower Yuba River. Consequently, restricted availability of complex, diverse habitats associated with the loss of natural river morphology and function, combined with limited availability of physical habitat structure components providing instream and overhead object cover, represents a high stressor to rearing juvenile anadromous salmonids under the Environmental Baseline.[111] However, the Project does not cause or contribute to the limited amount of physical habitat structure in the lower Yuba River. The proposed minimum flow requirements in the Amended FLA would

[109] CALFED and YCWA. 2005. Draft Implementation Plan for Lower Yuba River Anadromous Fish Habitat Restoration: Multi-Agency Plan to Direct Near-Term Implementation of Prioritized Restoration and Enhancement Actions and Studies to Achieve Long-Term Ecosystem and Watershed Management Goals. Prepared by the Lower Yuba River Fisheries Technical Working Group. Funded by CALFED and the Yuba County Water Agency. October 2005.

[110] This refers to terrestrial insects dropping onto the water as available fish food.

[111] Applicant-Prepared Draft BA at BA8-17.

provide suitable flow and water temperature conditions for rearing juvenile anadromous salmonids.[112]

Second, NMFS has not demonstrated that current or proposed minimum instream flow requirements (based on the Lower Yuba River Accord and reflected in the Amended FLA) adversely affect anadromous salmonid populations.[113]

Third, NMFS's recommendation would actually decrease rather than increase the magnitude and duration of floodplain inundation, relative to the Base Case and the Amended FLA. Specifically, YCWA's modeling analyses show that:

- The NMFS flows (NMFS "Combined" scenario) would result in fewer days of inundation of the floodplain of the lower Yuba River from Englebright Dam to Daguerre Point Dam (area inundated at flows above 5,000 cfs) than under the Base Case or the Amended FLA conditions.[114]

- The NMFS "Combined" flows would not contribute to inundating floodplain habitat compared to the Base Case or the Amended FLA, but instead would reduce inundation of the floodplain. The NMFS "Combined" flows would result in a slight decrease in inundation of the floodplain across all years with an average annual decrease of one percent and median decrease of two percent compared to the Base Case. In wetter years, the NMFS "Combined" flows would result in a decrease of one percent for the average and a seven percent decrease for the median, with wet years defined as Schedule 1 and 2 years, which account for 34 of the 41 years modeled. The Amended FLA flows would result in a one percent increase in inundation of the floodplain compared to the Base Case for the average of all years, and about a one percent decrease for the median of all years. For wetter Schedule 1 and 2 years, the Amended FLA would increases floodplain inundation about one percent for the average and median statistics.[115]

Fourth, the NMFS recommendation would not increase the amount of estimated juvenile salmonid rearing habitat (weighted usable area) during the spring period, relative to the Base Case or the Amended FLA. YCWA's analysis shows that essentially

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[112] Appendix 10 at 11-12, 16-17, 21-22.

[113] *Id.* at 5.

[114] *Id.* at 27.

[115] *Id.*

identical amounts of habitat would be provided by the NMFS recommendations, the Amended FLA and the Base Case scenarios during the year-round spring-run Chinook salmon juvenile rearing period, the mid-January through June fall-run Chinook salmon juvenile rearing period, and the year-round steelhead juvenile rearing period.[116]

Fifth, the NMFS proposed conditions would result in numerous unaccounted for redirected impacts to anadromous salmonid populations in the lower Yuba River. The recommendations would result in overall less suitable water temperature conditions for several lifestages of spring-run Chinook salmon, fall-run Chinook salmon and steelhead. For example, the NMFS recommendation:

- Would result in overall less suitable water temperature conditions for spring-run Chinook salmon upstream migration, holding, spawning, embryo incubation and juvenile rearing.[117]

- Would result in overall less suitable water temperature conditions for fall-run Chinook salmon immigration and staging, spawning, embryo incubation.[118]

- Would result in overall less suitable water temperature conditions for steelhead upstream migration and holding, and smolt emigration.[119]

Sixth, the NMFS proposal would result in significant costs to YCWA in terms of reduced operational flexibility, water supply, water transfers, power generation and revenue.[120] Specifically, the NMFS recommendation:

- Would require extreme Project operations in some years to comply with the required flows at Marysville Gage. In fact, YCWA would not be able to comply with the NMFS recommended condition if the water year type were to change to a Schedule 1 with the May Bulletin 120 or any subsequent update.[121]

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116 *Id.* at 11-12, 16-17, 21-22.

117 *Id.* at 5-13.

118 *Id.* at 5, 13-18.

119 *Id.* at 5, 18-23.

120 *Id.* at 31.

121 *Id.*

- Would prevent YCWA from delivering water to its Member Units during the last week in April in 11 of the 19 Schedule 1 years in the model simulation period.[122]

- Would result in water delivery shortages to local farmers in four additional years in the period of record, three of which are Schedule 1 years and one of which is a Schedule 2 year. These are years with significant winter runoff but well below average spring runoff.[123]

- Would require YCWA and local farmers to pay for groundwater pumping as a substitute supply, with a maximum cost in one year of $3,000,000 and an average annual cost of $175,000 per year.[124]

- Would significantly reduce and, in some years, eliminate April and early May YCWA water transfers, and would reduce summer water transfers which, in turn, would reduce water transfer revenue. In 2013, the NMFS recommendation would have reduced YCWA's water-transfer revenues by $800,000. In 2014, this reduction would have been $40,000,000.[125]

- Would reduce average annual power generation by two percent, with a maximum one-year reduction of 16.7 percent, and would reduce average annual Project power revenue by $1,580,000 (a 3.1 percent reduction) compared to the Base Case scenario, and by $500,000 (a one percent reduction) compared to the Amended FLA scenario.[126]

Therefore, the Commission should not adopt this recommendation.

5. Use of New Colgate Power Tunnel Intake

CDFW in its 10(j) Recommendation 2.7 and FWS in its 10(j) Recommendation 13 each propose a new license condition to operate the Colgate Power Tunnel upper intake during the months of March, April, and May and to consult with the Ecological Group that would be created by YCWA Proposed Condition GEN1 during its annual meeting in April to "determine which New Colgate Power Tunnel Intake will be utilized

[122] *Id.* at 32.

[123] *Id.*

[124] *Id.* at 33.

[125] *Id.* at 34.

[126] *Id.* at 36.

during each of the months in the remainder of the water year."[127] SWRCB states that it "will likely condition the operation and maintenance of the upper and lower intakes for New Colgate Powerhouse."[128] This is a new recommended condition that does not have a corresponding condition in YCWA's Amended FLA. The attached report, "Response to Recommended New Condition: Use of New Colgate Power Tunnel Intake,"[129] analyzes this recommendation in detail and concludes that the recommendation is based on incorrect factual assumptions, is not necessary, is not implementable, would not provide environmental benefits, and would come at a significant cost.

As described in the report, the ostensible rationale for the recommendation is to create a process to optimize the use of the cold water pool in New Bullards Bar Reservoir to support all life stages of salmon and steelhead in the lower Yuba River through use of the multi-level intake in order to save cold water in the spring so that colder water will be available in summer and fall.[130]

However, the RMT in 2013 concluded that implementation of the Yuba Accord provides a suitable thermal regime for target species (including spring-run Chinook salmon, fall-run Chinook salmon and steelhead) in the lower Yuba River, and did not recommend water temperature-related operational or infrastructure modifications. For the Applicant-Prepared Draft BA, water temperature regimes were analyzed and were considered to be a low stressor for spring-run Chinook salmon and steelhead in the lower

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127 CDFW Intervention, Enclosure A at 15 (Section 2.7).

128 SWRCB Comments, Att. B at 3.

129 The report is attached as Appendix 11.

130 Appendix 11 at 3-6.

Yuba River. There is no reason to reexamine these conclusions.[131] Rather, the Commission should reject this recommendation.

First, the assumption that using the low-level outlet depletes water from the cold water pool in New Bullards Bar Reservoir is incorrect. In fact, it does not.[132]

Second, during the driest years, the upper intake would not be available due to low storage and inadequate submergence of the intake. Therefore, the recommendation is not implementable when it is most needed.[133]

Third, as the technical report explains, the recommendation would have minimal environmental benefits. YCWA analyzed water temperatures resulting from the CDFW and FWS recommended condition for use of both the lower and upper intakes by modeling that scenario, compared to operating the lower intake alone, based on the water temperature model. To examine whether the CDFW and FWS recommendation would accomplish the stated objective of lowering water temperatures during the summer and fall, examination of water temperature modeling output focused on June through October. Overall, the CDFW and FWS recommendation would result in slightly cooler water temperatures during some months of a particular lifestage, slightly warmer water temperatures during other months of the same lifestage, and similar temperatures during yet other months of a given lifestage, relative to the "lower intake only" scenario. While the CDFW and FWS recommendation would, overall, more frequently provide cooler water temperatures, the differences relative to the "lower intake only" scenario were minimal, typically less than 1°F and exceeding a Water Temperature Index value with a

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131 Applicant-Prepared Draft BA at BA6-194 to BA6-195, BA8-2.

132 Appendix 11 at 4.

133 *Id.* at 3.

difference of five percent probability. In other words, the differences between the CDFW and FWS recommendation and the "lower intake only" scenario were typically less than 1°F about five percent of the time. Consequently, the CDFW and FWS recommendation would not provide a substantive benefit relative to the "lower intake only" scenario.

Fourth, there are a number of practical problems associated with use of the upper intake which would be unduly expensive to remedy. At the direction of CDFW, YCWA has not used the New Colgate Power Tunnel upper intake since 1993, which means the upper intake has remained closed by its bulkhead for over 25 years and is not in working condition. Consequently, YCWA has not used the systems to routinely shift withdrawals between the upper and lower intakes. Restoring the upper intake into operation and restoring the operational flexibility to switch between intakes on a monthly basis, as proposed by CDFW and FWS, would require substantial repair and refurbishment. Changing between the lower and upper intakes on a monthly basis would substantially increase annual operation and maintenance costs. Neither CDFW nor FWS estimated costs or otherwise addressed the activities YCWA would undertake to implement their recommendation. YCWA's high level estimate is approximately $33,000,000 over 30 years ($1,100,000/year) for the initial refurbishments, repair and replacements, and annual operation and maintenance.[134]

In summary, the substantial costs of this measure, even if implementable, would not be offset by any significant environmental benefits and the Commission should not adopt it.

[134] *Id*. at 6.

6. Maintain Summer Water Temperatures in the Lower Yuba River in Schedule 6 Water Years

YCWA Proposed Condition AR3 would require YCWA to maintain a flow in Schedule 6 years of 300 cfs from June 1 through June 15 and a flow of 150 cfs from June 16 through August 31, measured at the Marysville gage. In addition, YCWA's water-right permits, as amended by SWRCB Corrected Order WR 2008-0014, require YCWA to release an additional 30,000 ac-ft in Schedule 6 years, consistent with Section 5.1.3 of the Yuba Accord Fisheries Agreement.[135] Section 5.1.3 states:

> 5.1.3 Groundwater Substitution Program. YCWA will operate a groundwater-substitution program in Water Years when Schedule 6 is in effect, which will result in an additional 30,000 acre-feet of water not shown in Schedule 6 flowing in the lower Yuba River at the Marysville Gage during the portions of such Water Years when this water is transferable to the Water Purchase Agreement transferees. Subject to the preceding requirement of transferability, the River Management Team, through a decision by its Planning Group, will determine the flow schedule for the 30,000 acre-feet during each Schedule 6 Water Year. This flow schedule will be set to achieve maximum fish benefit during the transfer period.[136]

Although the section does not specify the months during which YCWA will provide flows from this additional 30,000 ac-ft, this water almost always will be allocated to flows during the June 1 through August 31 period, when the Schedule 6 flows specified in the Yuba Accord Fisheries Agreement (and in YCWA Proposed Condition AR3) are the lowest and lower Yuba River water temperatures normally are the highest.

FWS 10(j) Recommendation 1 has the same June 1 through August 31 flows for Schedule 6 years as those in YCWA Proposed Condition AR3, that is, 150 cfs for June 1 through June 15 and 300 cfs for June 16 through August 31. FWS 10(j)

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[135] SWRCB Corrected Order WR 2008-0014, *supra* note 62, at 56 (Term 1.a).

[136] Yuba Accord Fisheries Agreement at 9.

Recommendation 2 would add a new license condition requiring YCWA to provide both the 30,000 ac-ft of water specified in the Yuba Accord Fisheries Agreement and YCWA's water-right permits, and an additional 2,050 ac-ft during Schedule 6 years. The default flow schedule for this water would be 350 cfs from June 1 through August 31, but the Ecological Group could, by consensus, make adjustments to this schedule.

CDFW 10(j) Recommendation 2.6 and the Bureau of Land Management's ("BLM") 10(a) Recommendation 8 contain essentially the same proposed requirements, and FWN also recommends this proposed condition.[137] NMFS 10(j) Recommendation 2 contains the same proposed 350 cfs minimum flow requirement, but without any provisions for adjustments.

CDFW's rationale statement for this recommendation is that it is intended to protect Chinook salmon and steelhead from lethal and sub-lethal effects of elevated water temperatures in Schedule 6 years.[138] The CDFW statement also discusses the general factors that have affected the survival and recovery of steelhead and Chinook salmon in the lower Yuba River.[139] FWS's rationale statement contains similar discussions of these topics[140] and NMFS's letter also discusses these topics.[141] None of these comments provides any estimates of the costs of implementing this proposed new condition and none of these letters discusses any specific effects of the Project. In fact, NMFS's letter acknowledges that "[i]n general, releases from [New Bullards Bar] Reservoir are made

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[137] CDFW Intervention, Enclosure A at 14-15 (Section 2.6); DOI Comments at 110; FWN Comments at 33.

[138] CDFW Intervention, Enclosure A at 104-05 (Section 3.4.8).

[139] *Id.* at 106 (Section 3.4.8).

[140] DOI Comments at 52.

[141] NMFS Comments at 21-24.

from the low level outlet to New Colgate powerhouse, creating more uniform year-round temperatures in the lower Yuba River; cooler in the summer and warmer in the winter than in absence of the Project."[142]

This point is confirmed by historical water temperature data. As discussed in the Applicant-Prepared Draft BA,[143] the coldwater pool availability in New Bullards Bar Reservoir has been sufficient to accommodate year-round utilization of the lower reservoir outlet to provide cold water into Englebright Reservoir, and subsequently into the lower Yuba River. Figure 6.2-6 of the Applicant-Prepared Draft BA (reproduced below as Figure 2) shows the monthly average of daily mean water temperatures of the lower Yuba River, at the Marysville Gage, during the three periods for which water temperature data are available:

- Pre-Project period from 1965 to 1968 (two wet and two below normal years[144]).
- Project period from 1974 to 1977 (two wet and two critical years).
- Modified operations during the Project period from 1993 to 2005[145] (five wet, four above normal, one below normal, one dry, and two critical WYs).

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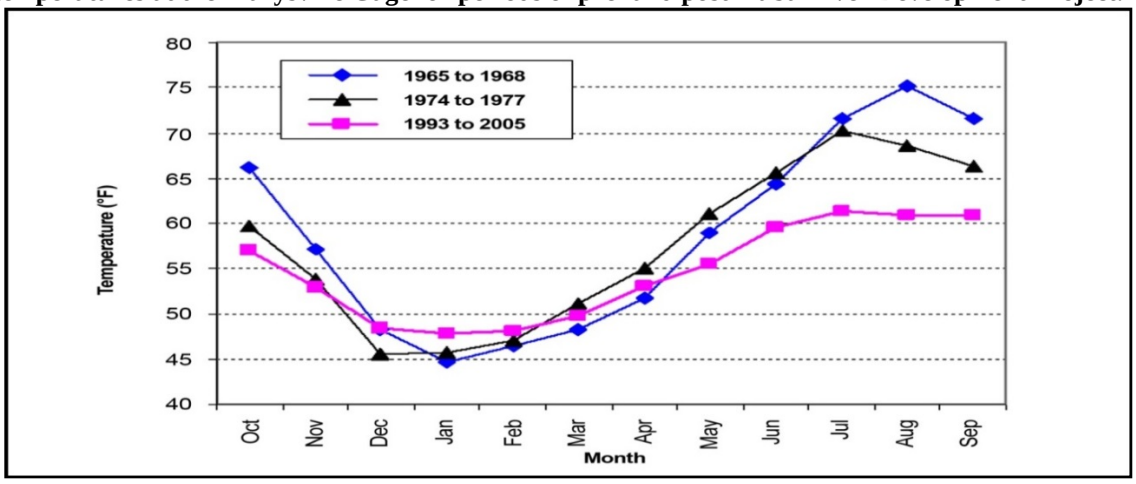
[142] *Id.* at 21.

[143] Applicant-Prepared Draft BA at BA6-9 to BA6-10.

[144] These water-year types are defined by the Yuba River Index (B-E, *Yuba River Index: WY Classifications for Yuba River*, 2000).

[145] Water temperature data are available for 1989 to 2005. However, after September 1993, and before the operational implementation of the Yuba Accord in 2006, the low-level outlet of New Bullards Bar Reservoir was consistently used to release water for power generation at New Colgate Powerhouse to assist in the management of water temperatures in the lower Yuba River.

Figure 2. Reproduction of BA Figure 6.2-6. Monthly average of daily Yuba River water temperatures at the Marysville Gage for periods of pre- and post-Yuba River Development Project.



The monthly average of daily mean water temperatures during the 1974 to 1977 Project period shows reductions in summer water temperatures compared to the 1965 to 1968 pre-Project period, even though the 1974 to 1977 Project period included the most severe drought (1976-1977) that the Yuba River Basin has experienced in recorded history. Compared to the pre-Project period of 1965 to 1968, the monthly averages of daily mean water temperatures were substantially lower during the 1993 to 2005 Project period, from mid-summer into the fall, with the average August temperature over 10°F lower. These substantial reductions in summer and fall water temperatures have resulted from releases of water from the coldwater pool in New Bullards Bar Reservoir.

Because these historical water-temperature data clearly demonstrate that the Project has resulted in significant water temperature benefits to salmonids in the lower Yuba River and will continue to provide such benefits, there is no nexus between the FWS, CDFW, NMFS, and FWN recommended conditions and Project effects. However, because YCWA already has committed to the 30,000 ac-ft block of water in Schedule 6 years through the Yuba Accord Fisheries Agreement, and because YCWA's water-right permits now require YCWA to provide this water, YCWA is amending its Condition

AR3 to include a provision requiring the continued release of this water, subject to the current requirement in the Yuba Accord Fisheries Agreement that this water be transferable to downstream water users. These amendments provide that the Ecological Group rather than the RMT created by the Yuba Accord Fisheries Agreement, may make adjustments to YCWA's proposed schedule for this block of water. The amendments also specify the default condition for flows created by this block of water if the Ecological Group does not reach written agreement on such adjustments. YCWA's amendments to Condition AR3 are shown in Appendix 4 of this Response. For comparative purposes, if this additional 30,000 ac-ft is distributed to provide uniform flows throughout the June 1 to August 31 period of Schedule 6 years, then the uniform flow at the Marysville Gage during this period will be approximately 338 cfs.

YCWA has not included the FWS, CDFW, and FWN recommendation in its amendment to Proposed Condition AR3 for two reasons. First, the flow rate of 338 cfs that would occur with a uniform distribution of the 30,000 ac-ft would be substantially the same as the 350 cfs rate that would be provided by the CDFW, FWS, and NMFS proposed additional 2,050 ac-ft. Second, FWS, CDFW, NMFS, and FWN have not provided any rationale concerning either Project nexus or environmental benefit that would justify their proposed additional 2,050 ac-ft. Therefore, the Commission should not accept their recommendations.

7. Determine Water Year Types for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass

YCWA Proposed Condition WR3 would implement the calculation of the North Yuba Index ("NYI") and WY types for determining the schedule for instream flows in the lower Yuba River consistent with the Yuba Accord Fisheries Agreement and

YCWA's water rights that were amended by the SWRCB to implement the Yuba Accord, with one change, which is to forego evaluation of the NYI in February when the current WY type is a Schedule 5, 6, or Conference Year. The reason for this change is to avoid a flow increase in February due to an inaccurate Bulletin 120 forecast in years when flows then would be reduced in March when a more accurate forecast shows a drier WY.

FWS 10(j) Recommendation 18, CDFW 10(j) Recommendation 2.2, and FWN Recommendation VI each recommend editing Condition WR3 so that YCWA would forgo this in February of Schedule 5, 6, and Conference Years, as proposed by YCWA, but only in such years when DWR's Bulletin 120 February 1 forecast for the Yuba River near Smartsville[146] annual unimpaired flow is less than 50 percent of average.[147] (Although their recommended condition does not define "average," it appears that they mean "less than 50 percent of the average annual unimpaired flow" at the Smartsville Gage.) FWS, CDFW, and FWN did not provide any analysis, including costs, to support their recommendation. The SWRCB comment agreed with this concept.[148]

The Commission should not adopt the recommendation for two reasons. First, the commenters' proposed further limitation to years when the February 1 forecast of unimpaired flow is less than 50 percent of average annual unimpaired flow would use the same February forecast that YCWA Proposed Condition WR3 is attempting to guard against, because this forecast is relatively inaccurate in dry WYs. As acknowledged in CDFW's comments, "CDWR's current methodology of using an average forward-

[146] YCWA Proposed Condition WR3 references the Yuba River Near Smartsville forecast while CDFW and FWN references the Yuba River Near Smartsville Forecast plus Deer Creek. YCWA's terminology abbreviates the official name by omitting the plus Deer Creek label. Thus, YCWA is using the same forecast as referenced by CDFW and FWN.

[147] CDFW Intervention, Enclosure A at 7 (Section 2.2); DOI Comments at 98; FWN Comments at 62.

[148] SWRCB Comments at 28-29.

looking precipitation estimate can overestimate future precipitation in a dry climate cycle."[149]

Second, FWS, CDFW, and FWN's main rationale for their recommendation is that "it is still appropriate to adjust the February Schedule in the wetter winters."[150] However, the additional limitation that FWS, CDFW, and FWN have included in their recommendation would apply in many winters that would not be "wetter winters" because 50 percent of average annual unimpaired flow is a very dry condition.

Historically, a DWR Bulletin 120 February forecast of annual unimpaired flow of greater than 50 percent has not signified that wetter conditions are actually occurring in the month of February. In the 47 years from 1970 to 2016, nine of those years had both February actual unimpaired flows of less than 50 percent of average and February 1 Bulletin 120 annual runoff forecasts of more than 50 percent of average. In those nine years, which were 20 percent of all 47 years, the February Bulletin 120 annual runoff forecast averaged 72 percent of average while the actual unimpaired runoff in the month of February averaged 41 percent of average. This large difference demonstrates that a Bulletin 120 forecast value of 50 percent of annual average unimpaired flow does not accurately represent a threshold above which "wetter winters" are occurring as stated by CDFW.[151] The examination of historical February Bulletin 120 Forecasts shows that if the Commission were to adopt the commenters' recommended changes to Proposed Condition WR3, there is at least a 20 percent chance that the result would be a change from a lower number (wetter) flow schedule in February to a higher number (drier) flow

[149] CDFW Intervention, Enclosure A at 21 (Section 3.4.2).

[150] *Id*.

[151] *Id*.

schedule in March. This is exactly the type of change that YCWA's Proposed Condition WR3 is designed to avoid.

February 2015 is a good example of why the Commission should adopt YCWA Proposed Condition WR3 and not the FWS, CDFW, and FWN recommendation. The DWR June 2014 Bulletin 120 forecast resulted in a Schedule 5 flow requirement in effect from June 2014 until the February 2015 forecast. The February 1, 2015 forecast resulted in a Schedule 3 forecast, which increased the applicable minimum flow requirement at the Marysville Gage from 550 to 700 cfs. The March 1 forecast resulted in a Schedule 5 flow requirement which decreased this minimum requirement from 700 cfs back to 550 cfs. The result of this shift from Schedule 5 to Schedule 3 for one month and then a shift back to Schedule 5 was that YCWA had to release an additional 8,500 ac-ft of water during February. If the commenters' recommended change to Condition WR3 had been in effect, then Schedule 3 would have applied during February 2015, because the February 1, 2015 DWR Bulletin 120 forecast was 51 percent of average unimpaired flow. Water conditions continued to deteriorate during March 2015, and the April 1, 2015 forecast resulted in Schedule 6 minimum flow requirements, and this schedule then remained in effect for the rest of the year. In sum, the Commission should reject the proposed modification to YCWA's proposed condition.

B. Lower Yuba River – Non-Flow Recommendations

1. Develop and Implement Physical Habitat Improvement Projects for Juvenile Salmonid Rearing

YCWA did not include in its Amended FLA a proposed condition for physical habitat modifications in the lower Yuba River because of lack of Project nexus. Ongoing

Project operations do not result in impacts to geomorphic and riparian conditions, which have been severely degraded due to past and ongoing non-Project activities.

FWS, BLM, NMFS, CDFW, and FWN each recommended a new measure that would require YCWA to develop and implement physical habitat improvement projects for juvenile and salmonid rearing in the lower Yuba River. Generally, each commenter recommended a similar plan with minor differences. Notable differences are highlighted below. The SWRCB states that "additional immediate actions to restore riparian planting and LWM placements may be appropriate."[152]

FWS 10(j) Recommendation 3 would require YCWA, in consultation with CDFW, FWS, NMFS, SWRCB, and a qualified restoration ecologist, to develop a plan to restore or enhance functioning juvenile salmonid rearing habitat in the lower Yuba River from Englebright Dam through the Hallwood Reach. Potential measures mentioned by the FWS include lowering of floodplain surfaces, planting of riparian vegetation, and installation of LWM. Additional implementation measure details are provided as follows:

- Floodplain habitat (340 acres total) accessible at 5,000 cfs would be modified to be accessible between 1,500 to 3,000 cfs. Land modification may include grading, benching of bank areas, backwater expansion, and creation of side channels or swales. All modified habitat would be planted with native riparian vegetation.

- Existing floodplain habitat (251 acres total) that is accessible between 3,000 and 21,000 cfs would be planted with native vegetation. For this and the floodplain habitat recommendation, half of the restoration would be completed by year 10 and the remaining acreage by year 20.

- LWM (492 pieces total) would be placed from Englebright Dam through the Hallwood Reach. Placement and density would be guided by a restoration ecologist in consultation with the CDFW, FWS, NMFS, and SWRCB. Material

[152] SWRCB Comments at 28.

would be at least 24 inches in diameter and 18 feet in length with 50 percent of the pieces maintaining a crown or rootwad. In addition, 10 percent of the pieces would be secured to the bank and accessible at flows as low as 880 cfs upstream of Daguerre Point Dam or 530 cfs downstream of the dam, based on installation location. Half of the pieces would be placed by year five of the new license and the remainder by year 10.

- LWM would be surveyed and replaced as needed every 10 years until a new license is issued.

The plan would include implementation and effectiveness monitoring. Implementation monitoring would include progress reports of restoration activities. The frequency of reports is not indicated. In addition, "as-built" monitoring would be initiated 60 days following completion of restoration or LWM placement. A summary report would be provided within 60 days following monitoring. Effectiveness monitoring would include assessing function of the restored floodplain, survival of planted vegetation, LWM presence, terrestrial input at restored/enhanced floodplain sties, and salmonid usage of habitat associated with restored floodplains or LWM. Effectiveness monitoring would begin within a year of completion of each restored area and continue for 10 years or until the location reaches its performance metric, whichever first. LWM effectiveness monitoring would commence within one year of completion and continue for three years. Annual reporting and presentation of effectiveness monitoring to the Ecological Group would also be required.

Identified performance metrics would be specific to planted riparian vegetation and include: 50 percent survivorship of riparian plants five years following implementation; minimum canopy of 15 percent in five years, and 65 percent in 10 years; and less than five percent non-native tree/shrub species and 10 percent grass species after 10 years. No other performance metrics were provided for LWM or floodplain function.

FWS also identified that modifications to the plan could occur if collaboratively agreed upon by YCWA, FWS, CDFW, and SWRCB. Revisions could include but not be limited to performance metrics, the amount of LWM replenished, monitoring triggers and frequency, monitoring methods, and/or discontinuing the replenishment of LWM.

FWS did not provide an estimated cost to implement its recommendation. FWS augmented its 10(j) Recommendation 3 in its 10(j) Recommendation 15, which would require YCWA to develop within one year of issuance of the new license a model of the amount of floodplain in the lower Yuba River that would be lost due to operation of YCWA's proposed New Bullards Bar Dam Auxiliary Flood Control Outlet and then, upon agreement of FWS and CDFW, to supplement the 251 acres of floodplain habitat restoration identified in FWS 10(j) Recommendation 3 to mitigate for the loss of floodplain habitat due to the Auxiliary Flood Control Outlet's operation. FWS's rationale for this recommendation is that the Amended FLA described a different operation of the outlet than discussed with Stakeholders in the relicensing.

BLM 10(a) Recommendation 4 and CDFW 10(j) Recommendation 2.29 are for all practical purposes the same as FWS Recommendation 3. Neither BLM nor CDFW provided any additional details regarding its recommendation, including the cost to develop the plan or to implement measures in the plan. FWN Recommendation II states its support for FWS and CDFW's recommendations.[153]

NMFS 10(j) Recommendation 4 is similar to the FWS, BLM, and CDFW recommendations with one exception. Any addition of LWM was not included in NMFS's activity description. This omission is likely because NMFS separately proposed

[153] FWN Comments at 35.

in its 10(j) Recommendation 3 to implement an LWM Augmentation Program. YCWA responds to NMFS 10(j) Recommendation 3 in Section III.I.1 of this Response. Again, the costs to develop the plan or implement the measures in the plan were not included.

The Commission should reject all these recommendations for the following reasons.

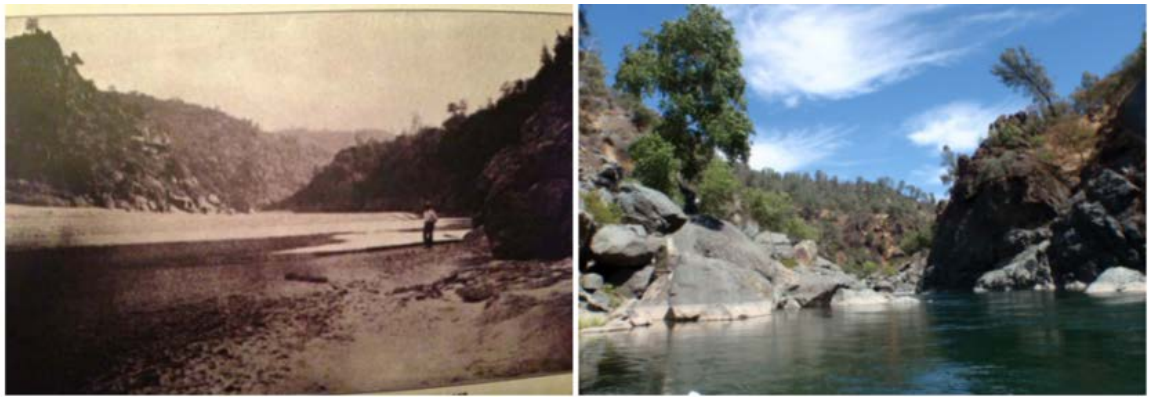
a. The Commission Should Not Require the Project to Fix The Physical Condition of the Lower Yuba River Because It Is Not a Project Effect.

The Project has not caused the current degraded condition in the lower Yuba River, and should not be held responsible to correct all past ills. Historic activities unrelated to Project effects have shaped the current geomorphic characteristics of the lower Yuba River. These transformative activities include hydraulic mining during the Gold Rush era, sediment management and subsequent dam building for sediment control by the California Debris Commission, and historic flood control channelization. The Project-related effect on the degraded geomorphic features and function of the lower Yuba River is negligible when considering these significant past actions. Therefore, the Project nexus is lacking for conditions recommending geomorphic-based actions, in particular, the FWS, BLM, NMFS, CDFW, and FWN recommendations for new measures to implement physical habitat improvement projects for juvenile and salmonid rearing.

Between 1852 and 1906, an estimated 366,500,000 cubic yards of hydraulic mining debris moved downstream from the upland mining areas of the greater Yuba River watershed and were deposited in the Yuba River downstream of the yet to be built

Englebright Dam, causing aggradation on the order of 26-85 feet.[154] This massive sedimentation in the channel and floodplains transformed the river into a braided, unstable stream system, though Mendell[155] stated that most of the sediment was not exported from near-mine locations until the floods of 1861. Even prior to mining, the river had already been highly altered by sedimentation, agriculture, and engineering projects.[156] Adler[157] states that by 1906, the supply of hydraulic mining debris from upland areas was mostly depleted and degradation became the dominant process along the Yuba River. An example image of the sedimentation issue in 1917 is presented in Figure 3 and contrasted to current conditions in 2012. The California Debris Commission constructed Daguerre Point Dam in 1906 to relocate the river and prevent hydraulic mining debris from the Yuba River watershed from flowing into the Feather and Sacramento Rivers.[158]

Figure 3. The photograph on the left (Gilbert 1917, presented in Technical Memorandum 6-2)[159] was taken in the Narrows Reach in 1904; the photograph on the right was taken in a similar location in the Narrows Reach in 2012; the comparison illustrates the depth of mining debris deposits in the stream channel.



[154] *See* Amended FLA, Exh. E at E3.3.1-22 (Section 3.3.1.1.6) (citing Adler 1980).

[155] *See id.* (citing Mendell 1881).

[156] *See id.* (citing James 2013).

[157] *See id.* (citing Adler 1980).

[158] *See id.*, Exh. E at E3.3.1-8 (Section 3.3.1.1.3).

[159] *See id.*, Exh. E, App. E6, Technical Memorandum 6-2.

Based upon historical channel cross-section data collected along the Yuba River during the late 1800s and early 1900s and updated in 1979, Adler concluded that the river channel had attained equilibrium by 1940 to a channel morphology similar to its pre-1849 channel configuration (i.e., single stable channel, and similar channel elevation), except the stream channel was now bordered by large cobble training walls that constrain the channel width in many sections.[160] Englebright Dam on the Yuba River was then constructed in 1941 by the California Debris Commission, to trap sediment derived from mining operations in the Yuba River watershed. Adler further concluded that since 1940, almost 90 percent of the hydraulic mining debris deposited in the Yuba River downstream of Englebright Dam remained as quasi-permanent deposits in the floodplains. The cobble training walls, along with the massive deposit of hydraulic mining debris behind the training walls, are now a stable, generally immobile part of the lower Yuba River system.[161]

At the mouth of the Yuba River at the south edge of Marysville, 70 feet or more of sediment eventually filled the river channel.[162] Upstream of Marysville, entire communities were buried under more than 40 feet of silt and gravel.[163] Sacramento River Flood Control Project levees were constructed along the Feather and Yuba Rivers and their tributaries to prevent flooding of valley communities. The levees prevented communities from becoming buried under the sediments that were washed down from the mountains. The levees were built even higher and designed to confine the floodwaters to

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160 *See id.*, Exh. E at E3.3.1-22 (Section 3.3.1.1.6) (citing Adler 1980).

161 *See id.*

162 *Id*.

163 *Id.* (citing Hoover et al. 1990).

a relatively narrow channel that would maintain sufficiently high velocities to efficiently convey sediment through the system, reducing the amount of dredging necessary to maintain navigation. As a result of the levees, Marysville, Olivehurst, and Linda are now many feet below the floodwater levels of the Feather and Yuba Rivers.

While hydraulic mining, construction of sediment-control dams, construction of flood-control levees and other pre-Project activities have drastically altered the geomorphology of the stream channel, the riparian vegetation has been generally resilient and variable through time. In the lower Yuba River, six study sites (i.e., Marysville, Hallwood, Daguerre Point Dam, Dry Creek, Parks Bar, and Timbuctoo Bend) were assessed[164] to document the cumulative change from the earliest available photo (1937 or 1947, depending on site) to 2010 (Figure 4 includes an example of the imagery presented in Technical Memorandum 6-2, Attachment 6-2E).[165] The visual assessment found that, in general, riparian vegetation cover was consistent or increased slightly over time. In the Narrows and Englebright sites, the cumulative change was a decrease in riparian vegetation. However, at all sites, localized increases and decreases in riparian vegetation over time were identified when the photographs were compared in a stepwise manner (e.g., 1937 to 1947). The majority of these fluctuations were associated with natural and anthropogenic changes to channel alignment, and were likely influenced by flood events. The riparian habitats were assessed as healthy and recovering from historical disturbances, based on the vigor and variety of age classes of the plants present.[166]

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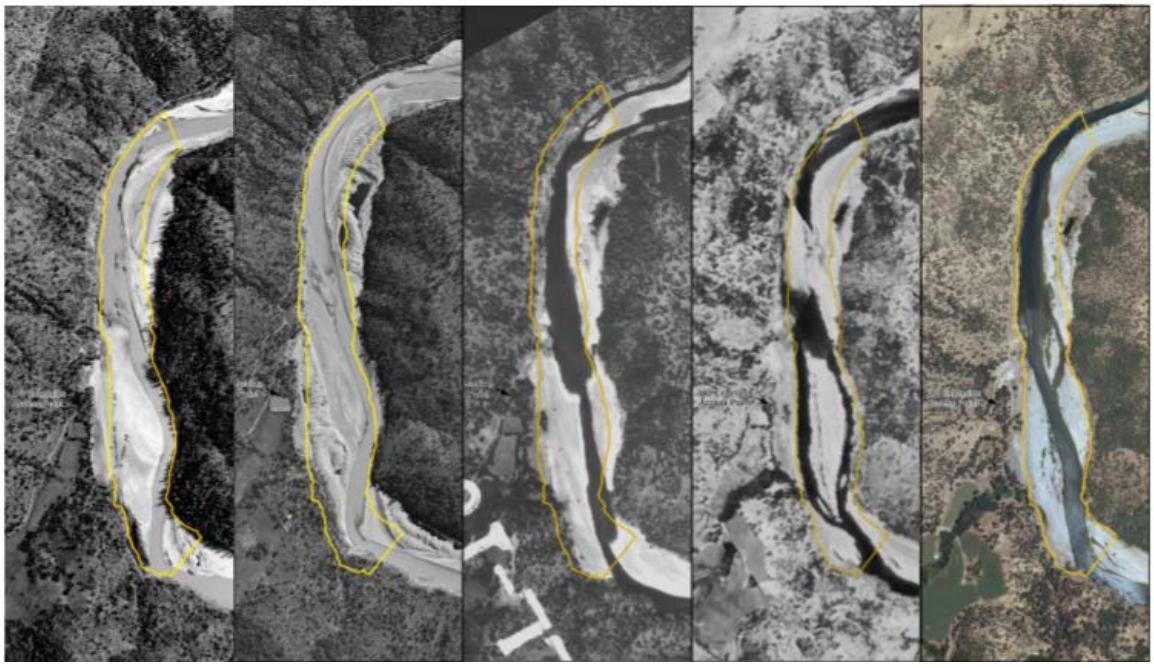
[164] *See id.*, Exh. E, App. E6, Technical Memorandum 6-2.

[165] Amended FLA, Exh. E, App. E6.

[166] Amended FLA, Exh. E at E3.3.4-1 to E2.2.4-7 (Section 3.3.4.1.1); *id.*, Exh. E, App. E6 (Technical Memorandum 6-2).

Riparian vegetation communities tended to be simplistic in structure both vertically and horizontally, indicating that they are developing from an early seral stage and have not yet become complex as they recover from historical disturbances and continuing flood flows.

Figure 4. Example of Timbuctoo Bend channel structure and historic vegetation for multiple years as follows from left to right: 1937 (flow unknown), 1947 (1,500 cfs), 1970 (703 cfs), 1987 (962 cfs), 2010 (3,300 cfs). Originally provided in Technical Memorandum 6-2, Attachment 6-2E.



As described above, the geomorphic status of the lower Yuba River is not a Project effect; neither is a real or perceived shortage of LWM. Since riparian conditions in the lower Yuba River are essentially unchanged or perhaps slightly improved from pre-Project conditions, the supply of LWM produced in the lower Yuba River should be unchanged. In addition, LWM influx to the lower Yuba River from upstream sources is partially blocked by Englebright Dam (now owned by the U.S. Army Corps of Engineers's ("USACE")), which may pass LWM under some conditions (high continuous spill flows), but not other conditions. The USACE's Englebright Dam is outside of the Project influence.

b. Analysis of Project Impacts Is Flawed and Nexus to Project Is Minimal or Insignificant.

The rationale statements for this recommendation demonstrate that FWS, BLM, NMFS, CDFW, and FWN all substantially mischaracterize Project impacts to the lower Yuba River by associating pre-Project conditions with Project operations, ignoring material in the relicensing process record, and failing to identify nexus to a Project effect. To the contrary, in the relicensing process record shows that in the context of the massive anthropomorphic changes to the lower Yuba River that pre-date the Project, any changes to geomorphic patterns or vegetation structure resulting from Project operations are insignificant.[167] Nevertheless, FWS, NMFS, CDFW, and FWN erroneously associate these pre-Project conditions with Project operations. In numerous locations in their respective comment letters, FWS, NMFS, CDFW, and FWN mention a decreased availability of rearing habitat, a reduced quality of habitat, or a reduction in ecological function without providing or citing analyses of such decreases or reductions, or even what is meant by "ecological function." They then attribute those decreases or reductions to the Project, again without analysis, documentation or citation.

For example, the CDFW rationale report states that "Project flows . . . have also reduced the quality of habitat available in the bank and floodplain zone by suppressing the riparian community."[168] FWS states that "The Project contributes to the lack of salmonid rearing habitat availability and to that rearing habitat's low quality."[169] Separate from the massive historical anthropomorphic changes to the river and floodplain

[167] *Id.*, Exh. E, App. E6, Technical Memorandum 1-2 at ES-2.

[168] CDFW Intervention, Enclosure A at 199 (Section 3.4.27).

[169] DOI Comments at 58.

areas of the lower Yuba River which persist and define the river to this day, Technical Memorandum 6-2 (Riparian Habitat Downstream of Englebright Dam) concludes that:

> For six of the study sites (i.e., Marysville, Hallwood, Daguerre Point Dam, Dry Creek, Parks Bar, and Timbuctoo Bend), the cumulative change from the earliest available photo (1937 or 1947, depending on site) to 2010 was an increase in riparian vegetation. In the Narrows and Englebright sites, the cumulative change was a decrease in riparian vegetation. However, at all sites, localized increases and decreases in riparian vegetation over time were identified when the photographs were compared in a stepwise manner (e.g., 1937 to 1947). The majority of these fluctuations were associated with natural and anthropogenic changes to channel alignment.[170]

FWS's rationale for juvenile habitat in the lower Yuba River cites an "analysis of available juvenile salmonid habitat" using "unpublished data in USFWS files,"[171] which presumably tiers off of the FWS analysis of flow habitat relationships for juvenile rearing.[172] FWS does not provide these data. Further, as described in Technical Memorandum 7-10 and in the Amended FLA,[173] flow habitat relationships are based on depth and velocity of flow, and object or riparian cover. As amply demonstrated in the relicensing record, the geomorphic and riparian conditions in the lower Yuba River pre-date the Project.

FWS's analysis concludes that there are "only 8.50 acres of high-quality juvenile rearing habitat in the lower Yuba River at Project flows of 2,500 cfs and only 2.11 acres of optimal juvenile rearing habitat," using the aforementioned "unpublished data in

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[170] Amended FLA, Exh. E, App. E6, Technical Memorandum 6-2 at ES-2.

[171] DOI Comments at 57.

[172] USFWS. 2010b. Flow-habitat relationships for juvenile fall/spring-run Chinook salmon and steelhead/rainbow trout rearing in the Yuba River. Sacramento Fish and Wildlife Office, Planning and Instream Flow Branch. October 8, 2010.

[173] Amended FLA, Exh. E, App. E6, Technical Memorandum 7-10.

USFWS files."[174] In contrast, the instream flow and habitat analysis conducted by the Licensee in consultation with the relicensing participants identified 221.8 acres of juvenile habitat that had maximum ranking of velocity, depth and cover criteria.[175]

CDFW's rationale report states that:

> CDFW recognizes that historical land uses (e.g., logging, hydraulic mining, dredger mining, and training walls) and other dams on the Yuba have also contributed to the lack of optimal rearing habit. Therefore, the recommended mitigation measures are based on quantifiable ways in which the Project alters the lower Yuba River and these recommended mitigation measures do not include any additional actions that would be necessary to mitigate for legacy or non-Project impacts.[176]

CDFW and other proponents of this recommendation rely heavily on an "acre-day" analysis of floodplain inundation performed by FWS.[177] This analysis relies on a 2 ½ page report[178] which includes results but no methodology, for floodplain area and flow relationship and "ecologically relevant areas." It would appear that the analysis envisions replicating pre-Project hydrology for the lower Yuba River or, failing that, recommends mass grading to achieve presumably equivalent surface inundation area ("presumably equivalent," since detailed pre-Project surface mapping of the lower Yuba River does not exist).

As described above, while the riparian community is generally resilient, the lower Yuba River has not established consistent riparian vegetation since the hydraulic mining

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[174] DOI Comments at 57.

[175] Amended FLA, Exh. E, App. E6, Technical Memorandum 7-10.

[176] CDFW Intervention, Enclosure A at 201 (Section 3.4.27).

[177] *See id.* at 89 (Section 3.4.8) (citing USFWS. 2017a. Analysis for Use of Cumulative Acre-Days to Evaluate Changes in Floodplain Inundation on the Lower Yuba River, Appendix 1).

[178] USFWS, 2014. Identification of the instream flow requirements for Anadromous fish in the streams within the Central Valley of California and fisheries investigations - Annual progress report fiscal year 2014.

debris era, either pre- or post-Project. Historic aerial riparian analysis (as cited above) has established that the Project has had minimal or insignificant impacts on the extent and density of riparian vegetation. Therefore, hydrologic changes attributable to the Project are not solely or even significantly responsible for the continuing dearth of riparian vegetation. It has not been clearly established what other "missing ingredient" (or combination of missing ingredients) is responsible for the riparian growth or lack of growth. Factors such as the lack of fines and suitable substrate to attract and hold seeds and vegetation, coarse graded hydraulic mining debris that increases the depth to groundwater and reduces capillary effects, or other anthropomorphic or legacy effects are all candidates for this causal connection.

c. The Proposed Measures Would Not Provide Substantial Benefits.

In addition, the recommended measures would not provide substantial benefits because they would not and could not change the fundamental geomorphology that has caused the historical and current conditions in the lower Yuba River. Consequently, any improvements to current conditions would be transitory at best.

The fundamental factors that dictate geomorphology include: valley wall width, levee and training wall alignment, thalweg slope, the presence of massive quantities of unconsolidated alluvium and hydraulic mining debris, a lack of fines due to sediment entrapment by the USACE's Englebright Dam, peak flow frequency and magnitude, or total annual volume of flow. The proposed measures to implement physical habitat improvement projects for juvenile and salmonid rearing conditions would not change any of these fundamental factors, so it is logical to expect the river to re-establish a geomorphic equilibrium similar to current conditions within a few years of

implementation of these measures. For example, lowering of surfaces adjacent to the river channel to provide for inundation with flows in the 1,500 to 3,000 cfs range would mean that these terraformed areas will be inundated annually, would be immediately proximate to the river thalweg, and would be subject to severe channel altering hydraulics with every high flow event. The river is highly dynamic at flows below 10,000 cfs, as summarized in Technical Memorandum 1-2:

> Much of the changes in the dominant type of transport occur below 10,000 cfs. Finer material, such as sand and fine gravel, are mobile at flows less than the representative bankfull condition (5,000 cfs), with coarser particles becoming mobile as flows increase. Transport is rare below 1300 cfs, but intermittent transport increases rapidly over a greater portion of the bed near 5,000 cfs.[179]

Various studies on fluvial changes in the lower Yuba River have been completed in recent years. In particular, construction of digital elevation models ("DEMs") and the subtraction of DEMs between different points in time as a method to determine temporal patterns of scour and fill is a highly valuable procedure emerging in geomorphology. Carley et al.[180] and Weber and Pasternack[181] evaluated aggradation and degradation across river reaches and morphological unit types between 1999 and 2014 in two time periods. This study provided insights into how sediment budgets and incision/ aggradation rates differ within the lower Yuba River during two contrasting flow regimes. During the large flood events of time period 1 (1999 to 2006/2008), sediment

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[179] Amended FLA, Exh. E, App. E6, Technical Memorandum 1-2 at ES-2.

[180] Carley, J. K., Pasternack, G. B., Wyrick, J. R., Barker, J. R., Bratovich, P. M., Massa, D. A., Reedy, G. D., Johnson, T. R. 2012. Significant decadal channel change 58-67 years post-dam accounting for uncertainty in topographic change detection between contour maps and point cloud models. Geomorphology 179: 71-88, doi:10.1016/j.geomorph.2012.08.001.

[181] Weber, M. D., Pasternack, G. B. 2017. Valley-scale morphology drives differences in fluvial sediment budgets and incision rates during contrasting flow regimes. Geomorphology, 288:39-51. doi: 10.1016/j.geomorph.2017.03.018.

within the lower Yuba River was displaced longitudinally, with reaches above Daguerre Point Dam eroding sediment and reaches below Daguerre Point Dam accumulating sediment. This finding corresponds with the valley-scale morphological features (levees, secondary bypass channels and narrow valley walls) that are activated at high river stages. These valley-scale morphological features drive the hydraulics and sediment movement within the lower Yuba River at high flow. During the modest floods of time period 2, from 2006/2008 to 2014, the majority of the sediment was laterally redistributed with erosion outside of the base-flow channel (e.g., floodplain, terrace, and lateral bar morphological units) and deposition within the former base-flow channel (e.g., pools, runs, and fast glide morphological units) as the river channel migrates. In the context of construction via grading of floodplain areas in the lower Yuba River, graded areas subject to inundation at less than 10,000 cfs are highly subject to recapture or remodeling as a result of modest to high flood events, where graded areas only subject to inundation at flows higher than 10,000 cfs are far less subject to recapture or remodeling.[182] In summary, there is a substantial body of technical work in the relicensing record that strongly indicates that the type of wholesale terraforming that is being recommended would have only transitory benefits, lasting until river flows remodel the river channel and erase the constructed changes.

The following historic aerial photographs show both pre- and post-Project geomorphic conditions for various river reaches. Photos include the Timbuctoo Bend reach (approximately river mile ("RM") 18.5-21), at the upstream end of the Yuba Goldfields (approximately RM 14-17.5), near the middle of the Yuba Goldfields

[182] Pasternack pers. comm. 2017.

(approximately RM 12-15), and immediately downstream of the Yuba Goldfields (approximately RM 6-9). All of the images, both pre- and post-Project, show the expansive hydraulic mining debris terraces that persist in the river channel, as well as the confinement of the river channel by hillsides and levees or training walls. The photos also show the substantial remodeling of the river channel (the thalweg moves from river left to river right and back, braiding and un-braiding of the river channel, purging of vegetation after flood flows).

Figure 5. Historic aerial imagery from 1947, 1957, 1998, 2015, and 2017 of the Timbuctoo Bend reach of the lower Yuba River.

U.S. Geological Survey ("USGS") Image of Timbuctoo Bend, 1947

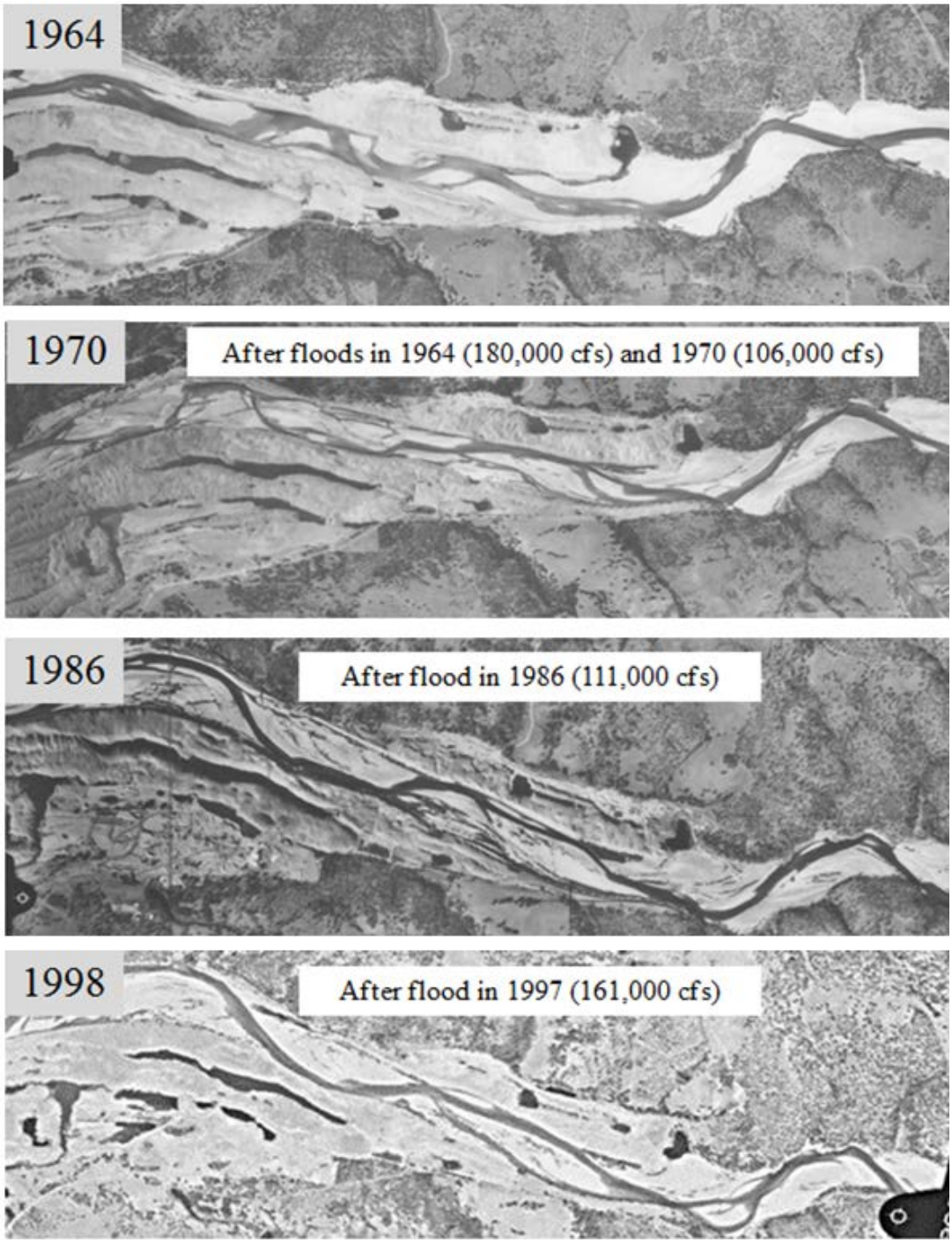
UCD Photo of Timbuctoo Bend, 1957

Timbuctoo Bend August 1998 – one year after 1997 flood (1 in 200 year event)
Photo: Google Earth

Timbuctoo Bend April 2015, after 4 dry years. Photo: Google Earth

Timbuctoo Bend May 2017 (four months after flood flows that reached 90,000 cfs) Photo: Google Earth

Figure 6. Historic aerial imagery from 1964,[183] 1970,[184] 1986,[185] and 1998[186] of the channel near the top of the Yuba Goldfields. Images represent conditions after four major flood events.



[183] USGS. Collected on 5/31/1964.

[184] DWR. Collected on 1/27/1970.

[185] DWR. Collected on 3/21/1986.

[186] USGS. Collected on 8/21/1998.

Figure 7. Historic aerial imagery from 1964,[183] 1970,[184] 1986,[185] and 1998[186] of the channel near the middle of the Yuba Goldfields. Images represent conditions after four major flood events.

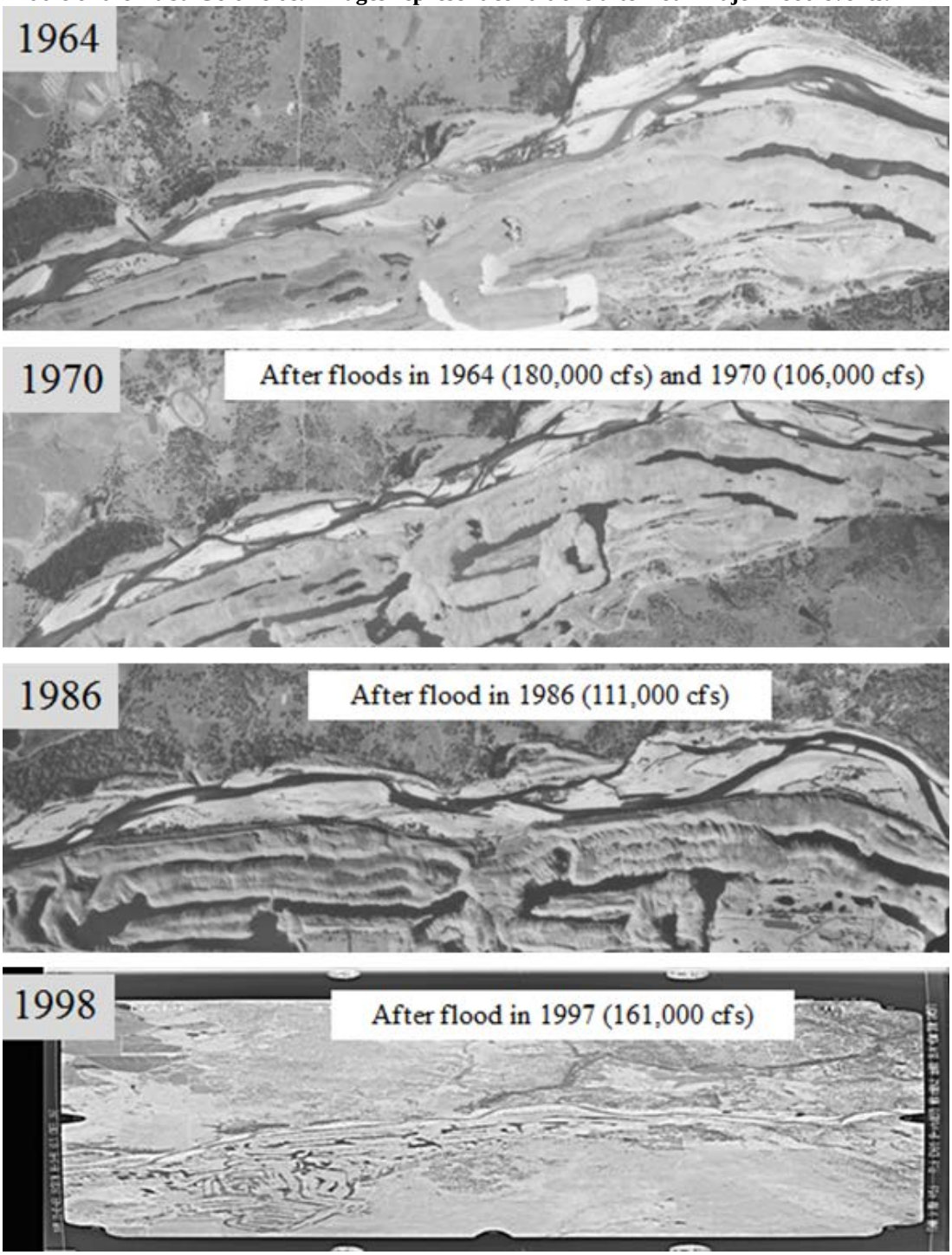
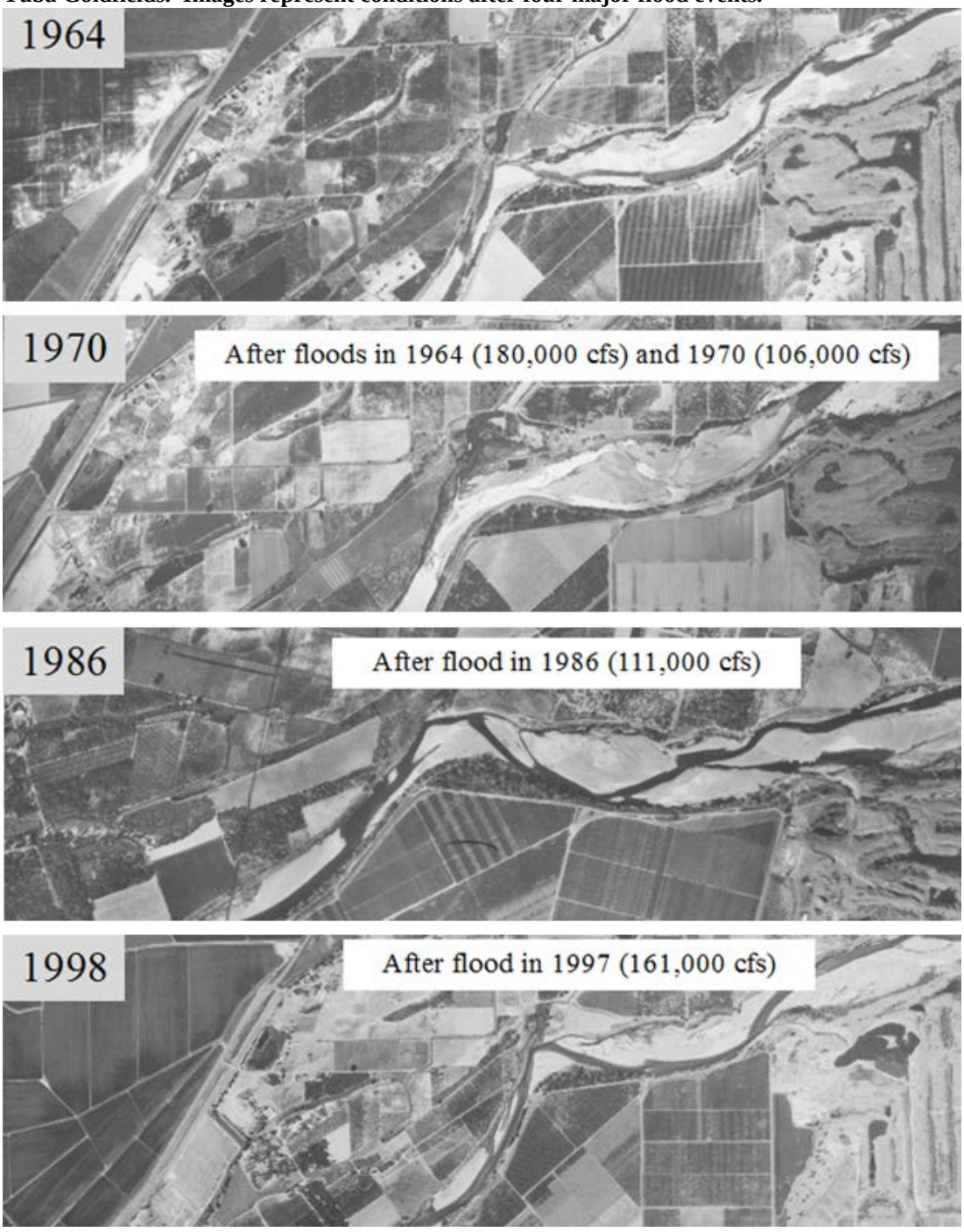


Figure 8. Historic aerial imagery from 1964,[183] 1970,[184] 1986,[185] and 1998[186] of the channel below the Yuba Goldfields. Images represent conditions after four major flood events.



The preceding photos support the analysis that the type of wholesale terraforming that is being recommended would have only transitory benefits.

d. Implementation of the Recommendations May Be Prohibitively Difficult.

Implementation of the proposed recommendations would involve massive impacts to the lower Yuba River. The FWS, NMFS, CDFW, and FWN recommendations do not identify specific locations for habitat improvements; however the sheer gross scale of the required grading operations would have substantial harmful impacts to the river corridor. Accordingly, the recommended measures would not provide substantive benefits and would have large-scale redirected impacts.

Light Detection and Ranging ("Lidar") -based mapping of the lower Yuba River[187] from the upstream end of Timbuctoo Bend to the confluence of the Feather River has catalogued a total of 510 acres of wetted area at representative base flow (880 cfs above Daguerre Point Dam and 530 cfs below Daguerre Point Dam). Wetted area at bankfull flow conditions (5,000 cfs) is 829 acres, and wetted area at flood conditions (21,100 cfs) is 1,703 acres. An increase of 340 acres in terraced areas wetted between 1,500 and 3,000 cfs would result in an increase of over 40 percent in bankfull wetted area; thus over 40 percent of the entire area most proximate to the flowing river will be potentially impacted by wholesale grading operations.

Stage-discharge relationships at various cross sections along the lower Yuba River vary by cross section, but Lidar-based mapping of the lower Yuba River

[187] Wyrick, J. R. and Pasternack, G. B. 2012. Landforms of the Lower Yuba River. Prepared for the Yuba Accord River Management Team. University of California at Davis, Davis, CA, 91pp. DOI: 10.13140/RG.2.2.27716.63365.

summarized in Wyrick et al. 2013[188] has documented an average rate of stage change of 1.29 inches per 100 cfs in the baseflow channel, and 0.47 inches per 100 cfs between the baseflow and bankfull channel. To cut down a terrace currently inundated at 10,000 cfs to inundate at 2,000 cfs would require excavating over 40 inches of material. To cut down from a terrace currently inundated at 20,000 cfs to inundate at 1,500 cfs would require excavation of nearly eight feet of material. It may be assumed that it will be necessary to feather these cut-down areas into the remaining floodplain areas (rather than leaving new steep cut slopes in the river channel); such feathering would likely require disturbing as much as twice the total footprint of the target of 340 acres. If 680 acres would need to be disturbed in order to construct these terraces, then a total of 40 percent of the entire floodplain area of the length of the lower Yuba River would need to be disturbed in order to implement this recommendation.

The total volume of material to be excavated is potentially on the order of several million cubic yards. Assuming sufficient areas (totaling 340 acres) exist at inundation levels of 5,000, 10,000, and 20,000 cfs, a total of nearly 4,000,000 cubic yards of sediment would need to be removed from the lower Yuba River to achieve the terraforming results recommended by the resource agencies. It may be further assumed that material excavated from bar areas will need to be exported from the river channel (exported and disposed of outside of the valley walls or levees). Additional material may need to be removed if low surfaces are not available for grading (if much higher bars and banks need to be mined), for access and stockpiling during construction, or for

[188] Wyrick, J. R., Gonzalez, R. and Pasternack, G. B. 2013. Hydraulic geometry of the lower Yuba River: depth-discharge relationships. Prepared for the Yuba Accord River Management Team. University of California at Davis, Davis, CA, 15pp.

remediation of construction-related impacts. Taken in sum, the resource agencies are recommending a wholesale cobble and gravel mining operation that would disturb a substantial portion of the lower Yuba River.

Additional complications with these recommendations include land ownership (most of the river bed outside of the jurisdictional waterway is privately owned), access (there are only a handful of public access points to the lower Yuba River; thus excavation haul routes are likely to be partially or largely within the river channel), the potential for extensive ecological impacts to the flowing river and existing riparian areas (and associated mitigation and remediation for those impacts), and impacts associated with spoiling excavated material outside of the river corridor. There may be some potential for selling excavated material as construction gravel (making implementation of this recommendation truly a commercial gravel mining operation).

Finally, the potential exists for methylated mercury contamination resulting from the terraforming of hydraulic mining debris. Hunnerlach et. al.[189] characterized the mercury content of sediment upstream of Daguerre Point Dam. Although total mercury and methylmercury concentrations were low, the assessment concluded that:

> Concentrations of mercury and several other trace elements in the fine-grained sediment trapped behind Daguerre Point Dam are of potential environmental concern. Median concentration values of arsenic, chromium, copper, and nickel in clay-silt separates (less than 0.060 millimeter) were higher than consensus threshold effects levels for ecological toxicity; maximum concentrations of lead, mercury, and zinc were also above the threshold effects levels. Total mercury concentrations were 3 to 30 times higher in fine-grained fraction than in the sandy fraction. Although concentrations of methylmercury are relatively low in

[189] Hunerlach, M.P., Alpers, C.N., Marvin-DiPasquale, M., Taylor, H.E., and De Wild, J.F., 2004, Geochemistry of mercury and other trace elements in fluvial tailings upstream of Daguerre Point Dam, Yuba River, California, August 2001: U.S. Geological Survey Scientific Investigations Report 2004-5165, 66 p., as cited in "Existing Information Summary", Approved Study Plan 1-2, Channel Morphology Downstream of Englebright Dam, *available at* https://pubs.usgs.gov/sir/2004/5165/sir2004-5165.pdf.

> sediments trapped behind Daguerre Point Dam, there is a potential for converting a significant portion of inorganic mercury to methylmercury if these sediments are released to the lower Yuba River below Daguerre Point as a consequence of fish passage improvement projects.[190]

This potential for heavy metal contamination would require extensive sampling prior to any terraforming activities, and could require specialized extraction and disposal techniques if trace elements exist in concentrations of concern.

In addition to wholesale grading, the resource agency recommendations also suggest large scale riparian planting. To date, the only large riparian planting effort on the lower Yuba River has been the Hammon Bar Riparian Enhancement Project, a 2011-2013 pilot project implemented by the SYRCL with funding from the FWS Anadromous Fish Restoration Program ("AFRP").[191] The Hammon Bar project utilized highly mechanized planting techniques (e.g., stinger or deep pit excavation and planting). These planting techniques would not be replicated by natural processes. In short, riparian planting using these approaches is not accelerating natural processes, but using industrial scale, anthropomorphic modifications to mitigate for pre-Project impacts. While this approach may have some merit for remediation of pre-Project anthropomorphic impacts by jurisdictional entities (e.g., USACE), or voluntary efforts by third parties (e.g., the SYRCL Hammon Bar project), this is not an appropriate recommendation for assignment to the Project.

Costs for the recommended measures to implement physical habitat improvement projects for juvenile and salmonid rearing would be substantial, and would significantly

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[190] *Id.* at 43-44.

[191] SYRCL, 2013. Hammon Bar Riparian Enhancement Project Report. South Yuba Citizens League, Nevada City, CA, *available at* http://yubariver.org/wp-content/uploads/2013/12/Hammon-Bar-Report-2013-SYRCL.pdf.

outweigh their expected benefits. For example, SYRCL's AFRP-funded riparian planting pilot program saw costs for riparian planting of $40,000 to $72,000 per acre in 2011 dollars, for a pilot program with a minimal construction footprint of five acres and with landowner support. The recommended riparian planting measures would be a much more expansive project (50 times the size), distributed widely along the river, with land ownership and access challenges. In 2017 dollars, a cost of $100,000 to $200,000 per acre seems likely, yielding a total cost of $25,000,000 to $50,000,000.

For terraforming of 340 acres of river channel, feathering the lowered areas into the remaining banks, and constructing haul and spoil areas, a simplistic estimate of grading volume would total perhaps 4,000,000 cubic yards of coarse sediment. California Department of Transportation costs for roadway excavation range from $10 to over $300 per cubic yard depending on conditions and complexities;[192] a cost estimate of $50 per cubic yard for excavation, hauling and disposal of lower Yuba River material would be optimistic and assume few complications due to complex river-side construction, presence of toxic minerals, or mitigation for impacts to water or terrestrial habitat. The total estimate for grading and excavation could cost in excess of $200,000,000. Revegetation of the 340 acres of excavated area, plus feathering, transport corridors and remedial impacts at $100,000 per acre could add another $68,000,000 in cost. Based on the assumptions above, the total cost for implementation of this measure could be in excess of $300,000,000.

[192] State of California Business, Transportation and Housing Agency Department of Transportation, 2016 Caltrans Cost Data (2017), *available at* http://www.dot.ca.gov/hq/esc/oe/awards/2016CCDB/2016ccdb.pdf.

e. The Recommendations Do Not Reflect Commensurate Nexus and Impacts.

As described above, FWS, NMFS, CDFW, and FWN have not correctly assessed the nexus of geomorphic and riparian conditions to Project operations. As a result, YCWA does not believe that the recommendations for physical habitat modifications put forth by CDFW, FWS, NMFS, and FWN are appropriate recommendations.

Numerous entities are undertaking habitat enhancement projects in the lower Yuba River. The USACE has recognized impacts to sediment and large wood resulting from operations at its Englebright Dam, and has undertaken a program of gravel and wood augmentation for the past several years. The USACE completed a Section 905(b) reconnaissance report in 2014 pursuant to the Water Resources Development Act of 1986, and is proceeding with a feasibility study phase of investigation. The 2014 Section 905(b) analysis found:

> There is Federal interest in proceeding to the feasibility phase of this study to further analyze and evaluate ecosystem restoration in the Yuba River watershed. Preliminary data indicate that there are significant National Ecosystem Restoration [] benefits associated with restoration of structures, functions, and processes in the Yuba River.[193]

The AFRP has funded several investigations and or pilot projects for the lower Yuba River, including assessments of Sinoro Bar, Rose Bar, Hammon Bar and Daguerre Alley, and the Hammon Bar pilot program. AFRP funding for field studies and pilot projects at Daguerre Alley is ongoing at this time. Activities are being conducted by the

[193] USACE. 2014. Yuba River Ecosystem Restoration Section 905(b) Analysis. US Army Corps of Engineers Sacramento District, *available at* http://www.spk.usace.army.mil/Portals/12/documents/environmental/Yuba%20River%20905b%20Analysis%2010-20-14.pdf.

appropriate jurisdictional agencies. There is no basis, however, for making such activities a responsibility of YCWA under the new Project license.[194]

f. The Commission Should Not Adopt FWS's Recommendation 15 Because Operation of YCWA's Auxiliary Flood Control Outlet Would Lessen Floodplain Impacts, Not Increase Them.

YCWA filed a correction to its Amended FLA in September 2017 clarifying that the outlet would be used during high flood events to reduce flood impacts, which is consistent with how the operations were described to FERC and to Stakeholders during relicensing. The Auxiliary Flood Outlet adds to the attenuation of the peak of flood events, but likely extends the length of time for any floodplain inundation resulting from that flood event, because it allows YCWA to start releasing water earlier. Therefore, there is no decrease to floodplain inundation to be mitigated by FWS 10(j) Recommendation 15.

2. Develop a Shot Rock Removal and Stabilization and Gravel Augmentation Plan for the Englebright Dam Reach

YCWA did not include in its Amended FLA a proposed condition regarding shot rock in the Englebright Dam Reach because FERC has previously determined that the Project does not contribute to additional shot rock in the Englebright Dam Reach:

> Because the project attenuates natural flows that would mobilize shot rock from the river banks, it appears that the existing and proposed project operations reduce the occurrence of erosion and entrainment of existing shot rock and do/would not contribute to additional shot rock entrainment to the lower Yuba River (section 5.9(b)(5)). Therefore, we do not recommend that YCWA be required to further evaluate the effect of

[194] In addition, FWS's statement that only floodplain improvements would meet the objective of increasing juvenile rearing habitat is belied by the fact that their pilot programs are in-stream improvements, not floodplain improvements. *See also* Section III.B.7 *infra*.

> continued project operations on flood flows that may erode and entrain shot rock in the lower Yuba River, as NMFS and FWN requested.[195]

FWN's Section 10(a) Recommendation 11 would require YCWA, in consultation with FWS, NMFS, USACE, CDFW, and the Ecological Group, to develop a Shot Rock Removal and Stabilization and Gravel Augmentation Plan for the Englebright Dam Reach. The plan would require monitoring within two years of flows as measured at Smartsville of 50,000 cfs or greater. FWN's rationale for its recommendation is that shot rock is mobilized during high flow events and displaces or interferes with limited suitable habitat for salmonids. FWN did not provide any other details regarding the recommendation, including cost to implement it.

The Commission should not adopt FWN's recommendation for two reasons. First, the Commission has already determined a lack of nexus between the Project and shot rock entrainment in the Englebright Dam Reach.[196] Second, FWN's recommendation would provide no added environmental benefit because the USACE annually injects into the reach salmonid spawning-sized gravel each year. As described in the Amended FLA, 15,500 short tons of salmonid spawning-sized gravel have been placed in the Englebright Dam Reach since 2007.[197] FWN's recommendation would simply shift cost responsibility to YCWA for something the USACE is already doing.

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[195] Determination on Requests for Modifications to the Yuba River Hydroelectric Project Study Plan, App. A at 5, Project No. 2246-058 (issued Feb. 2, 2015).

[196] *Id*.

[197] Amended FLA, Exh. E at E3.3.1-23 (Section 3.3.1.1.6).

3. Develop and Implement Narrows Reach Fish Stranding Prevention Plan

YCWA Proposed Condition AR8 would implement a Lower Yuba River Aquatic Monitoring Plan that was developed in consultation with FWS, CDFW, and FWN. The plan includes monitoring interactions of anadromous fish with Narrows 2 facilities and operations. The goal of the monitoring would be to observe anadromous fish presence during specific operational scenarios and rapidly identify any occurrence of stranding or isolation in the Narrows Reach (i.e., the approximately 1,000-feet-long section of the Yuba River that extends from the Narrows 2 facilities to the Narrows 1 Powerhouse). Interactions of anadromous fish with Narrows 2 facilities and operations would be characterized by monitoring Narrows Reach from July through February of each year, or as superseded by a Biological Opinion ("BiOp") from NMFS for the relicensing.

YCWA would survey for stranded Chinook salmon and steelhead in the Yuba River when any of the following occurs, all of which are monitoring triggers in YCWA's Narrows 2 facilities Prioritized Operations and Monitoring Plan that YCWA is implementing under the existing license:

- 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 one-hour period; or
- 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 one-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, 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 and in spaces between large boulders. Any stranded fish would be reported to NMFS, FWS, CDFW, and SWRCB within 48 hours of observance. YCWA may also apply for permission to rescue stranded fish or alert agency representatives for an opportunity to conduct a fish rescue.[198] As shown in Appendix 2, FWS, CDFW, and FWN supported YCWA Proposed Condition AR8. YCWA estimated the cost to implement its condition to be $9,434,910 over 30 years (i.e., $314,467/year).[199]

FWS, NMFS, CDFW, SWRCB, and FWN each included a recommendation regarding fish stranding in the Narrows Reach.

FWS 10(j) Recommendation 4 would require YCWA, in consultation with FWS, NMFS, CDFW, and SWRCB, to develop a Narrows Reach Fish Stranding Prevention Plan. FWS states that the plan would provide measures to reduce or eliminate fish stranding during normal operations of the Project, including flow transitions between the Narrows 2 facilities and the Narrows 1 Powerhouse. Potential measures discussed by the FWS include changes in Project operations, construction of entrainment deterrents, maintenance of gravel bars and banks, filling of intermittent pools, and monitoring. FWS did not provide any additional details regarding the recommendation, including the cost to develop the plan or to implement measures in the plan, or what it meant by "entrainment deterrents" since the plan does not address entrainment, but stranding.

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[198] For a detailed description of the plan, *see* Amended FLA, App. E2 at E2-50.

[199] *See* Amended FLA, Exh. E at E4-10 (Table 4.3-2).

CDFW 10(j) Recommendation 2.27 and SWRCB's preliminary WQC Condition 17 are for all practical purposes the same as FWS's recommendation. Neither the CDFW nor the SWRCB provided any additional details regarding its recommendation, including the cost to develop the plan or to implement measures in the plan. FWN supports FWS and CDFW's recommendations.[200]

NMFS 10(j) Recommendation 5 is similar to FWS's recommendation with two notable exceptions. First, NMFS added ramping rates and construction of tailrace barriers as potential measures, which FWS did not include. Second, NMFS's recommendation provides that if a Project flow reduction triggers monitoring, as outlined in YCWA's Narrows 2 facilities Prioritized Operations and Monitoring Plan,[201] YCWA would notify the FWS and CDFW within 24 hours, and if the subsequent monitoring found stranded fish, YCWA would notify NMFS, FWS, and CDFW as soon as possible but no later than within 24 hours.

The Commission should not adopt the FWS, NMFS, CDFW, SWRCB, and FWN recommendations regarding development of a fish stranding plan in Narrows Reach for two reasons. First, YCWA's proposed condition provides a well-conceived approach to provide adequate protection for the resource, without the need of developing a new, open-ended plan, as recommended by the agencies and FWN. YCWA's proposed plan, which was approved by FWS, CDFW, and FWN, would require YCWA to monitor for stranded fish following operational changes that could reasonably strand fish, notify agencies if fish are stranded, rescue the stranded fish, and develop specific measures to

[200] FWN Comments at 70.

[201] This plan was incorporated in YCWA's existing Project license by the Commission on February 8, 2016. *Yuba Cty. Water Agency*, 154 FERC ¶ 62,084 (2016).

eliminate stranding where it is observed. In contrast, the agencies' and FWN's recommendation would require YCWA to develop unspecified measures and then monitor. This is an unreasonable approach given that stranding is a rare event. During 2016, monitoring under the existing Narrows 2 Facilities Prioritized Operations and Monitoring Plan was triggered 11 times and no stranded fish were observed. While stranding has been occasionally observed in the past, YCWA has, and will continue to take actions to reduce or eliminate stranding. These actions have included, with FERC's approval, placing a hood over the Narrows 2 Powerhouse Partial Bypass to assure the spray from the bypass stays in the river and not on the bank, and filling in depressions where isolated pools that could strand fish were observed. YCWA's proposed condition would continue these measures during a rare stranding event.

Second, the FWS, NMFS, CDFW, SWRCB, and FWN recommendations provide minimal details, are completely open-ended,[202] and are not based on substantial evidence of a Project effect.[203] The metrics for success are missing and there is a large potential for unspecified and unbounded revisions. For instance, NMFS states that stressors such as "delay and/or mortality associated with fish attempting to enter the powerhouse penstocks" were not addressed in relicensing. This statement is in support of altering Project facilities to include a possible tailrace barrier, which is costly, may significantly alter operations, and would inhibit upstream migration of anadromous fishes. However, multiple years of underwater camera monitoring, snorkeling, visual observation, and

[202] *See Pub. Util. Dist. No. 1 of Chelan Cty.*, 107 FERC ¶ 61,280 at p. 62,329 (rejecting a recommendation as unduly vague).

[203] 16 U.S.C. § 825*l*(b) (requiring that Section 10(j) and 10(a) recommendations must be supported by substantial evidence in the record).

detailed two-dimensional fish tracking never documented a single fish entering or attempting to enter the Narrows 2 Penstock.

4. Implement Lower Yuba River Aquatic Monitoring Plan

YCWA Proposed Condition AR8 would implement a Lower Yuba River Aquatic Monitoring Plan that was developed in consultation with FWS, CDFW, and FWN. The plan incorporates numerous components, described *supra* Section III.B.3 (Develop and Implement Narrows Reach Fish Stranding Prevention Plan) and not repeated here.

NMFS 10(j) Recommendation 6 proposes that, in consultation with NMFS, FWS, and CDFW, the plan be modified to include deployment of an Adaptive Resolution Imagery Sonar ("ARIS") underwater camera, which would be operational during potential stranding/entrainment events related to operations of the Narrows 2 facilities. NMFS provides criteria for those events. NMFS's recommendation would require YCWA to review the ARIS video when these criteria occur for evidence of false attraction, stranding or mortality, and make the video available to the public on request. NMFS states that it made this recommendation because FERC did not reply to NMFS's concerns regarding the adequacy of YCWA's FERC-ordered studies.[204]

The Commission should not adopt NMFS's recommendation for four reasons. First, NMFS's proposed methodology would produce limited information and provide no additional protection to fish and wildlife. NMFS's proposed method of monitoring would not provide all the information requested by NMFS—an ARIS camera only provides underwater video, so it would not provide any information regarding fish stranding, which occurs above water. Also, as demonstrated during YCWA's study, an

[204] NMFS Comments at 45.

ARIS camera has a very limited "viewing" area in highly turbulent and aerated water, like that found near the Narrows 2 facilities.

Second, YCWA has already performed relicensing studies on the impact of flow changes of the Narrows facilities on fish stranding and entrainment. As required by the Commission, YCWA conducted a radio-telemetry study, which included Dual-Frequency Identification Sonar and ARIS camera monitoring, as part of Study 7.11.[205] There is sufficient information in the record as a result of this and other studies to determine Project effects on stranding, false attraction/delay, and mortality of adult salmonids.

Third, under current license requirements[206] and as proposed to be included in the new license, YCWA will continue to monitor for stranded fish in the vicinity of the Narrows 2 facilities and provide notice to NMFS, CDFW, and the Commission within 24 to 48 hours of discovery of a fish mortality or stranding incident. Under Proposed Condition AR8, YCWA may also apply for permission to rescue stranded fish or alert agency representatives for an opportunity to conduct a fish rescue.[207] Under these obligations, YCWA must provide an annual report summarizing the results of YCWA's monitoring efforts with the Commission. In its most recent report, filed in January 2017,

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[205] Yuba River Development Project Revised Study Plan, Project No. 2246-058 (filed Aug. 17, 2011); Modified Study 7.11, Fish Behavior and Hydraulics Near Narrows 2 Powerhouse, Project No. 2246-058 (filed June 1, 2012); Yuba River Development Project Initial Study Report, Project No. 2246-058 (filed Dec. 3, 2012); Yuba River Development Project Updated Study Report, Project No. 2246-058 (filed Dec. 2, 2013); Interim Technical Memorandum 7-11 and 7-11a: Fush Behavior and Hydraulics Near Narrows 2 Powerhouse, Project No. 2246-065 (filed June 5, 2014).

[206] *Yuba Cty. Water Agency*, 154 FERC ¶ 62,047 (2016) (Order Approving Streambed Monitoring Plan, under which YCWA would modify and monitor potential fish stranding locations downstream of the Narrows 2 development); *Yuba Cty. Water Agency*, 154 FERC ¶ 62,084 (Order Modifying and Approving Narrows 2 Prioritized Operations and Monitoring Plan, under which YCWA would implement an operational protocol for use of the Narrows 1 and 2 Powerhouses, partial flow bypass, and full flow bypass, as well as stranding surveys).

[207] For a detailed description of the plan, *see* Amended FLA, Exh. E, App. E2 at E2-50.

YCWA reported no fish strandings during 11 monitoring events in 2016.[208] These obligations should adequately address NMFS's concerns regarding fish stranding and mortality of adult salmonids near the Narrows 2 facilities.

NMFS's recommendation would come at a relatively high cost with minimal if any benefit. Besides the cost to modify YCWA's proposed plan, which YCWA estimates to be in the $40,000 range, ARIS cameras are over $80,000 for purchase (plus installation and accessories generally costing $10,000), or the option of $15,000 for monthly rental, which also requires separate installation. ARIS cameras when ran continually wear significantly over time and can require significant cost for repair or full replacement (i.e. assumed replacement every five years if purchased). The proposed effort would require eight months of monitoring (July through February). In order to sufficiently monitor, a continuous 24 hours a day monitoring feed would be required. Data would be downloaded weekly due to large file size, requiring one day of field time. The recorded operational change footage must be manually reviewed and analyzed due to the poor operational conditions from highly aerated water in the Narrows 2 area and could assume 30 hours a month of review. Finally an annual report would be required to discuss and address each operational event and observed fish behavior (approximately $20,000 effort). Since NMFS's recommendation provides no off-ramps from the proposed effort if no stranding is observed for numerous consecutive years, it can only be assumed the activity would occur annually for the duration of the license. In total, the annual cost

[208] Monitoring Report for Period from January 21, 2016 through December 31, 2016, in Compliance with the Narrows 2 Facilities Prioritized Operations and Monitoring Plan and the Streambed Monitoring Below Englebright Dam Plan at ES-i, Project No. 2246-070 (filed Jan. 17, 2017).

could range, depending if equipment was rented or purchased and maintained between $4,500,000 to $5,100,000 over 30 years ($150,000/year to $170,000/year).

5. Recovery of Special-Status Species in the Lower Yuba River

YCWA included in its Amended FLA Proposed Condition GEN2, which is identical to FS's preliminary Section 4(e) Condition 30. This condition would require YCWA to review the then-current special-status species lists, (including, but not limited to: ESA threatened and endangered species; species proposed for listing under the ESA; FS's list of Species of Conservation Concern; Tahoe and Plumas National Forest Watch Lists; California Endangered Species Act ("CESA") threatened and endangered species; species proposed for or candidates for listing under CESA; California Fully Protected species; California Species of Special Concern; and FWS and NMFS sensitive species) annually to identify any changes to a species' status (e.g., species added to or removed from a list or status on a list changed). If a species has been added to the list or its status on the list has otherwise changed and the species has a reasonable likelihood of being directly affected by the Project and adequate information is not available to assess likely Project effects on NFS lands, the condition would require YCWA to consult with FS to develop a study plan to assess potential Project effects, provide the plan to FS for review, file the plan with FERC, and perform the study as approved by FERC. Upon completion of the study, YCWA would provide a study report to FS for review, and file the report with FERC. In addition, the condition would require that if YCWA proposes an action that could adversely affect a special-status species or its habitat, YCWA would consult with FS. As shown in Appendix 2, FS and FWN supported YCWA's proposed

condition. YCWA estimated the cost to implement its condition is $540,000 over 30 years (i.e., $18,000/year).[209]

NMFS, CDFW, FWS, and FS each made recommendations that would expand this obligation beyond NFS lands.

NMFS 10(j) Recommendation 7 would require that YCWA annually review with resource agencies special-status species lists, including, but not limited to, ESA-listed species and Species of Concern lists. If a species is added to a list or its range changes and if NMFS and FWS determine the species is affected by the Project, YCWA would develop a study plan, in consultation with resource agencies, to assess potential Project effects. Under the recommendation, YCWA would prepare a Draft Biological Evaluation ("BE") or Draft BiOp, and provide the Draft BE or BiOp to resource agencies for review pursuant to relevant sections of the ESA or CESA, as appropriate, and file with FERC the Draft BE or BiOp which would provide the basis for consultation. NMFS's rationale for its recommendation was to address NMFS's concern regarding Section 7 of the ESA.[210]

CDFW 10(j) Recommendation 1.2 is similar to NMFS's recommendation, but differs in several ways. CDFW includes specific lists to be reviewed, including ESA threatened and endangered species; species proposed for listing under the ESA; FS's Sensitive Species; Tahoe and Plumas National Forest Watch Lists; CESA threatened and endangered species; species candidates for listing under CESA; California Fully Protected species; California Species of Special Concern; and California rare plants. Under CDFW's recommendation, FS, NMFS, FWS, and CDFW would determine if a study is needed. In addition, the CDFW recommendation is more detailed than NMFS's

[209] Amended FLA, Exh. E at E4-5 (Table 4.3-2).

[210] NMFS Comments at 46.

recommendation regarding notifications to agencies, and does not discuss Draft BEs or BiOps. CDFW states the primary basis for its recommendation is to expand YCWA Proposed Condition GEN3 from just NFS lands to all Project-affected lands.[211]

FWS 10(j) recommendation overlaps in part with NMFS's recommendation, but addresses other FWS-specific issues for ESA-listed species under FWS jurisdiction. The recommendation would require YCWA to develop a list of ESA-listed species every 120 days and consult with FWS if a new species under FWS's jurisdiction is added to the list. In addition, the recommendation would require YCWA to: (1) complete ESA consultation prior to initiating Project improvements; (2) contact FWS if a hazardous materials spill occurs; (3) consult with FWS regarding use of pesticides; and (4) perform surveys for elderberry shrubs prior to the start of Project activities and consult with FWS if the surveys find elderberry shrubs. FWS stated it included the recommendation because formal consultation with FWS has not been conducted with regards to Project effects on the ESA-listed California red-legged frog (*Rana draytonii*) ("CRLF") and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).[212]

FS 10(a) Recommendation 6 provides that YCWA should provide all necessary and required support for the recovery of special-status species in the lower Yuba River. FS reserves the right to modify its 10(a) recommendation dependent on the protection measures formally recommended by fish and wildlife agencies or changes in the status of species if the changes could result in effects on NFS lands and resources. FS's rationale focuses on ESA-listed species, with regards to FS's better understanding of how actions on ESA-listed anadromous salmonids in the lower Yuba River might affect introduction

[211] CDFW Intervention, Enclosure B at 13-14 (Section 3.3.2).

[212] DOI Comments at 65-66.

of these fishes upstream on NFS lands. FS justifies its condition on the basis that it would preserve options for the FS to be involved in future actions regarding ESA-listed salmonids.[213]

a. The Commission Should Not Adopt the NMFS, CDFW, and FWS Recommendations and Should Find that YCWA's Proposed Condition Is Adequate.

The Commission should reject the NMFS, CDFW, and FWS 10(j) recommendations for three reasons. First, in the event of a new ESA listing or a change to a species status during the term of the new license, the Commission, as the federal action agency, would determine if that species is affected by the Project and initiate Section 7 consultation with NMFS or FWS, as appropriate.[214] This is the standard procedure under the ESA. While YCWA agreed as part of Section 4(e) discussions with the FS to conduct a study when both the FS and YCWA determine that a listed species on NFS lands will be affected by Project operations, it is not appropriate to extend this condition to non-NFS lands. The Commission should retain its discretion to determine if the Project affects listed species and whether further study and ESA consultation are warranted. The NMFS and FWS proposed 10(j) recommendations would effectively remove that discretion from FERC and place in the agencies' hands the decision as to whether to initiate Section 7 consultation.

Second, the recommendations are not proper 10(j) recommendations in that they are not specific measures to protect, mitigate or enhance fish and wildlife resources—they merely require consultation, studies, or both, but not specific measures to protect fish and wildlife.

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213 FS Comments, Enclosure 3 at 12.

214 50 C.F.R. § 402.16 (2017).

Third, the FWS recommendation should not be included in the new license because it is premature. Specifically, FWS stated it included its recommendation because FERC has not initiated ESA Section 7 consultation with FWS. YCWA understands that FERC will initiate Section 7 consultation with FWS if it determines that the Project may adversely affect ESA-listed species or critical habitat under FWS's jurisdiction. Thus, the proposed condition is superfluous.

b. The Commission Should Not Adopt FS's Recommendation and Should Find that YCWA's Proposed Condition Is Adequate.

The Commission should not include FS 10(a) Recommendation 30 in the new license for four reasons. First, YCWA Proposed Condition GEN2 adequately provides for the identification of new special-status species on NFS lands and for a related YCWA-assessment of Project effects on these newly-listed special status-species. Because this measure relates to species downstream in the lower Yuba River, there would be no effect on NFS lands.

Second, the FS 10(a) Recommendation 30 is vague and open-ended.[215] The recommendation would require YCWA to "provide all necessary and required support for the recovery of special-status species in the lower Yuba River downstream of Englebright Dam."[216] The FS provides no description of what this "support" would entail, so it would be impossible to determine if YCWA was complying with the recommendation if it was included in the new license.

[215] *See Pub. Util. Dist. No. 1 of Chelan Cty.*, 107 FERC ¶ 61,280 at p. 62,329 (rejecting a recommendation as unduly vague).

[216] FS Comments, Enclosure 2 at 9.

Third, FS has provided no evidence to suggest a Project nexus between special-status species in the lower Yuba River and the Project.[217] The new license should not require YCWA to address impacts to species if the impacts are not related to the Project. FS's interest in this condition is clearly related to the potential for ESA-listed anadromous salmonids introduction upstream of Englebright Dam on NFS lands. The Project does not block the upstream passage of these fishes. In addition, the Amended FLA does not propose an anadromous fish introduction program on NFS lands. Thus, there is no nexus between this proposed measure and Project operations.

Fourth, FS 10(a) Recommendation 30, in which FS reserves its right to modify its Section 4(e) conditions to respond to introduction of ESA-listed salmonid species on or that may affect NFS lands within the Project area, duplicates FS Section 4(e) Condition 27. FS 10(a) Recommendation 30 is unnecessary.

6. Comply with NMFS Recovery Plan for the Central Valley Spring-run Chinook Salmon

FWS 10(a) Recommendation 1 would require YCWA to

> assist in the implementation of NMFS Recovery Plan Priority 1 Recovery Actions in the Yuba River for Central Valley spring-run Chinook salmon, including: . . . [(1)] developing and implementing a program to reintroduce spring-run and steelhead to historic habitats upstream of Englebright Dam; and [(2)] modifying Daguerre Point Dam to provide unimpeded volitional upstream passage of adult steelhead and Chinook salmon and to minimize predation of juveniles moving downstream.[218]

FWS's entire rationale statement for this recommendation is the following two sentences: "The Central Valley Spring-run Chinook Salmon is a USFWS trust resource

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[217] *See Georgia Power Co*., 149 FERC ¶ 62,210 at PP 59, 70 (holding that a proponent of a Section 10(a) or 10(j) recommendation must establish a nexus between the need for the measure and the resources affected by the project).

[218] DOI Comments at 99.

that is included in CVPIA-AFRP goals for salmonid restoration in the Central Valley. In addition, the USFWS and the Commission have obligations under sections 2, 4, and 7 of the ESA to conserve listed salmonid species."[219] Even though the Recovery Plan was prepared and adopted by NMFS, NMFS's letter does not contain any similar recommendations.

YCWA did not propose a condition similar to FWS 10(a) Recommendation 1 and the Commission should not include this FWS recommendation in the new license for three reasons. First, FWS has not even attempted to demonstrate any nexus between its recommendation and any effects of the Project.[220] Such nexus does not exist, because Daguerre Point Dam and Englebright Dam were constructed in 1906 and 1941, respectively, and now are owned by the United States and maintained by the USACE. They are not parts of the Project.

Second, the FWS recommendation does not contain any specific measures and is too vague to determine what measures FWS asserts the Commission should order YCWA to implement.[221]

Third, FWS has not demonstrated that this recommendation is consistent with the comprehensive development standard in FPA Section 10(a), and FWS has not even attempted to analyze the cost of implementing this measure or its expected environmental benefit.

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219 *Id.*

220 *See supra* note 217.

221 *See supra* note 215.

7. Support Actions as Identified by the Anadromous Fish Restoration Program's Final Restoration Plan

FWS 10(a) Recommendation 2 would require YCWA to assist in the implementation of the AFRP as identified in FWS's 2001 Final Restoration Plan under the Central Valley Project Improvement Act ("CVPIA").[222] YCWA did not make an equivalent proposal in the Amended FLA, although the Amended FLA would address several elements of the Final Restoration Plan as explained below.

Restoration actions for the Yuba River under the Final Restoration Plan include (among others):

1. Supplement flows with water acquired from willing sellers consistent with applicable guidelines or negotiate agreements to improve conditions for all life history stages of Chinook salmon and steelhead.

2. Improve flows for American shad (*Alosa sapidissima*) migration, spawning, incubation and rearing from April to June, consistent with actions to protect Chinook salmon and steelhead and when hydrologic conditions are adequate to minimize adverse effects to water supply operations.

3. Reduce and control flow fluctuations to avoid and minimize adverse effects to juvenile salmonids.

4. Maintain adequate instream flows for temperature control.

5. Facilitate passage of spawning adult salmonids by maintaining appropriate flows through the fish ladders, or by modifying the fish ladders at Daguerre Point Dam.

6. Purchase streambank conservation easements to improve salmonid habitat and instream cover.

7. Facilitate passage of juvenile salmonids by modifying the dam face of Daguerre Point Dam.

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[222] FWS, Final Restoration Plan for the Anadromous Fish Restoration Program. Plan to Increase Natural Production of Anadromous Fish in the Central Valley of California. Released as a Revised Draft on May 30, 1997 and Adopted as Final on January 9, 2001, *available at* https://www.fws.gov/cno/fisheries/CAMP/Documents/Final_Restoration_Plan_for_the_AFRP.pdf.

8. Operate reservoirs to provide adequate water temperatures for anadromous fish.

9. Evaluate the effectiveness of pulse flows to facilitate successful juvenile salmonid emigration.

10. Evaluate whether enhancement of water temperature control via shutter configuration and present management of the cold water pool at New Bullards Bar Dam is effective, and modify the water release outlets at Englebright Dam if enhancement of water temperature control via shutter configuration is effective.

11. Identify and attempt to implement actions that will maintain mean daily water temperatures between 61°F and 65°F for at least one month from April 1 to June 30 for American shad, consistent with actions to protect Chinook salmon and steelhead and when hydrologic conditions are adequate to minimize adverse effects to water supply operations.

12. Evaluate the benefits of restoring stream channel and riparian habitats of the Yuba River, including the creation of side channels for spawning and rearing habitats for salmonids.[223]

FWS's rationale for the recommendation is that: "[t]he [CVPIA] directs the Secretary of the Interior to develop and implement a program that makes all reasonable efforts to double natural production of anadromous fish in Central Valley streams (Section 3406(b)(1)),"[224] and that the restoration actions are important to achieving this goal.

The Commission should not include FWS 10(a) Recommendation 2 in the new license because:

- Many of the components included in FWS's list are not actions, but evaluations. The time has long since passed to request new studies in connection with the Project relicensing.

[223] DOI Comments at 100.

[224] *Id*. at 3 (noting one of FWS's general resource objectives for the Project as attainment of the AFRP doubling goal of 66,000 Chinook salmon in the Yuba River, consistent with the CVPIA).

- The recommendation does not address YCWA's role or responsibilities and thus is completely open-ended.

- There is no Project nexus for many of the actions and evaluations listed in Recommendation 2. This is particularly true with respect to modifications to Daguerre Point Dam and Englebright Dams, which are owned by the United States and would require Congressional authorization.

YCWA's Amended FLA addresses several of the restoration actions within the scope of YCWA's operational and management capabilities:

- ***AFRP Restoration Action 3 (Reduce and control flow fluctuations to avoid and minimize adverse effects to juvenile salmonids) –*** YCWA Proposed Condition AR9 is designed to minimize potential Project effects related to flow ramping and flow fluctuations on salmonids in the Yuba River downstream of Englebright Dam.[225]

- ***AFRP Restoration Action 4 (Maintain adequate instream flows for temperature control) and AFRP Restoration Action 8 (Operate reservoirs to provide adequate water temperatures for anadromous fish) –*** Improved water temperature suitability in the lower Yuba River has been achieved through implementation of the Yuba Accord flow schedules (including the 30,000 ac-ft of additional water for June 1 through August 31 in Schedule 6 Years discussed above in Section III.A.6). For the July through September period of Conference Years, YCWA 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.

  In the Amended FLA, modeled and monitored water temperatures were used in conjunction with species and lifestage-specific water temperature index values to assess lifestage-specific water temperature suitability. The analysis determined that water temperatures in the lower Yuba River under the Project represent a low stressor to: (1) spring-run Chinook salmon and steelhead;[226] and (2) fall-run Chinook salmon in the lower Yuba River.[227]

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[225] *See* Amended FLA, Exh. E, App. E2 at E2-55 to E2-58 (Section E2.4.9).

[226] *See* Applicant-Prepared Draft BA at BA8-20 to BA8-21, BA8-37 to BA8-38, BA8-60 to BA8-61, and BA8-76 to BA8-77.

[227] *See* Amended FLA, Exh. E, Applicant-Prepared Draft EFH Assessment at EFH8-32 to EFH8-37.

Therefore, the Commission should find that YCWA's licensing proposal is consistent with the AFRP.

C. New Bullards Bar Dam Reach

1. Maintain Minimum Streamflows Below New Bullards Bar Dam

YCWA Proposed Condition AR10 would provide, by WY type, minimum streamflows in the 2.4-mile-long section of the North Yuba River immediately downstream of New Bullards Bar Dam (i.e., "New Bullards Bar Dam Reach," which is shown on the map in Appendix 5), as measured at the existing USGS gaging station. In addition, the proposed condition would provide that the minimum streamflows could be temporarily modified for short periods for any one of three reasons: (1) upon consultation with and approval by the FWS, CDFW, and SWRCB, and notification to FERC; (2) due to emergencies; and (3) for one four-hour period each calendar year to perform FERC and/or California Division of Dam Safety ("DSOD") required testing of outlet valves. The testing would be performed when the dam is spilling and include rapidly opening and closing the valve.

Except for related lost generation, as discussed below, YCWA assumed no incremental cost to implement YCWA's proposed minimum flows in Condition AR10 because the condition did not require any new equipment or modification and would occur as part of normal Project operations: YCWA's proposed minimum flow could be released through the existing New Bullards Bar Minimum Flow Powerhouse and the existing downstream gaging station could monitor the flow.

FWS, CDFW, FS, BLM, and FWN each recommended a condition similar to YCWA Proposed Condition AR10, but substantially increasing the minimum flows on

the order of 260-435 percent. SWRCB commented that "[c]urrent flow and habitat conditions in the NBB Reach do not appear to support the native fauna" and "Proposed Condition AR10 may not be protective of resources in the NBB Reach."[228]

FWS 10(j) Recommendation 11 would require different minimum streamflows than those proposed by YCWA, as shown in Table 1.

Table 1. FWS's recommended New Bullards Bar Dam minimum streamflows as compared to YCWA's proposed minimum streamflows, which are shown in strike-through.

Month	Wet Water Year	Above Normal Water Year	Below Normal Water Year	Dry Water Year	Critically Dry Water Year
October 1 - 30	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~7~~ 30 cfs
November 1-30	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~7~~ 30 cfs
December 1 - 31	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~7~~ 30 cfs
January 1 - 31	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~7~~ 30 cfs
February 1- 29	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~7~~ 30 cfs
March 1 - 31	~~11~~ 30 cfs	~~12~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 30 cfs	~~7~~ 30 cfs
April 1 - 30	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs
May 1- 31	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs
June 1 - 30	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs	~~5~~ 60 cfs
July 1 - 31	~~11~~ 40 cfs	~~12~~ 40 cfs	~~13~~ 40 cfs	~~13~~ 40 cfs	~~7~~ 40 cfs
August 1 - 31	~~11~~ 40 cfs	~~12~~ 40 cfs	~~13~~ 40 cfs	~~13~~ 40 cfs	~~7~~ 40 cfs
September 1- 30	~~11~~ 30 cfs	~~12~~ 30 cfs	~~13~~ 30 cfs	~~13~~ 40 cfs	~~7~~ 30 cfs
Total Volume	**~~7,500~~ 28,360 ac-ft**	**~~7,700~~ 28,400 ac-ft**	**~~8,000~~ 28,400 ac-ft**	**~~8,000~~ 28,400 ac-ft**	**~~4,700~~ 28,400 ac-ft**
Change in Volume	**20,860 ac-ft (278%)**	**20,630 ac-ft (268%)**	**20,400 ac-ft (255%)**	**20,400 ac-ft (255%)**	**23,700 ac-ft (434%)**

In addition, FWS's recommendation, as compared to YCWA's proposed condition, would eliminate the provision that YCWA could briefly modify minimum streamflows to test gate valves if required by the Commission and/or DSOD once each year.

CDFW 10(j) Recommendation 2.4, BLM 10(a) Recommendation 10, and FWN Recommendation VII are the same as FWS Recommendation 11. FS 10(a) Recommendation 2 is the same as FWS 10(j) Recommendation 11, but does not eliminate the allowance for gate testing.

[228] SWRCB Comments at 21.

FWS, CDFW, FS, BLM, and FWN did not provide an estimated cost to implement their recommendations.

The Commission should not adopt the FWS, CDFW, FS, BLM, and FWN recommendations and should find that YCWA's proposed condition is preferable for the following reasons.

a. The Purpose of the Recommendation Is to Mitigate Project Effects on Coldwater Habitat in Summer, but the Project Does Not Adversely Affect Coldwater Habitat in Summer.

The FWS, CDFW, FWN, FS, and BLM provide no evidence to support their premise that the Project reduces coldwater habitat in summer, which they define as sections of river having a year-round mean daily water temperature of less than 20°C.[229] In fact, without the Project, no coldwater habitat would occur because in summer the temperature of water entering the Project area is already warmer than 20°C. Table 2 shows that in July and August the temperature of water in the Middle Yuba River entering the Project's Our House Diversion Dam impoundment and in the North Yuba River entering the Project's New Bullards Bar Reservoir are routinely warmer than 20°C. Water temperatures in Oregon Creek entering the Project's Log Cabin Diversion Dam are nearly 20°C in these months. These three impoundments are the Project's most upstream facilities.

[229] DOI Comments at 86.

Table 2. Mean monthly temperature of water entering the Project area in July and August. Red-shaded cells indicate months in which mean monthly water temperature is 20°C or warmer (from measured data).[1]

Calendar Year	Mean Daily Water Temperature (°C)	
	July	August
MIDDLE YUBA RIVER (0.3 RM UPSTREAM OF OUR HOUSE DIVRRSION DAM IMPOUNDMENT)		
2009	22.6	22.0
2010	21.3	20.7
2011	17.4	20.3
2012	22.1	22.6
2013	24.2	22.1
2014	24.2	22.7
2015	23.9	22.7
2016	22.1	22.2
NORTH YUBA RIVER (0.5 RM UPSTREAM OF NEW BULLARDS BAR RESERVOIR)		
2009	21.2	20.6
2010	19.1	18.8
2011	14.8	17.6
2012	20.4	20.9
2013	--	20.7
2014	23.3	21.3
2015	22.4	21.7
2016	20.2	20.6
OREGON CREEK (0.2 RM UPSTREAM OF LOG CABIN DIVERSION DAM IMPOUNDMENT)		
2009	19.6	18.6
2010	19.2	17.4
2011	17.6	17.6
2012	18.7	18.8

[1] SOURCES: Data from 2009 through 2012 are mean monthly water temperature calculated by averaging mean daily water temperature data for each day in that month from measured water temperature data collected by YCWA as part of YCWA's relicensing Study 2-5, Water Temperature Monitoring, which is included in Appendix E6 of YCWA's Amended FLA. Data from 2013 through 2016 are mean monthly water temperature calculated by averaging measured mean daily water temperature data for that month from data collected by YCWA as part of the Yuba Salmon Forum, and these data are included in Appendix 14.

As these waters pass through Our House and Log Cabin diversion dams, the temperature changes very little because the impoundments are small and shallow and have brief retention times. As the dam releases flow downstream, they reach equilibrium temperature (i.e., the water is as warm as it will get). Table 3 shows that, on a monthly basis, the entire Middle Yuba River below Our House Diversion Dam meets the FWS, CDFW, FS, BLM, and FWN criterion for coldwater habitat of less-than-20°C, except for June through September when the water is warmer than 20°C in the Middle Yuba River as it enters the Yuba River at the confluence with the North Yuba River. The current Project has no effect on the amount of coldwater habitat in the Middle Yuba River, which in July and August is already as warm as 24° to 25°C.

Table 3. Modeled water temperatures in the Middle Yuba River just downstream of Our House Dam and just upstream of the confluence the North Yuba River. Red-shaded cells indicate months in which mean monthly water temperature is 20°C or warmer.[1]

Month	Middle Yuba River	
	Just Downstream of Our House Diversion Dam	Just Upstream of the North Yuba River
	Monthly Mean Water Temperature (°C)[2]	Monthly Mean Water Temperature (°C)[2]
October	13.1	13.9
November	7.2	7.3
December	4.6	4.0
January	4.4	4.0
February	5.2	6.0
March	6.7	8.9
April	8.2	11.8
May	10.7	15.4
June	15.6	20.9
July	21.8	25.4
August	21.6	23.8
September	18.8	20.1

[1] Source: Temp Model Scenario 11 in Appendix 6.

[2] Calculated by averaging all of that month's mean daily water temperatures.

As shown in Tables 2 and 3, releases from the New Bullards Bar Dam are always cooler in summer than inflow into the reservoir, which results in coldwater habitat in the New Bullards Bar Dam Reach. Hence, a careful review of the facts shows that the Project does not reduce coldwater habitat and, in fact, increases the amount of coldwater habitat upstream of Englebright Reservoir. The Project should not be required to mitigate for the reduction of coldwater habitat because it does not reduce coldwater habitat.

b. The Recommendation Would Have a Significant Adverse Effect on Rainbow Trout in New Bullards Bar Reach by Making the Water Too Cold.

FWS, CDFW, FWN, FS, and BLM did not provide a model run for the Commission or YCWA to evaluate the efficacy of their recommendation. Therefore, YCWA ran its relicensing Water Balance and Operations Model ("Ops Model") and relicensing Water Temperature Models ("Temp Model") to compare water temperatures in New Bullards Bar Dam Reach under the recommendation and under YCWA Proposed Condition AR10.

Table 4 shows that, under both the recommendation of the FWS, CDFW, FWN, FS, and BLM and YCWA's proposed condition, releases from New Bullards Bar Dam

are usually about 7°C. Under the FWS, CDFW, FWN, FS, and BLM recommendation, as the water moves downstream it warms slightly, but is 11.0°C or less in all months. In contrast, under YCWA's proposed condition, the water at the end of the reach before the confluence with the Middle Yuba River is warmer than under the FWS, CDFW, FWN, FS, and BLM recommendation, and ranges between approximately 12° and 15°C from April through September.

Table 4. Modeled water temperatures at the upstream end and downstream end of the New Bullards Bar Dam Reach under the YCWA proposed condition and the FWS, CDFW, FS, BLM, and FWN recommendation for New Bullards Bar Dam minimum streamflows.[1]

Month	YCWA's Proposed Condition AR10	FWS, CDFW, FWN, FS & BLM Recommendation
	Monthly Mean Water Temperature (°C)[2]	Monthly Mean Water Temperature (°C)[2]
UPSTREAM END OF NEW BULLARDS BAR DAM REACH (IMMEDIATELY BELOW NEW BULLARDS BAR DAM)		
October	7.1	7.2
November	7.1	7.2
December	7.1	7.3
January	7.0	7.1
February	6.8	6.8
March	6.7	6.7
April	6.8	6.7
May	7.0	6.9
June	7.1	7.0
July	7.0	6.9
August	7.0	7.0
September	7.0	7.1
DOWNSTREAM END OF NEW BULLARDS BAR DAM REACH (IMMEDIATELY UPSTREAM OF CONFLUENCE WITH THE MIDDLE YUBA RIVER)		
October	10.4	9.2
November	8.6	8.1
December	7.7	7.6
January	7.7	7.5
February	8.4	7.8
March	9.3	8.4
April	12.2	8.3
May	14.0	9.0
June	15.7	9.5
July	15.2	11.0
August	14.3	10.6
September	12.7	10.5

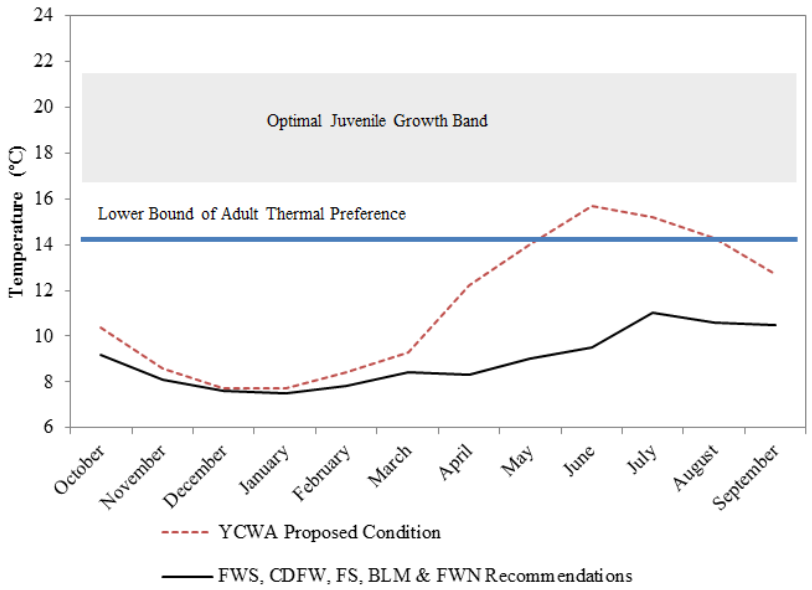
[1] SOURCE: Temp Model Scenarios 5 and 9 in Appendix 6.

[2] Calculated by averaging all of that month's mean daily water temperatures.

The FWS, CDFW, FWN, FS, and BLM cite several sources showing that adult rainbow trout (*O. mykiss*) do not prefer habitat with temperatures cooler than 12°C

(Garside and Tait 1958; Bell 1973; Cherry et al. 1977; McCauley et al. 1977[230]). In fact, that is exactly what would occur in summer if the FWS, CDFW, FWN, FS, and BLM recommendation was adopted. Table 8 and Figure 9 show their recommendation would make the entire New Bullards Bar Dam Reach non-preferable habitat for rainbow trout year-round. In comparison, as shown in Figure 9, YCWA's proposed condition would result in preferred habitat for rainbow trout in spring and in summer.

Figure 9. Predicted average mean daily water temperature at the downstream end of the New Bullards Bar Dam Reach under the FWS, CDFW, FWN, FS, and BLM recommendation and YCWA's proposed condition, as compared to optimum growth temperatures for rainbow trout. The data used to prepare this figure are the same mean daily water temperature data used to calculate the average monthly water temperature data in Table 4.



SOURCE: Water temperatures from Temp Model Scenarios 5 and 9 in Appendix 6; optimum growth range for rainbow trout from Verhille et al. (2016)[231], Myrick and Cech (2001)[232], and EPA (2003)[233]; and lower bound of adult thermal preference from Garside and Tait (1958), Bell (1973) Cherry et al. (1977), and McCauley et al. (1977).

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[230] Garside, E.T., and J.S Tait. 1958. Preferred temperature of rainbow trout (*Salmo gairdneri* Richardson) and its unusual relationship to acclimation temperature. Canadian Journal of Zoology 36(4):563-567; Bell, M. C. 1973. Fisheries handbook of engineering requirements and biological criteria. Contract DACW57-68-C-0086. Fisheries-Engineering Research Program, U. S. Army Corps of Engineers, North Pacific Division, Portland, Oregon; Cherry, D.S., K.L. Dickson, J. Cairns Jr, and J.R. Stauffer. 1977. Preferred, avoided, and lethal temperatures of fish during rising temperature conditions. Journal of the Fisheries Board of Canada 34(2):239-246; McCauley, R.W., J.R. Elliott, and L.A.A Read. 1977. Influence of acclimation temperature on preferred temperature in the rainbow trout *Salmo gairdneri*. Transactions of the American Fisheries Society 106(4):362-365.

[231] Verhille C.E., English K.K., Cocherell D.E., Farrell A.P., and N.A. Fangue. 2016. High thermal tolerance of a rainbow trout population near its southern range limit suggests local thermal adjustment. Conserv Physiol 4(1): cow057; doi:10.1093/conphys/cow057.

For this reason alone, the Commission should not adopt the FWS, CDFW, FWN, FS, and BLM recommendation to increase minimum streamflows below New Bullards Bar Dam beyond what YCWA has proposed.

c. The Recommendation Would Also Make the Water in New Bullards Bar Reach Too Cold for Foothill Yellow-Legged Frog, a Candidate CESA Species.

Curiously, the FWS, CDFW, FWN, FS, and BLM recommendation did not address the potential effects of their recommendation on FYLF, a species that CDFW recently listed as a Candidate species under the CESA. As a general rule, the FYLF does not initiate breeding in spring until water temperature reaches a minimum of over 10°C with several studies finding breeding activity initiating between 12° and 17°C.[234] In addition, the growth and development of FYLF tadpoles is closely related to water temperature. In experimental enclosures, FYLF tadpoles selected temperatures between 16.5° and 22.2°C.[235]

Like with rainbow trout, the FWS, CDFW, FWN, FS, and BLM recommendation would make water in New Bullards Bar Reach too cold for FYLF breeding and growth. In contrast, YCWA's proposed condition would provide for breeding and growth of

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[232] Myrick and Cech. 2001. Temperature Effects on Chinook Salmon and Steelhead: A Review Focusing on California′s Central Valley Populations. Bay Delta Modeling Forum Technical Publication 011.

[233] Environmental Protection Agency (EPA). 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. Seattle, WA: Region 10 Office of Water.

[234] Garcia and Associates (GANDA). 2008. Identifying Microclimatic and Water Flow Triggers Associated with Breeding Activities of a Foothill Yellow-Legged Frog (*Rana boylii*) Population on the North Fork Feather River, California. California Energy Commission, PIER Energy- Related Environmental Research Program. CEC-500-2007-041.

[235] Catenazzi, A. and S.J. Kupferberg. 2013. The importance of thermal conditions to recruitment success in stream-breeding frog populations distributed across a productivity gradient. Biological Conservation 168 40–48

FYLF in the reach, which is another reason why FERC should not adopt the FWS, CDFW, FWN, FS, and BLM recommendation.

d. The Additional Coldwater Habitat Created in the Middle/North Yuba River Reach Above New Colgate Powerhouse by the FWS, CDFW, FWN, FS, and BLM Recommendation Does Not Justify the Adverse Effects Created in the New Bullards Dam Reach or the Additional Cost.

Table 5 shows that under both YCWA's complete flow recommendation and the FWS, CDFW, and FWN complete flow recommendation (i.e., with all proposed flow-related conditions),[236] the entire Middle/North Yuba River Reach meets their criterion of less-than-20°C for coldwater habitat from September through May. In June, both the YCWA and the FWS, CDFW, and FWN flow proposals would provide coldwater habitat for most of the reach. In July and August, YCWA would not meet the 20°C criterion in the entire reach, though FWS, CDFW, and FWN would provide some coldwater habitat.

[236] *See* Appendix 10.

Table 5. Modeled water temperatures at the upstream end and downstream end of the Middle/North Yuba River Reach under the YCWA proposed condition and the FWS, CDFW, FS, BLM, and FWN recommendation for New Bullards Bar Dam minimum streamflows.

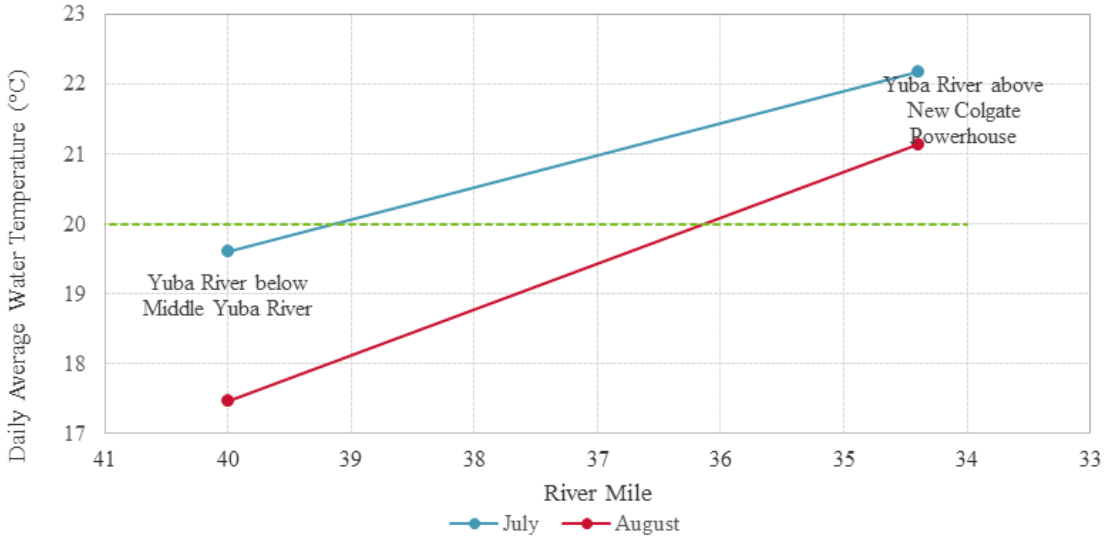
Month	YCWA's Proposed Condition AR10	FWS, CDFW, FWN, FS & BLM's Recommendation
	Monthly Mean Water Temperature (°C)[2]	Monthly Mean Water Temperature (°C)[2]
UPSTREAM END OF NORTH/MIDDLE YUBA RIVER REACH (IMMEDIATELY DOWNSTREAM OF THE NORTH AND MIDDLE YUBA RIVER CONFLUENCE)		
October	12.9	11.8
November	7.5	7.6
December	4.7	5.1
January	4.6	5.0
February	6.3	6.4
March	8.8	8.7
April	11.8	10.7
May	15.1	13.0
June	19.6	15.1
July	22.9	18.4
August	21.2	16.8
September	18.0	15.5
DOWNSTREAM END OF NORTH/MIDDLE YUBA RIVER REACH (IMMEDIATELY UPSTREAM OF NEW COLGATE POWERHOUSE)		
October	14.3	13.7
November	7.8	7.7
December	3.7	4.0
January	3.8	4.1
February	6.3	6.4
March	9.4	9.3
April	13.0	12.3
May	16.6	15.3
June	20.4	18.7
July	23.3	22.0
August	22.3	21.1
September	19.3	18.5

[1] SOURCE: Temp Model Scenarios 5 and 9 in Appendix 6.

[2] Calculated by averaging all of that month's mean daily water temperatures.

Figure 10 shows that in July and August, the FWS, CDFW, and FWN complete flow recommendatio would result in approximately 0.8 and 3.8 miles, respectively, of coldwater habitat in the 5.8-mile Middle/North Yuba River Reach.

Figure 10. Predicted water temperatures in Middle/North Yuba River Reach under the FWS, CDFW, and FWN Complete Flow Analysis. The confluence of the Middle and North Yuba Rivers is at RM 40.0 and New Colgate Powerhouse is at RM 34.2.



SOURCE: Temp Model Scenario 9 in Appendix 6.

As discussed above, the coldwater habitat created in the New Bullards Bar Dam Reach would not exist in that reach in the summer without the Project, so adding more water to increase coldwater habitat would not be an appropriate Project mitigation measure because there is no adverse Project effect. Neither would the FWS, CDFW, and FWN complete flow recommendation be as an appropriate enhancement measure, because the decrease in the amount of thermally suitable habitat for rainbow trout and FYLF in the North Yuba River above the confluence would outweigh the minor amount of new coldwater habitat that would be created in the Middle/North Yuba River Reach. The benefits would be particularly small because the enhancement area would be isolated between the warmer Middle Yuba River and Englebright Reservoir, which has very warm surface water temperatures in July and August.

e. The Claimed Benefits of the Recommendation Do Not Justify the High Cost.

FWS, CDFW, FWN, FS, and BLM did not provide a model run for the Commission or YCWA to document estimated cost to implement their recommendation.

Therefore, YCWA ran its Ops Model to compare reductions in annual generation and associated loss in revenues under the recommendation and under YCWA Proposed Condition AR10.

Table 6 shows that, as compared to the Base Case (i.e., today's conditions), YCWA's proposed condition would result in a 0.2 percent reduction in average annual generation equating to a loss in Project value over 30 years of $2,795,104. In comparison, the FWS, CDFW, FWN, FS, and BLM recommendation would result in a 1.7 percent reduction in average annual generation and a loss in Project value of $19,301,423—$16,506,319 more than YCWA's proposed condition over 30 years.

Table 6. Generation-related costs of the FWS, CDFW, FWN, FS, and BLM recommendation and YCWA's proposed condition.

Alternatives	Average Annual Generation			Average Annual Cost		
	Value (MWh/yr)	Change (%) Compared to:		Value ($)	Change ($) Compared to:	
		Base Case	YCWA's Proposal		Base Case	YCWA's Proposal
Base Case	1,418,046	--	--	$51,388,294	--	--
YCWA's Proposed Condition AR10	1,414,838	-0.2%	--	$ 51,295,124	-$93,170 ($2,795,104 over 30 yrs)	--
FWS, CDFW, FWN, FS & BLM's Recommendation	1,394,008	-1.7%	-1.5%	$50,744,913	-$643,381 ($19,301,423 over 30 yrs)	-$550,211 ($16,506,319 over 30 yrs)

SOURCE: Ops Model Scenarios 5, 9, and 11 in Appendix 6.

In addition, implementation of the FWS, CDFW, and FWN recommendation would require YCWA to modify the existing weir at the downstream gaging station since their recommended streamflows exceed the capability of that facility for monitoring compliance with these higher minimum flows. YCWA estimates the cost to make this modification, including permitting, is approximately $250,000.

The incremental cost of $16,756,319 (i.e., $16,506,319 + $250,000) of implementing the FWS, CDFW, FWN, FS, and BLM recommendation is not warranted. As described above, as compared to YCWA's proposed condition, the FWS, CDFW, FWN, FS, and BLM recommendation would, in fact, have an adverse effect on the New

Bullards Bar Dam Reach making water temperatures too cold for rainbow trout and FYLF. FWS, CDFW, FWN, FS, and BLM attempt to justify their recommendation by saying the increased flows would help mitigate for the Project's reduction in coldwater habitat. As shown above, the Project does not reduce the amount of coldwater habitat and the recommendation would provide only a few miles of additional coldwater habitat in July and August.

The Commission should not adopt the recommendation but, instead, adopt YCWA's proposed condition that maintains rainbow trout and FYLF habitat in the New Bullards Bar Dam Reach and provides for some additional coldwater habitat, all at a cost of one-sixth the cost of the FWS, CDFW, FWN, FS, and BLM recommendation. In summary:

- Thermal conditions in the New Bullards Bar Dam Reach are colder than pre-Project conditions, so there is no Project caused reduction in coldwater habitat in this reach. In fact, the Project creates coldwater habitat that would not otherwise exist in the reach in July and August.

- The FWS, CDFW, FWN, FS, and BLM recommendation has no preferred rainbow trout habitat in the spring and summer while YCWA's recommendation maintains preferred rainbow trout habitat in the spring and summer.

- The FWS, CDFW, FWN, FS, and BLM recommendation would make water in the New Bullards Bar Reach too cold for FYLF, breeding and growth lifestages. Alternatively, YCWA's proposed condition would provide for breeding and growth of FYLF in the reach.

- The FWS, CDFW, FWN, FS, and BLM recommendations cannot be considered enhancements, because the minor amount of isolated coldwater habitat created is more than offset by the loss of thermally suitable habitat in the North Yuba just upstream, both for rainbow trout and FYLF.

- The FWS, CDFW, FWN, FS, and BLM recommendation benefits are not great enough to justify the incremental cost of $16,756,319.

2. Large Woody Material and Sediment Enhancement and Management Plan for the North Yuba River

YCWA did not include in its Amended FLA conditions related to enhancing sediment and LWM in the New Bullards Bar Dam Reach because such enhancements would have little overall benefit and be extremely expensive.[237] YCWA's analysis is discussed in more detail below.

FWS, CDFW, BLM, FS, FWN, and SWRCB each recommended development of a plan for the placement of LWM (defined by the FWS, CDFW, BLM, FS, FWN, and SWRCB as a piece of wood 25 feet in length, not including the root wad, and a minimum of 12 inches in diameter), and sediment (defined by FWS, CDFW, BLM, FS, FWN, and SWRCB as gravel pieces 0.25 to 6 inches in diameter[238]) in the steep, 2.4-mile-long New Bullards Bar Dam Reach.

FWS 10(j) Recommendation 9 would require YCWA to develop, within the first calendar year of the new license and in consultation with FWS, CDFW, SWRCB, and FS, a North Yuba River Large Woody Material and Sediment Enhancement Plan. With regards to LWM, FWS states the plan would require that, between August and September in the first five years of the new license, YCWA place a minimum of 143 pieces of LWM in the river, with 129 pieces placed in piles downstream of the spillway and 14 pieces anchored or buried at two sites to be selected in consultation with the Ecological Group. For sediment, the plan would require that, between August and September in the first five

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[237] *See* Amended FLA, Exh. E at E3.3.1-35 to E3.3.1-43 (Section 3.3.1.2.2).

[238] YCWA was confused by the FWS, CDFW, SWRCB, FS, and FWN specification for gravel. A comprehensive gravel assessment conducted by Kondolf and Wolman (1993) found that rainbow trout spawning gravel ranged from 0.37 inches to 2.52 inches. Kondolf, G. Mathias and M. Wolman. 1993. The Sizes of Salmonid Spawning Gravels. 29 Water Res. Research 2275-2285. The FWS, CDFW, SWRCB, and FS specification for gravel up to six inches in diameter appears to be too large to be useful to rainbow trout for spawning. No justification for this larger size was provided.

years of the new license, YCWA place in the North Yuba River downstream of the New Bullards Bar Dam spillway a 5,000-ton-pile of sediment, document the spatial area covered by the pile using photos and Global Positioning System coordinates, and establish permanent transects for sediment monitoring at the two sites where LWM would be anchored. Monitoring for LWM would be done in the entire reach using the methods described for LWM in YCWA Proposed Condition AR7. Monitoring for sediment would be done at the sediment pile and at two sites in the reach, the latter using the methods described for Stream Channel Morphology in YCWA Proposed Condition AR7.

Prior to placement, the plan would require YCWA to conduct baseline monitoring for LWM and sediment, and in each 10-year period, monitor for LWM and sediment after flows reach 8,000 cfs. If less than three of the 8,000 cfs flow events occur in the 10-year period, YCWA would be required to monitor in the tenth year of the 10-year period. The plan would require that, after each monitoring event, YCWA replenish the LWM piles up to a total of 129 pieces minus the number of stable LWM pieces found in the reach, and to replenish the sediment pile, and would require that YCWA after 10 years, replace any anchored LWM pieces that are no longer in place. The plan would also require YCWA to provide a monitoring report to the Commission, FWS, CDFW, FS, and SWRCB after each monitoring event, and to discuss the results of monitoring and potential changes to the plan with the Ecological Group.

FWS justifies its recommendation stating that the reach lacks habitat complexity because it is nearly devoid of LWM and sediment because they are captured by New Bullards Bar Dam.[239]

CDFW 10(j) Recommendation 2.19, BLM 10(a) Recommendation 3, FS 10(a) Recommendation 5, and FWN Recommendation VIII are identical to FWS's recommendation.

SWRCB's preliminary WQC Condition 11 states, in part, that the SWRCB would likely require YCWA, in consultation with relevant resource agencies, to develop and implement plans to mitigate for the reduction of LWM and sediment in the North Yuba River below New Bullards Bar Dam, and the plans would likely require YCWA to monitor. SWRCB states the plans may include best management practices and the SWRCB may include specific metrics or methods.

The Commission should not adopt these agency recommendations for the following reasons.

a. <u>The Recommendation Underestimates the Amount of LWM and Sediment in the Reach, and Overstates the Amount of LWM and Sediment that Should Be in the Reach.</u>

FWS, CDFW, BLM, FS, and FWN each reference Ruediger and Ward[240] as the standard for the number of pieces of LWM that should be in the reach. Ruediger and Ward measured 53 reaches within 4th order streams in the Stanislaus National Forest wherein they calculated a mean of 14.8 pieces of LWM per 100 meters (95 percent confidence that the actual number is between 11.5 to 18.1 pieces per 100 meters). Stable

[239] DOI Comments at 76-77.

[240] Ruediger, R. and J. Ward. 1996. Abundance and function of large wood debris in central Sierra Nevada streams. Fish Habitat Relationships Technical Bulletin No. 20.

pieces were estimated at 3.7 pieces per 100 meters (95 percent confidence that the actual number is between 2.5 to 4.9 pieces per 100 meters).

Ruediger and Ward do not suggest that what they found should be the standard for all streams. They did not suggest that the number of LWM or key pieces found in the Stanislaus National Forest was applicable to all Sierra Nevada streams, and stated that theirs was a limited data set. In fact, Ruediger and Ward concluded that Sierra Nevada streams generally have less LWM than other forested streams (e.g., the Pacific Northwest) likely due to large floods, boulder/bedrock dominated channels, and the prominence of tree species that are less decay resistant. Ruediger and Ward developed a table that provided context for LWM loading that ranged from a low of five pieces per 100 meters in headwater streams of the Sierra Nevada[241] to a maximum of 61 pieces per 100 meters found in the Oregon Coast Range.[242] Lisle[243] concluded that the variation between minimum and maximum loading within a region could be as much as 10-fold. Lisle indicated that quantification of needed loading is based on the role of dead wood, volumes/sizes in reference streams, historical and projected conditions, events and processes that control wood supply and longevity in riparian forests and streams.

The role and function of LWM in the Sierra Nevada should also be considered. Ruediger and Ward concluded that in moderate and steep-gradient streams with bedrock and boulder substrates (i.e., like the New Bullards Bar Dam Reach), LWM did not influence channel morphology and was easily flushed out during large floods that are

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[241] Berg, N., A. Carlson, and D. Azuma. 1998. Function and dynamics of woody debris in stream reaches in the central Sierra Nevada, California. Can. J. fish. Aquat. Sci. 55: 1807-1820.

[242] Heimann, D.C. 1988. Recruitment trends and physical characteristics of coarse woody debris in Oregon Coast Range streams. Master's Thesis. Oregon State University, Corvallis, Oregon.

[243] Lisle, T.E.. 2002. How much dead wood in stream channel is enough?. USDA Forest Service Gen.Tech.Rpe. PSW-GTR-181. 2002.

capable of transporting even the largest LWM long distances downstream. Berg found that LWM did not shape channel morphology or provide fish cover.[244] These characterizations (e.g., steep gradient, large boulder substrate, and periodic large floods) apply exactly to the New Bullards Bar Dam Reach. Refer to Appendix 13 for a detailed description of the reach including photos of typical sections that show the steep gradient and large boulders, and the results of periodic large floods in this reach.

The 2.4-mile reach below New Bullards Bar Dam Reach is a steep-gradient stream, with an overall gradient of 2.0 percent and sections as high as 5.5 percent. Therefore, Ruediger and Ward do not provide an appropriate standard for this reach because the Ruediger and Ward study predominately studied lower gradient reaches. Even so, YCWA measured 13 pieces along a 327 feet-long section of the New Bullards Bar Dam Reach (100 meters; 13 pieces/100 meters).[245] YCWA did not measure "stability" using the same metric as Ruediger and Ward. Key pieces were defined in the YCWA study, which was approved by the Commission, as LWM pieces that exceeded half of the average bankfull widths, exceeded 25 inches in diameter and 25 feet in length, or showed morphologic influence (e.g., trapping sediment or altering flow patterns). Both Ruediger and Ward and YCWA defined LWM as pieces greater than one meter long and 10 centimeters in diameter. YCWA found a similar amount of LWM in the New Bullards Bar Dam Reach compared to the amount documented by Ruediger and Ward when reporting all pieces that meet the minimum criteria for length and diameter.

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[244] Berg, *supra* note 244.

[245] Yuba County Water Agency. 2013a. Technical Memorandum 6.1. Riparian habitat upstream of Englebright Reservoir (Table 3.4-1), in Amended FLA, Exh. E, App. E6.

In addition, FWS, CDFW, BLM, FS, and FWN fail to account in making their recommendations for the amount of LWM that will soon be entering the New Bullards Bar Dam Reach from the steep, wooded banks along the reach (Figure 11). A fire in 2010 and another in 2013 within the steep gorge of the North Yuba River are likely to provide dead trees as a local source of LWM.

Figure 11. 2011 Google Earth© image showing the North Yuba just downstream of New Bullards Bar Dam looking upstream (YCWA access road to New Bullards Bar Dam is seen on the top left of the photo). Brown/grey color highlighted in red circles is where vegetation, including large trees, was burned during fires in 2010.

Similarly, FWS, CDFW, BLM, FS, and FWN are mistaken in concluding that the New Bullards Bar Dam Reach is "nearly devoid" of sediment based on capture of sediment by the dam. To the contrary, there are spawning-sized gravels in the reach, but YCWA's habitat mapping found they are either located in areas smaller than one square meter, which was the minimum area criterion used in the habitat mapping protocol, or were in areas deficient in other key elements of spawning habitat such as

depth or velocity. These areas included the channel margins, areas out of the active channel, or small patches within velocity shadows behind larger substrate. The habitat mapping data collected by YCWA regarding spawning gravels were used as an indicator of some of the substrate in the system, and not as an absolute measure of spawning habitat or trout populations. Stream fish surveys conducted by YCWA as part of the relicensing documented rainbow trout in the reach and extrapolated rainbow trout abundances of 567 fish per mile based on 2012 data and 534 fish per mile based on 2013 data, suggest that rainbow trout utilize the North Yuba River and successfully spawn.[246]

YCWA's channel morphology study completed in 2013[247] developed an analysis of the amount of sediment available to the reach and bedload transport within the reach, the difference being net loss (or gain). The amount of sediment available to the reach is based on regional estimates of sediment yield per unit area and based on the drainage area with and without the dam in place (e.g., the drainage area to the New Bullards Bar Dam Reach is only that drainage area below the dam and does not include the entire drainage above the dam). Bedload transport was estimated using output from the Bedload Assessment in Gravel-Bedded Streams model.[248] Although there are limitations to these types of models,[249] sediment availability without the Project was estimated to be

[246] There is no fish stocking in the reach.

[247] Yuba County Water Agency, 2013. Technical Memorandum 1.1. Channel Morphology Upstream of Englebright Reservoir.

[248] Wilcock, P., J. Pitlick, and Y. Cui. 2009. Sediment transport primer estimating bed-material transport in gravel-bed rivers. United States Department of Agriculture Forest Service Rocky Mountain Research Station General Technical Report. RMRS-GTR-226. May 2009; Pitlick, J., Y. Cui, and P. Wilcock. 2009. Manual for computing bedload transport using BAGS (Bedload Assessment for Gravel-Bed Streams) software. United States Department of Agriculture Forest Service Rocky Mountain Research Station General Technical Report. RMRS-GTR-223. May 2009.

[249] Models tend to make many assumptions and are best used within uniform, low gradient streams with few obstacles, characteristics which the reach below New Bullards Bar Dam does not possess.

about 52,000 tons per year (down to 202 tons per year with the Project), while transport was about 500,000 tons per year (though one estimate was as high as 9,000,000 tons per year; reduced to 430,000 tons per year with the Project). Given these rough calculations, it is reasonable to suggest that the sediment movement out of the reach is an order of magnitude, or more, higher than that which is available to the reach, even without the dam (discussion and values can be found in YCWA 2014).[250] These results are useful in that they show it is likely that sediment is being moved out of the reach at a greater rate than it is being replaced. Thus, the lack of sediment in the reach cannot be attributed to the Project. However, sediment reservoirs are being maintained, as seen from patches of sediment in velocity shadows, deep pools, and on gravel bars.

b. The Questionable Benefits of the Recommendation Do Not Justify the Very High Cost.

The recommendation to place LWM and gravel in the 2.4-mile reach would have dubious benefits at a very high cost. The steep-gradient, steep-sided reach is subject to very high flows, such as the over 40,000 cfs hourly peak spill flow that occurred on February 10, 2017. These flows quickly flush LWM and sediment out of the reach, with most remaining LWM or sediment found out of the water high on the bank after the flows recede. While YCWA Proposed Condition AR4 would control spills to some extent, the control does not reduce the peak flows that scour LWM and sediment out of the reach, but simply extends the ramp-down from spill flows below 2,000 cfs. Construction and operation of YCWA's new Auxiliary Flood Control Outlet at New Bullards Bar Dam also may result in reduction of peak spill releases under significant floods by allowing

[250] Yuba County Water Agency. 2013b. Technical Memorandum 1-1 at Table 3.3-4 and 3.4-1. Channel morphology upstream of Englebright Reservoir.

more water to be released earlier in anticipation of high flood control releases. However, even with improved control, high scouring flows will regularly occur in the North Yuba River.

For context, the estimate of discharge at which rainbow trout-sized spawning gravel (defined as 0.25 to three inches) is mobilized is between 65 and 700 cfs, although it could range between one and 140 cfs in the steeper sections (this is assuming uniform distribution of spawning-sized gravels across a channel; actual mobility is a function of local conditions). These discharges have a 1.6 to 2.3 year return frequency based on synthetic annual maximum mean daily data flow frequency curves, which means spawning gravel can be moved about every two years. A review of habitat-forming elements within this section of the river shows that boulders and bedrock dominate (66 percent of the Channel Morphology study site[251] in this reach was composed of boulder or bedrock substrate bed and banks) and LWM would be a minor and relatively ineffective component to change sediment storage or change planform or substantially enhance small deposits of spawning gravel important for the local trout. Spawning-sized gravel patches were located in velocity shadows, in protected areas formed by large boulders, and in the channel margins (Figure 12). Any benefits of adding LWM and sediment to the reach would be quickly and drastically reduced after the first spring storm, which would flush the material out of the reach before it can provide any added habitat for rainbow trout spawning.

[251] Amended FLA, Exh. E, App. E6, Technical Memorandum 1-1 (Channel Morphology Upstream of Englebright Reservoir) and Technical Memorandum 1-2 (Channel Morphology Downstream of Englebright Dam).

Figure 12. Photograph of typical North Yuba River Reach showing steep sided banks and large boulders. Refer to Appendix 13 for additional photos of the reach.

These questionable benefits must be balanced against the cost, which FWS, CDFW, BLM, FS, and FWN did not provide, to implement the recommendation. YCWA developed a cost estimate, which assumed sediment and LWM would be placed by helicopter. YCWA considered transporting the sediment to just below the spillway by truck using the existing, one-mile-long paved maintenance access road, but found this unacceptable. The existing road is narrow with few wide areas, very steep (i.e., approximately 15 percent), perched along the side of a rock cliff with poor sightlines, and no guardrails, and subject to landslides and rock falls. In addition, in winter an dearly spring the road is frequently wet or covered with snow and black ice, creating a public safety issue. Further, if the road was used, it would need to be extended about 0.5 miles downstream along a steep-sided rock outcrop to below the spillway, with few options for turn-around near the river (Figure 13).

Figure 13. 2011 Google Earth© image showing YCWA's access road from Marysville Road to New Bullards Bar Dam Dam and the spillway channel entering the North Yuba River.

YCWA believes it is not feasible to upgrade the existing road, and even if it was, YCWA would have very serious concerns about use of the road by the number of large haul trucks that would be needed (i.e., assuming a 12-ton truck is used to transport the sediment and 5,000 tons of three-inch diameter sediment, 270 truck-loads would be required to transport the sediment) because of safety, wear and tear on the road, interference with YCWA's maintenance activity, and decreased control of access to the base of this high hazard dam, which would compromise dam safety. Extending the existing road to below the spillway would also be very costly. YCWA did not consider using the existing road to transport the LWM because, based on the recommendations, it could not assume the material would be placed near the spillway.

YCWA also considered the possibility of using the existing private and FS road along the south side of the river partially shown in Figures 11 and 13. However, this road terminates well downstream of the spillway and well above the river bed, and would have most of the problems (i.e., constructability) described for the existing access road.

In addition, YCWA considered constructing a new road from Marysville Road to downstream of the spillway for the purpose of placing sediment in the stream. However, YCWA dismissed this alternative because of the difficult constructability given the steep grade and the erodable nature of the bank of the canyon walls, as well as public safety concerns.

If the sediment was placed by helicopter, assuming that was permitted due to safety concerns (e.g., helicopters with heavy, hanging payloads passing over recreation areas and public roads) and environmental concerns (e.g., effects on nearby nesting raptors), the number of trips, time and cost to just place the sediment would be unreasonable. Assuming one Chinook helicopter carries a load of 14 tons of sediment per trip and at an average of three hours per trip from the sediment stockpile area to the deposit site, it would take 134 days, about a third of a year, for the helicopter to place 5,000 tons of sediment in the river. Assuming a daily rate of $7,000, the Chinook helicopter costs would be $938,000 for one year. YCWA estimated the cost to purchase the sediment, obtain necessary permits and approvals, monitor and prepare and file a report would be approximately $400,000, bringing a one-time effort for sediment to about $1,400,000. Since the sediment would be flushed out regularly after the initial placement, following each monitoring event (i.e., three times every 10 years) the entire process would be repeated. Therefore, the cost over 30 years for initial sediment placement and replenishment three times every 10 years would be $14,000,000.

If the LWM was placed by helicopter—with the same assumptions as above regarding permitting, safety, and environmental concerns—the number of trips, time and cost to place the LWM would be unreasonable (i.e., assuming one Chinook helicopter carries a load of three LWM pieces per trip and an average of five hours per trip from the

LWM stockpile area to the placement sites, it would take 27 days for the helicopter to place 129 LWM pieces in the river. For 14 pieces of LWM to be anchored, assume two pieces can be anchored per day, which would add another seven days, for a total of 34 days). Assuming a daily rate of $7,000, the helicopter costs would be approximately $238,000. YCWA estimated the cost to obtain the LWM, obtain necessary permits and approvals, monitor and prepare and file a report would be approximately $300,000, bringing a one-time effort for LWM to about $538,000. Since the LWM would be flushed out regularly after the initial placement, following each monitoring event (i.e., three times every 10 years) most of the process would be repeated. Therefore, the cost over 30 years for initial LWM placement and replenishment three times every 10 years would be approximately $5,380,000.

In summary, the total cost to implement the recommendation would be approximately $20,000,000. Given the very questionable benefits of the recommendation and the fact that YCWA is proposing to expend millions of dollars to significantly enhance habitat in over 100 miles of river elsewhere within the system, the cost is excessive and unnecessary. In addition, the USACE maintains Englebright Dam less than 20 miles downstream for the sole purpose of capturing upstream debris. It is highly likely that any sediment or LWM placed by YCWA in the North Yuba River would soon be captured by and reduce the useable capacity of Englebright Dam.

3. Control Project Spills at New Bullards Bar Dam

YCWA included in its Amended FLA Proposed Condition AR4, which would minimize the frequency and magnitude of flow changes due to spills through the New Bullards Bar Dam spillway that have the potential to adversely affect stream fish populations in the North Yuba River below New Bullards Bar Dam. The condition

would be in effect from May 1 through July 31 of each year when a spill through the spillway occurs until flows in the river below the spillway are within 20 percent of the downstream minimum flow. This period would encompass a significant portion of time during which rainbow trout spawning, incubation and emergence are most likely to occur. The spill recession schedule provides for stepped reductions when a spill through the spillway occurs so that the down-ramping is gradual while prolonging the total length of time during which each event occurs. As shown in Appendix 2, YCWA Proposed Condition AR4 was supported by FS, CDFW, and FWN. Except for related lost generation, YCWA assumed no incremental cost to implement Condition AR4 because the condition did not require any new equipment or modification and would occur as part of normal Project operations.[252]

FWS 10(j) Condition 12 is similar to YCWA Proposed Condition AR4 with two major differences:

- FWS's recommendation would apply <u>until the spill through the spillway ceases</u>, whereas YCWA's condition would apply following a spill through the spillway <u>until flows in the river are within 20 percent of the minimum flow requirement downstream of New Bullards Bar Dam.</u>

- FWS's recommendation would require spill recession to occur by <u>adjustments to the New Bullards Bar Dam spillway gates only</u>, whereas YCWA's condition allows YCWA to make reductions by <u>adjustments to the New Bullards Bar Dam spillway gates and the New Bullards Bar Dam low level outlet</u>.

In its comments, FWS states that it recommends the changes to remove the potential for rapid temperature changes in the North Yuba River when flow releases are shifted from

[252] Amended FLA, Exh. E at E4-8 (Table 4.3-2).

the spillway to the low level outlet.[253] FWS did not provide any additional detail, including cost to implement the recommendation.

The Commission should not adopt FWS's recommendation and should determine YCWA Proposed Condition AR4 provides sufficient protection for resources for two reasons. First, YCWA's proposed condition actually provides greater protection for the resources below New Bullards Bar Dam because it extends the recession period to within 20 percent of minimum flows, whereas FWS's recommendation would cease when spill through the spillway ceases. As an example, when a spill through the spillway recedes to 2,000 cfs, YCWA may already be operating its New Bullards Bar Dam low level outlet (assume 750 cfs for this example) as well as its New Bullards Bar Dam Minimum Flow Powerhouse (assume 13 cfs for this example), such that the total flow in the river below the spillway release would be 2,768 cfs. Under YCWA's proposed condition, YCWA would initiate the recession when flows in the spillway are 2,000 cfs, as prescribed by the condition, and continue the recession until flows in the river below the spillway are within 20 percent of minimum flows. If the minimum flow was 13 cfs at that time, flows in the river would be approximately 16 cfs (i.e., minimum flow plus 20 percent) when the recession was done under YCWA's proposed condition. Note that, contrary to FWS's proposed condition, YCWA needs to use the low level outlet valve to continue the recession after flow through the spillway ceases (i.e., in this example, when flow levels are between about 750 cfs and minimum flow). In contrast, under FWS's condition and using the same example as above, YCWA would continue the recession only until spill through the spillway ceases. So, under FWS's recommendation the downstream flows at

[253] DOI Comments at 86.

the end of the recession would be 768 cfs with no gradual flow recession from that level to minimum flows.

Second, FWS's recommendation would not substantially change the fact that when spills cease, the release temperature will change. Using the example above, under both YCWA's proposed condition and the FWS recommendation, when spill through the New Bullards Bar Dam spillway stops (i.e., at flows of about 768 cfs, with 750 through the low level outlet and 13 cfs through the New Bullards Bar Minimum Flow Powerhouse), all the releases would be from the lower elevation in New Bullards Bar Reservoir at the same water temperature.

The Commission should not adopt the FWS recommendation because it would not achieve the goal for which FWS proposed it and, more importantly, is less protective of aquatic resources than YCWA's proposed condition.

D. Our House and Log Cabin Diversion Dam Reaches

1. Periodically Close Lohman Ridge Diversion Tunnel

YCWA Proposed Condition AR11 would close the Lohman Ridge Diversion Tunnel in spring with the goal of keeping Middle Yuba River water in the Middle Yuba River in Wet WYs rather than diverting it to New Bullards Bar Reservoir where it would spill into the North Yuba River. YCWA would close the Lohman Ridge Tunnel within two business days of when DWR publishes its April Bulletin 120 (i.e., usually by the seventh business day in the month) and keep it closed through September 30 when: (i) the Bulletin 120 April Forecast is a Wet WY as defined in YCWA Proposed Condition WR2; and (ii) 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 would be fully opened, or

YCWA could fully close the Camptonville Diversion Tunnel to achieve the same purpose of making all the flow go past the Log Cabin Diversion Dam. YCWA's proposed condition would assure the tunnel is closed only when New Bullards Bar Dam would spill and only in Wet WYs.[254]

FS and other agencies expressed a concern about entrainment of resident fish in the fall. While YCWA believes its Lohman Ridge and Camptonville diversion tunnel relicensing entrainment study demonstrated a very low level of entrainment at these intakes, YCWA agreed periodically to close the Lohman Ridge Diversion Tunnel to mitigate any potential entrainment. Specifically, under YCWA Proposed Condition AR11, if DWR's May Bulletin 120 forecast is for a Wet, Above Normal, or Below Normal WY as defined in YCWA 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. FS included this condition as a preliminary Section 4(e) condition.[255] As described in the Amended FLA, the condition would require YCWA to install a new gate at the Lohman Ridge Diversion Tunnel intake with an estimated capital cost of $5,500,000, and estimated annual O&M of $198,000.[256] The condition would have a significant lost generation cost as well, as described below, but would have a negligible effect on New Bullards Bar Reservoir storage thereby protecting reservoir recreation, and no effect on water deliveries or lower Yuba River WY schedules. As such, YCWA considers the

[254] Amended FLA, Exh. E, App. E2 at E2-67 to E2-71 (Section E.2.4.11).

[255] Appendix 3 at 3-5.

[256] Amended FLA, Exh. E at E4-12 (Table 4.3-2).

periodic closure a reasonable balance of environmental protection and developmental values.

The FWS, CDFW, and FWN each recommended a condition similar to YCWA Proposed Condition AR11, but the changes are significantly more far reaching and expensive.

FWS 10(j) Recommendation 10 differs from YCWA Proposed Condition AR11 in the following ways:

- Spring closure major points:
    - FWS proposes tunnel closures in Above Normal and Wet forecasted WY types while YCWA proposes closure only in Wet WY forecasts.
    - FWS proposes tunnel closures based on the March DWR forecast with an April 1 tunnel closure date, while YCWA proposes tunnel closures based on the April DWR forecast with an April 11 tunnel closure date.
    - FWS proposes reopening of the tunnel if DWR's April or May forecasts result in a Below Normal or drier WY type.
    - Both FWS's and YCWA's proposals exempt tunnel closure if New Bullards Bar Reservoir's end of March storage is less than 775,000 ac-ft.
- Fall closure major points:
    - FWS proposes tunnel closures in every WY type from October through December where YCWA proposes tunnel closure if the DWR May forecast results in a Below Normal or wetter WY type for the same October through December period and if the New Bullards Bar Reservoir end of September is 600,000 or greater.

FWS states that the purpose of its recommendation is to allow water to remain in the Middle Yuba River when New Bullards Bar Dam is spilling, and to protect rainbow trout from entrainment "during the fall migratory period of resident *O. mykiss*."[257] FWS asserts that its recommendation would have minimal cost (i.e., 1.78 percent lost

[257] DOI Comments at 80.

generation equating to 1.08 percent lost revenue), but does not put forth any dollar values.[258]

CDFW 10(j) Recommendation 2.13 and FWN Recommendation XII to periodically close Lohman Ridge Diversion tunnel,[259] are essentially the same as FWS's recommendation, with the same rationale. SWRCB states that "Proposed Condition AR11 may not provide adequate protection to the beneficial uses of the Middle Yuba River."[260]

The Commission should not adopt the FWS, CDFW, and FWN recommendations for the following reasons.

a. The FWS, CDFW, and FWN Measure for Fall Closures Is Overly Conservative and Not Cost-Effective.

YCWA concurs that diverting water from one tributary only to spill it at another is not a valuable use of water, and commits in its Condition AR11 on a protocol to avoid that situation when practicable. However, there are challenges of precisely predicting future flood control release occurrences based on historic hydrology. Also, flood control releases are decided in near real-time based on a combination of factors, including current and near-term (next 10 days) storm activity, snow levels, controlled release capacity, and in consultation with USACE and DWR flood control centers. Any measure based on a standard formula for year type and timing of tunnel closure will have less than perfect results, as measured by loss of water supply and generation value. Therefore, YCWA Proposed Condition AR11 results in a 1.3 percent generation reduction as described

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258 *Id.* at 80-83.

259 FWN Comments at 74; CDFW Intervention, Enclosure A at 26.

260 SWRCB Comments at 31.

below. The FWS, CDFW, and FWN recommendation uses a broader and less accurate approach to minimizing divert-and-spill situations, with an even higher cost in lost water and power. As described below, the purpose of the additional closures would rarely be met, and the Commission should reject this recommendation because it is not cost effective.

b. The Additional Spring Closures Would Only Add Four Years After April 1 When Water Would Not Be Diverted.

As compared to YCWA's proposed condition, the FWS, CDFW, and FWN recommendation would not appreciably reduce the number of years in which, after April 1, water would be diverted from the Middle Yuba River and spilled at New Bullards Bar Dam. Because the FWS, CDFW, and FWN did not include in their comments a model of their proposed condition, YCWA ran its Ops Model to determine how often water is diverted from the Middle Yuba River and spills at New Bullards Bar Dam under existing conditions (i.e., Base Case), under YCWA's proposed condition, and under FWS, CDFW, and FWN's recommendation as compared to Base Case.[261]

The FWS, CDFW, and FWN recommendation adds closures in Above Normal WY types. Table 7 below shows that of the nine Above Normal WY types based on the DWR's April forecasts, there are four additional years when YCWA Proposed Condition AR11 would not close the tunnel. Three of the additional closure years would be years after April 1 in which water would be diverted from the Middle Yuba River to New Bullards Bar Reservoir and there would be some New Bullards Bar Dam spill—this is called a Condition Met ("CM") year. In years after April 1 in which water would not be

[261] Refer to Appendix 6 of this Response for YCWA's model runs.

diverted from the Middle Yuba River to New Bullards Bar Reservoir or New Bullards Bar Dam would not spill or both—this is called a Condition Not Met ("CNM") year.

Table 7. Number of WYs under the Base Case, YCWA's proposed condition and the FWS, CDFW, and FWN recommendation in which, after April 1, water would be diverted from the Middle Yuba River and New Bullards Bar Dam would be spilling.

Water Year			# of WYs[3]	Incremental Analysis[4]	
Year	Rank[1]	Type (Mar / Apr)[2]		YCWA Proposed Condition	FWS/CDFW/FWN Recommendation
Subtotal		*W*	*9*	Both FWS, CDFW and FWN recommendation and YCWA's proposed condition would close the Lohman Ridge Diversion Tunnel in 8 out of the 9 Wet WYs in the Period of Record.	
1996	9	AN / AN		Condition Met / Tunnel Not Closed	Condition Met / Tunnel Closed
1984	11	W / AN		Condition Not Met / Tunnel Not Closed	
1978	12	AN / AN		Condition Not Met / Tunnel Not Closed	
1970	13	W / AN		Condition Not Met / Tunnel Not Closed	
1993	14	AN / AN		Condition Met / Tunnel Not Closed	Condition Met / Tunnel Closed
1971	15	AN / AN		Condition Met / Tunnel Not Closed	Condition Met / Tunnel Closed
1999	16	AN / AN		Condition Not Met / Tunnel Not Closed	
1973	17	AN / AN		Condition Not Met / Tunnel Not Closed	
1975	18	BN / AN		Condition Met / Tunnel Not Closed	
2000	21	AN / AN			Condition Not Met / Tunnel Closed
1989	22	D / AN		Condition Met / Tunnel Not Closed	
Subtotal		*AN*	*11*	*CM / TC = 0* *CNM / TC = 0* *CM / TNC = 5*	*CM / TC = 3* *CNM / TC = 1* *CM / TNC = 2*
Subtotal		*BN*	*9*	Neither the FWS, CDFW, and FWN recommendation nor YCWA's proposed condition would close the Lohman Ridge Diversion Tunnel in BN, D, or CD WYs	
Subtotal		*D*	*9*		
Subtotal		*CD*	*3*		
Total			41	*CM / TC = 6* *CNM / TC = 2* *CM / TNC = 5*	*CM / TC = 9* *CNM / TC = 3* *CM / TNC = 2[Add in difference]*

SOURCE: Modeling Scenario 6, Scenario 10, Scenario 11, Scenario 12, and Scenario 13 in Appendix 6.

[1] From wettest to driest in the relicensing 41-year long period of record from WY 1970 through WY 2010, based on the October Smartsville estimates of full natural flow available on the California Data Exchange Center ("CDEC") (Station ID: YRS).

[2] WY type in March and in April based on YCWA Proposed Condition WR2.

[3] Number of WYs of that type in the relicensing period of record based on DWR's April Bulletin 120. The column is ranked by April WY type.

[4] Base Case conditions in each scenario with the only change being YCWA's proposed condition for the "YCWA" scenario and FWS/CDFW/FWN's recommendation for the "FWS/CDFW/FWN" scenario.

[5] YCWA's full proposal as described in YCWA's Amended FLA, and the FWS, CDFW, and FWN's full proposals as described in their Comment Letters.

[6] KEY: CM = Criterion Met; CNM = Criterion Not Met; TC = Tunnel Closed; TNC = Tunnel Not Closed. The criterion is, after April 1, water would be diverted from the Middle Yuba River and New Bullards Bar Dam would spill.

Although the FWS, CDFW, and FWN recommendation provides that YCWA may re-open the tunnel if the following DWR's April or May forecast is for a Below Normal or drier WY (i.e., less than 2,191,000 ac-ft), this does not occur in any of the years shown in Table 7. While the intent of this recommendation may have been to provide relief in drier years, it is never actually triggered.

c. The Purpose of the Four Additional Spring Closures Would Rarely Be Met and Would Unnecessarily Spill 265,499 Ac-Ft that Would Otherwise Be Stored in New Bullards Bar Reservoir.

The self-described intent of the FWS, CDFW, and FWN spring tunnel closure recommendation is to avoid diverting water from the Middle Yuba River only to spill it at New Bullards Bar Dam. This overall intent would not be met in three of the four years.

Table 8 shows that, except in 1996, the vast majority of water that would have been diverted from the Middle Yuba River to New Bullards Bar Reservor under the FWS, CDFW, and FWN recommendation would not have spilled at New Bullards Bar Dam. As shown in Table 8, in 1971, of the 130,321 ac-ft that would have been diverted from the Middle Yuba River into New Bullards Bar Reservoir, only 9,231 ac-ft would have spilled at New Bullards Bar Dam. In 2000, none of the water that would have been diverted would have spilled at New Bullards Bar Dam.

Table 8. Amount of water that would be diverted from the Middle Yuba River in the three to four additional years[1] that would occur under the FWS, CDFW, and FWN recommendations as compared to YCWA's proposed condition.

Year	Middle Yuba River Diversion from Apr 1 through Sep 30		New Bullards Bar Dam Spill from Apr 1 through Sep 30		Volume of Middle Yuba River Water that Would Remain in New Bullards Bar Reservoir Assuming All Spills at New Bullards Bar Dam Would be Middle Yuba River Water (ac-ft)
	Volume (ac-ft)	Days (number)	Volume (ac-ft)	Days (number)	
1996	122,126	183	138,702	12	None
1993	104,510	183	16,350	13	88,160
1971	130,321	183	9,231	8	121,090
2000	56,249	182	0	0	56,249
Total	**413,206**	**731**	**164,283**	**33**	**265,499**

[1] The additional years are identified in Table 7.

Overall the modeling shows that the FWS, CDFW, and FWN spring tunnel closure recommendation results in 265,499 ac-ft of water that would not be diverted into New Bullards Bar Reservoir and not spilled. This is 265,499 ac-ft of water that would no longer be available for generation at the New Colgate Powerhouse because the water would bypass the powerhouse by traveling down the Middle Yuba River.

d. The Cost for Additional Spring Tunnel Closures Significantly Outweighs the Minimal Environmental Benefits.

FWS, CDFW, and FWN did not provide an estimated cost to implement the recommendation other than as discussed below, so YCWA developed the cost estimate.

Table 9 shows that the four additional years in which the FWS, CDFW, and FWN recommendation would close the tunnel in spring would reduce generation by 1.0 percent at a cost over 30 years of $10,364,400, as compared to YCWA's proposed condition. This means that the four additional tunnel closures in the FWS, CDFW, and FWN recommendation as compared to YCWA's proposed condition would each cost over $2,500,000—and half of those additional tunnel closures would only minimally reduce New Bullards Bar Dam spill, while one of these would occur when New Bullards Bar Dam would not spill at all.[262]

Table 9. Generation-related costs of the FWS, CDFW, and FWN recommendation and YCWA's proposed condition.

Alternative	Average Annual Generation			Average Annual Cost		
	Value (MWh/yr)	Change (%) Compared to:		Value ($)	Change ($) Compared to:	
		Base Case[1]	YCWA's Proposal		Base Case[1]	YCWA's Proposal[1]
SPRING TUNNEL CLOSURE[1]						
Base Case	1,418,046	--	--	$51,388,294	--	--
YCWA's Proposed Condition AR11	1,400,014	-1.3%	--	$50,970,241	-$418,053 ($12,541,605 over 30 yrs)	--
FWS, CDFW, and FWN Recommendation	1,384,984	-2.3%	-1.0%	$50,624,761	-$763,533 $22,906,002 over 30 yrs)	-$345,480 ($10,364,397 over 30 yrs)

[1] Base Case conditions in each scenario with the only change being YCWA's proposed spring tunnel closure condition for the "YCWA" scenario and FWS/CDFW/FWN's recommendation for spring closure of the Lohman Ridge Tunnel for the "FWS/CDFW/FWN" scenario.

FWS, CDFW, and FWN each included in their comments a similar economic analysis regarding the power generation value per ac-ft of water diverted from the Middle Yuba River under different flow scenarios, though they did not file their supporting

[262] Refer to Appendix 6 of this Response for YCWA's model runs.

data.[263] YCWA did not perform a detailed review of their economic analysis and firmly believes its approach to valuing Project power used in the Amended FLA and this Response is appropriate and transparent. However, YCWA notes that the FWS, CDFW, and FWN approach supports YCWA's conclusion that the cost for the four Above Normal WY tunnel closures in spring would be significant. CDFW includes a table of the agencies' estimate of the value of diverted water by WY. It shows eight years on its plot, and they range from approximately $14 to $55, with an average of approximately $33.[264] CDFW states that in Above Normal WYs, water diverted from the Middle Yuba River to New Bullards Bar Dam if not spilled at the dam has an average ac-ft value of approximately $33.[265] At this value and using the volumes in Table 9, the Above Normal WY spring closure would have reduced power generation as much as $3,995,970 in 1971 (i.e., $33/ac-ft times 121,090 ac-ft), which is comparable to YCWA's assessment that on average, the four Above Normal WY tunnel closures would cost about $2,500,000. FWS, CDFW, and FWN have not demonstrated any environmental benefits of these additional tunnel closures that would justify over $10,000,000 in lost generation cost.

e. The FWS, CDFW, and FWN Recommendation for Fall Closures of the Tunnel Would Result in 17 More Closures in a 41-Year Period, as Compared to YCWA's Proposed Condition, and Most of These Additional Tunnel Closures Would Be in Dry and Critically Dry WYs When Entrainment Would Be Lowest.

As described above, because FWS, CDFW, and FWN did not include in their comments a model of their proposed condition, YCWA ran its Ops Model to determine

[263] DOI Comments at 80-82; CDFW Intervention, Enclosure A at 151 (Section 3.4.13); FWN Comments at 77.

[264] CDFW Intervention, Enclosure A at 154 (Figure 3.4.13-13).

[265] *Id*.

how often the Lohman Ridge Diversion Tunnel would be closed in fall under their recommendation as compared to YCWA's proposed condition.

Over the 41-year-long period of record, the FWS, CDFW, and FWN recommendation and YCWA's proposed condition would each close the tunnel in fall in 24 WYs, most of which are Wet, Above Normal, and Below Normal WYs. Table 10 shows the additional 17 WYs in which the FWS, CDFW, and FWN recommendation would close the tunnel in fall. Thirteen of these 17 additional tunnel closures would be in Dry and Critically Dry WYs, when water for generation and power is most valuable and entrainment is lowest.

Table 10. Years in which the FWS, CDFW, and FWN recommendation would close the Lohman Ridge Diversion Tunnel in fall and YCWA's proposed condition would not.

Water Year	Previous May (WY Type)	End-of-September NBB Reservoir Storage (ac-ft)	Oct – Dec Middle Yuba River Diversion (ac-ft)
1978	CD	212,869	13,937
1989	CD	410,539	9,010
1977	CD	457,401	92
1988	CD	475,811	9,131
1993	D	481,733	7,107
2002	D	486,869	14,783
1995	D	495,463	11,204
2008	D	527,209	1,704
2009	D	554,407	4,780
1982	D	574,008	59,558
1986	D	619,702	10,366
1991	D	656,056	2
1992	D	657,455	1,563
2005	BN	517,195	5,972
1971	AN	509,378	29,260
1998	W	542,080	5,221
1970	W	551,051	16,042
Total = 17 Years (4 CD WYs, 9 D WYs, 1 BN WY, 1 AN WY and 2 W WY)			

Source: Scenario 12 (Complete Amended FLA Run)

f. Additional Fall Closures of the Tunnel Would Have Minor Entrainment Benefits.

FWS, CDFW, and FWN state the primary purpose of their recommendation for the fall tunnel closure would be to protect rainbow trout from entrainment into the Lohman Ridge Diversion Tunnel. The record shows that, in fact, there is not a significant

entrainment problem justifying an annual fall closure of the Lohman Ridge Diversion tunnel. As a summary:

- ESA-listed fishes are not entrained. None occurs in the vicinity of the intake.
- Anadromous fishes are not entrained. None occurs in the vicinity of the intake.
- Special-status species have a very low likelihood of being entrained. Western pond turtle (*Clemmys marmorata*) and hardhead minnow (*Mylopharodon conocephalus*) may occur in the area, but none has been observed in the vicinity of the intake.
- Any entrained fishes would not be injured or suffer mortality. The tunnel does not terminate in a powerhouse or cone valve, but in an open channel into Oregon Creek resulting in nothing greater than displacement (assuming the individual could not return by swimming against diversion flows, which may occur depending on lifestage, and was observed more than once in the entrainment study performed for this relicensing).
- Unique fish communities do not occur in the area. In fact, the habitat in the area of the intake is not coldwater habitat as defined by FWS, CDFW, and FWN as requiring less than 20°C water temperatures.[266] As described in Section III.C.2.a of this Response, water temperature in the vicinity of the intake exceeds 20°C for most of July and August each year.
- The fishery in the vicinity of the intake has limited recreation/economic value due to marginal access, and is not a subsistence fishery.
- Based on YCWA's relicensing study, which FWS, CDFW, and FWN state they believe is indicative of entrainment in drier WYs, the entrainment rate is extremely low—0.54 tagged fish per day, or 1.0 fish every other day.[267] This is much less than the five rainbow trout a day that a licensed angler can catch and keep legally on this river.
- YCWA estimated that 641 rainbow trout may have been in the tagged area, and of these, 143 may have been entrained over approximately one year. YCWA's calculations are not repeated here but can be viewed in the Amended FLA.[268]

Therefore, any entrainment avoided by the additional closures would be minimal.

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[266] DOI Comments at 86.

[267] Amended FLA, Exh. E at E3.3.3-65 (Section 3.3.3.1.2).

[268] *Id*.

g. The Level of Entrainment of 0.3 Percent Is *De Minimis* When Comparing Entrainment to the Middle Yuba River Fish Population.

This level of entrainment would have a *de minimis* effect on the overall population of rainbow trout in the Middle Yuba River, and YCWA's proposed condition more than mitigates for any adverse effect.

To develop a rough estimate of the number of rainbow trout in the Middle Yuba River, YCWA used the best data available, which is summarized in the Amended FLA.[269] YCWA's approach was:

- Average the 2008, 2009, 2012, and 2013 electrofishing data for rainbow trout per mile density in the 34.4 miles of Middle Yuba River between the Our House Diversion Dam Impoundment and Nevada Irrigation District's Jackson Meadows Dam. This yields an average density of 1,370.3 rainbow trout per mile.

- Multiply this average density times the 34.4 miles between Our House Diversion Dam Impoundment and the Jackson Meadows Dam, which yields an estimate of 47,136 rainbow trout in this 34.4-mile-long section of the Middle Yuba River.

- Average the 2012 and 2013 electrofishing data for rainbow trout per mile density in the 12.6 miles of Middle Yuba River between the Our House Diversion Dam and the confluence of the Middle Yuba River and the North Yuba River. This yields an average density of 214.5 rainbow trout per mile.

- Multiply this average density times the 12.6 miles between Our House Diversion Dam Impoundment and the confluence, which yields an estimate of 2,703 rainbow trout in this 12.4-mile-long section of the Middle Yuba River.

- Summing 47,136 and 2,703 yields an estimate of 49,839 rainbow trout in the Middle Yuba River.

Using these numbers, the overall loss of Middle Yuba River rainbow trout due to entrainment into the Lohman Ridge Diversion Tunnel intake compared to the total population is about 0.3 percent (i.e., 143 fish out of 49,839 fish). Although this approach is somewhat simplistic (e.g., averages over multiple years and does not include fish in the

[269] *Id*. at E3.3.3-120 (Figure 3.3.3-43).

tributaries), it does provide a ballpark estimate which indicates a *de minimis* effect on the Middle Yuba River rainbow trout population.

FWS, CDFW, and FWN compare the entrainment to the fish population in the general vicinity of the Our House impoundment to show an impact to the fish population. YCWA believes that the better measure of entrainment impact on the fish population is the comparison of entrained fish to the overall population of rainbow trout in the Middle Yuba River, which is a *de minimis* 0.3 percent.

h. The Use of Gerstung (1973) and North Yuba River Data References to Conclude the Fish Populations Near the Intake Are Depressed Are Misleading.

YCWA disagrees with CDFW that coldwater fish populations are depressed in the lower Middle Yuba River as a result of entrainment.[270] CDFW's reference to Gerstung (1973)[271] reflects reliance on a dated source that is frequently misapplied. Gerstung's 1973 study used aggressive methods including rotenone, a fish poison, which cannot be conducted in modern-era research. The study sampled numerous locations in each stream and focused on headwaters to get a full representation of coldwater fishes. Addressing yield, Gerstung suggested that a fish density between 300 to 500 trout per mile (on average) was representative of a small stream and 200 to 1,500 trout per mile was representative of a large river. Gerstung's general fish density guidelines are comparable to past reported fish density in the Middle Yuba River, when considering *all* recent fish population sampling completed in 2008 and 2009 further upstream for the Yuba-Bear and Drum-Spaulding relicensings along with 2012 and 2013 sampling conducted by YCWA,

[270] CDFW Intervention, Enclosure A at 134 (Section 3.4.13).

[271] Gerstung, E.R., 1973. Fish population and yield estimates from California trout streams. Cal-Neva Wildlife, 1973, pp.9-19.

discussed above. Addressing biomass, the pounds per acre estimate Gerstung provided also benefited from being able to rotenone the stream (i.e., sacrifice and collect everything in the sample section). The pounds per acre estimate requires handling each fish to obtain weight information. Collecting adult trout by electrofishing is challenging and ineffective in moderate or larger habitat units and can often result in injury or mortality. While moderate injury or mortality was once acceptable for scientific monitoring, today visual monitoring (snorkeling) is required for larger habitat units to avoid mortality, injury or even excessive stress. Snorkeling is passive, does not result in handling fish, and negates the direct collection of pounds per acre data. Therefore, the current sampling data could not be completely representative of pounds per acre estimates to compare directly to Gerstung's estimates. It is valid to assess biomass between sites that were recently sampled to obtain relative comparisons, because similar methods and approach were used. However, to compare recent biomass sampling to Gerstung's historical results would be inaccurate. CDFW is aware of these modern sampling challenges and limitations, given that it issues the sampling permits, limits sampling fish mortality, and generally defines what can be done. Thus, it is somewhat disingenuous to rely on a 1973 report that is not comparable to the modern era.

Middle Yuba River rainbow trout densities were 3,341 and 3,919 fish per mile at RM 27 in 2008 and 2009, respectively, and water temperatures were approximately 18°C to 19°C—which are similar conditions to those sampled by Gerstung (1973). However, as YCWA's sampling moved into lower Middle Yuba River sections (i.e., RMs 12 and 13) where water naturally warmed (i.e., warmer than 20°C), the density of coldwater fish species reduced to less than 500 fish per mile, and cooler water species became more

abundant.[272] The progression of cold water to warm water in a stream is paralleled by shifts in fish assemblage and density from coldwater to warmwater species. This change in rainbow trout density from upstream to the vicinity of the tunnel intake is not a function of entrainment loses, but what is expected in any Sierra Nevada stream as water temperatures warm.

Similarly, CDFW's use of the North Yuba River above New Bullards Bar Dam as a "reference" for the Middle Yuba River near Our House Diversion Dam is inappropriate. The greatest density of fish in the North Yuba River was in a section of river that was significantly larger than the Middle Yuba River. When comparing similar sized stream sections, the consistent density of over 3,000 fish per mile at RM 27 on the Middle Yuba River appears to be of a similar or possibly greater density than on the North Yuba River. Thus, the comparison does not support a claim of depressed coldwater fish populations in the Middle Yuba River.

CDFW's claim that the reduced number of rainbow trout young-of year ("YOY") downstream of Our House Diversion Dam when compared to upstream is a result of loss of recruitment due to entrainment is not well founded. Our House Diversion Dam is relatively low in the Middle Yuba River, where temperatures are naturally warming. Spawning naturally occurs in upper sections of streams where cooler water occurs. The strong presence of YOY above Our House Diversion Dam only highlights that the stream is ecologically functional and healthy. In the event that large numbers of YOY were being entrained, sampling in and around the diversion pool would have captured individuals prior to entrainment. This was not observed. CDFW also ignores the benefit

[272] Amended FLA, Exh. E at E3.3.3-43 (Figure 3.3.3-4).

that Our House Diversion Dam blocks introduced warmwater fishes from moving into spawning reaches and further reducing native populations. Bass populations, which would feed aggressively on rainbow trout YOY, rivaled rainbow trout populations below Our House Diversion Dam.

i. Permanent Fall Tunnel Closure Is Not Needed to Protect Migrating Fishes.

FWS's statement that tunnel closures would protect a fall migratory period for rainbow trout implies that all rainbow trout are displaying annual migratory downstream movement. It is true that as temperatures cool in the fall and precipitation occurs, rainbow trout may redistribute. High-flow events can also displace individuals. It is important to be clear that this movement or activity is not to be compared to anadromous outmigrant behavior that is required for a steelhead to complete its life history. Landlocked riverine-type rainbow trout do not make annual mass migrations—some move very little—and redistributive movement is not all necessarily downstream.[273] Some rainbow trout have shown fidelity to making predictable lake-migrations when the habitat is available; however, riverine-type rainbow trout may or may not display increased down or upstream movement in the fall.[274] Therefore, there is no reason to expect that rainbow trout are migrating downstream toward Our House Diversion Dam resulting in significant entrainment. In fact, YCWA's relicensing study showed that very few of the tagged fish originated from upstream of the tunnel intake.

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[273] Meka, J.M., Knudsen, E.E., Douglas, D.C. and Benter, R.B., 2003. Variable migratory patterns of different adult rainbow trout life history types in a southwest Alaska watershed. Transactions of the American Fisheries Society, 132(4), pp.717-732.

[274] *Id.*

j. The Cost for Additional Fall Tunnel Closures Is Excessive.

As described above, the FWS, CDFW, and FWN did not provide an estimated cost to implement the recommendation other than as discussed below, so YCWA developed the cost estimate. Table 11 shows that YCWA's proposal for fall tunnel closures would result in a 0.6 percent loss in generation at a Project cost of $7,647,808 over 30 years. The FWS, CDFW, and FWN fall tunnel closure proposal would result in a 0.9 percent loss in generation at a Project cost of $11,795,435. Since both YCWA's proposed condition and the FWS, CDFW, and FWN recommendation would close the Lohman Ridge Diversion Tunnel from October through December in 24 out of 41 years (i.e., about 60 percent of the years in the 41-year-long period of record), the difference between the two costs—$4,147,627—is attributable to the fact that and the FWS, CDFW, and FWN recommendation would close the tunnel in fall in an additional 17 years, most of which are Critically Dry and Dry WYs when entrainment would be the lowest.

Table 11. Generation-related costs of the FWS, CDFW, and FWN recommendation and YCWA's proposed condition for fall tunnel closures.

Alternative	Average Annual Generation			Average Annual Cost		
	Value (MWh/yr)	Change (%) Compared to:		Value ($)	Change ($) Compared to:	
		Base Case[1]	YCWA's Proposal		Base Case[1]	YCWA's Proposal[1]
SPRING TUNNEL CLOSURE[1]						
Base Case	1,418,046	--	--	$51,388,294	--	--
YCWA's Proposed Condition AR11	1,409,906	-0.6%	--	$51,133,367	-$254,927 ($7,647,808 over 30 yrs)	--
FWS', CDFW's & FWN's Recommendation	1,405,773	-0.9%	-0.4%	$50,995,113	-$393,181 ($11,795,435 over 30 yrs)	-$138,254 ($4,147,627 over 30 yrs)

[1] Base Case conditions in each scenario with the only change being YCWA's proposed spring tunnel closure condition for the "YCWA" scenario and FWS/CDFW/FWN's recommendation for fall closure of the Lohman Ridge Tunnel for the "FWS/CDFW/FWN" scenario.

As stated above, FWS, CDFW, and FWN each included in their comments their estimate of the value per ac-ft of water diverted from the Middle Yuba River under

different flow scenarios, though they did not file their supporting data.[275] YCWA notes that in CDFW's comments, it states that, in Dry WYs, water diverted from the Middle Yuba River to New Bullards Bar Dam if not spilled at the dam would have an average ac-ft value of approximately $46.[276] At this value, the fall closure in 1982 alone would have a reduced power generation as high as $2,739.668 (i.e., $46/ac-ft times 59,558 ac-ft in Table 10).

In summary, both YCWA and FWS, CDFW, and FWN recommend to close the Lohman Ridge Diversion Tunnel from October through December in 24 out of 41 years, most of which are Wet, Above Normal, and Below Normal WYs. FWS, CDFW, and FWN would close the tunnel in all years, which would add Dry and Critically Dry WYs, citing concern about entrainment loses. YCWA estimates that the impact on the Middle Yuba River rainbow trout population due to entrainment is about 0.3 percent and none of these fish would be injured—just transported to Oregon Creek in the Middle Yuba Basin—and no unique resources (i.e., ESA-listed or anadromous fishes or an economically valuable or subsistence fishery) would be affected. The FWS, CDFW, and FWN recommendation would add additional $4,147,620 to the fall tunnel closure costs, as compared to YCWA's proposed condition. FWS, CDFW, and FWN have not provided substantial evidence of the expected benefits that warrant this added cost.

k. The Commission Should Not Adopt the Spring and Fall Tunnel Closure Recommendations.

The Commission should not adopt the recommendation but, instead, adopt YCWA's proposed condition, which was seconded by FS, that provides a reasonable

[275] CDFW Intervention, Enclosure A at 151 (Section 3.4.13); DOI Comments at 80-82; FWN Comments at 77.

[276] CDFW Intervention, Enclosure A at 154 (Figure 3.4.13-13).

level of fall tunnel closures at two-thirds of the cost of the FWS, CDFW, and FWN recommendation. YCWA Condition AR11 should be accepted because the minimal benefits of the FWS, CDFW, and FWN recommendation do not justify the costs.

- The intent of the FWS, CDFW, and FWN Spring Closure recommendation is to not divert Middle Yuba water into New Bullards Bar Reservoir when New Bullards Bar would spill. While their recommendation adds four more closures than YCWA Proposed Condition AR11, these closures would result in a loss of 265,499 ac-ft of water that, with this recommendation, would not be diverted into New Bullards Bar Reservoir and that, without this recommendation, would not have spilled from the reservoir.

- This 265,499 ac-ft of water that would bypass the New Colgate Powerhouse with this recommendation represents a $10,364,400 cost to generation revenues over 30 years compared to YCWA Proposed Condition AR11. On average, each tunnel closure would cost about $2,500,000.

- Additional Fall Closures of the Tunnel would have minor entrainment benefits. De minimis entrainment impacts of about 0.3 percent on overall Middle Yuba River rainbow trout population do not support any additional protective measures.

- The FWS, CDFW, and FWN recommendation would add an additional $4,147,620 over 30 years to the fall tunnel closure costs, as compared to YCWA's proposed condition.

- FWS, CDFW, and FWN have not provided substantial evidence of the expected benefits that warrant this added cost.

2. Our House and Log Cabin Diversion Dam Mitigation Plan

YCWA has proposed a number of conditions to mitigate and enhance beneficial uses upstream of Englebright Dam. These include conditions for minimum flows (AR1), controlling spills at diversion dams (AR2 and AR12), closing diversion tunnels (AR11), and providing whitewater boating flows (RR3), among others.[277] In addition, YCWA has proposed monitoring, including for water temperature (WR7), water quality (WR8), and

[277] Amended FLA, Exh. E, App. E2 at E2-29 to E2-39 (AR1, AR2), E2-67 to E2-76 (AR11, AR12), E2-80-82 (RR3).

biological and geomorphic processes (AR7).[278] Many of these conditions are supported by the FS, FWS, CDFW, and FWN.[279] YCWA estimated the cost to implement these conditions is more than $17,000,000 over 30 years,[280] plus lost generation costs.[281]

SWRCB's preliminary WQC Condition 10 provides that it will likely require YCWA, in consultation with relevant resource agencies, to develop and implement a plan to mitigate for Project-related impacts to beneficial uses in the Middle Yuba River and Oregon Creek, including such impacts as barriers to fish and wildlife migration, fish and wildlife entrainment, and impaired hydrographs. SWRCB's condition provides that mitigation would be commensurate to the level of impact, and could include restoration or enhancement of local aquatic habitat, diversion tunnel closures, and other avoidance and minimization strategies. The SWRCB also states that monitoring may be required to document mitigation effectiveness. The SWRCB does not include any additional detail, including costs to implement the condition, or why it is needed in addition to YCWA's proposed conditions. YCWA estimates the cost to develop the Our House and Log Cabin Diversion Dam Mitigation Plan alone would be between $75,000 and $150,000, depending on the level of engineering required in the plan. However, the true cost of the SWRCB's condition would be in consulting with the agencies regarding undetermined conditions and implementing the plan. Given the lack of detail in the preliminary condition, the implementation cost is impossible to estimate at this time.

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[278] Amended FLA, Exh. E, App. E2 at E2-28 to E2-29 (WR7, WR8), E2-47 to E2-50 (AR7).

[279] *See* Appendix 2.

[280] Amended FLA, Exh. E at E4-8, E4-10, E4-12, E4-13 (Table 4.3-2).

[281] With regard to lost generation costs, YCWA did not break these down by condition in its Amended FLA, but estimated the total lost generation to implement all of its flow-related conditions to be $39,260,310 over 30 years (i.e., $1,308,677/year). *Id*., Exh. E at E7-2 to E7-10 (Table 7.0-1).

YCWA requests that the Commission and the SWRCB accept YCWA's proposals to mitigate and enhance beneficial uses upstream of Englebright Dam, and forego imposing any additional requirements as part of a Log Cabin and Our House Diversion Dam Mitigation Plan. YCWA submits that its suite of measures for these stream reaches represents the best balance of cost-effective environmental measures and Project water supply and power production.

E. Recreation Impacts of Flow Recommendations

In addition to the numerous other adverse effects of the FWS, CDFW, and FWN flow proposal and the NMFS flow proposal described earlier in this Response, their recommendations would have serious adverse impacts on recreation at New Bullards Bar Reservoir. By drawing more water from the reservoir, which would lower the water surface elevation ("WSE"), their flow proposals would reduce the number of days that recreationists could use the two boat ramps on the reservoir, reduce the utilization of the developed campgrounds, and increase crowding on the reservoir by reducing the reservoir surface area.

1. The FWS, CDFW, and FWN Complete Flow Recommendations and the NMFS Complete Flow Recommendation Would Reduce Boater Access to New Bullards Bar Reservoir in Drier Years by Two to Three Months.

As background, the minimum functional use WSE for the Cottage Creek and Dark Day boat ramps at New Bullards Bar Reservoir are 1,853.0 feet and 1,758.0 feet, respectively. A boat ramp's functional WSE is that elevation from the constructed top of

the ramp to three feet above the lower end of the constructed ramp.[282] Historically, the Dark Day Boat Ramp has been functional year-round, and the Cottage Creek Boat Ramp has usually been functional from the May through September peak recreation period, except in Dry WYs when the reservoir is typically low. Extending either ramp would be difficult, if not impossible, due to topography.

Table 12 shows that the FWS, CDFW, FWN, and NMFS flow proposals would result in the reservoir WSE being below the Cottage Creek Boat Ramp for the entire peak recreation season in Critically Dry WYs, and in August and September in Dry WYs. In comparison, the YCWA proposal would result in the Cottage Creek Boat Ramp being non-functional in only Critically Dry WYs from June through September. These additional periods when the Cottage Creek Boat Ramp would be unavailable would have an adverse effect on reservoir recreation by reducing public access to the reservoir and marina facilities and services; as well as significantly increasing crowding in the parking area and launch ramp at Dark Day Boat Ramp.

[282] California State Parks Division of Boating and Waterways (CDBW). 1991. Layout, Design and Construction Handbook for Small Craft Boat Launching Facilities. Sacramento, California. 40 pp.

Table 12. Comparison of the average end-of-month water surface elevation (feet) at New Bullards Bar Reservoir for the YCWA proposal, the FWS, CDFW, and FWN Complete Flow Recommendations, and the NMFS Complete Flow Recommendation.[1]

Water Year Type	Scenario	Average End-of-Month Water-Surface Elevation (ft) During Peak Recreation Season (May-Sep)				
		May	Jun	Jul	Aug	Sep
Wet	YCWA Proposal	1,947.9	1,939.5	1,917.0	1,889.9	1,880.3
	FWS/CDFW/FWN Complete Flow Recommendation	1,943.7	1,935.5	1,913.1	1,886.1	1,876.4
	NMFS Complete Flow Recommendation	1,943.9	1,935.8	1,913.2	1,886.1	1,875.9
Above Normal	YCWA Proposal	1,944.1	1,933.0	1,908.8	1,887.3	1,877.7
	FWS/CDFW/FWN Complete Flow Recommendation	1,937.7	1,927.7	1,904.5	1,883.8	1,874.2
	NMFS Complete Flow Recommendation	1,936.1	1,926.1	1,901.9	1,880.6	1,870.8
Below Normal	YCWA Proposal	1,939.3	1,926.2	1,904.3	1,886.1	1,876.2
	FWS/CDFW/FWN Complete Flow Recommendation	1,927.6	1,915.6	1,893.6	1,875.5	1,865.4
	NMFS Complete Flow Recommendation	1,934.1	1,922.1	1,900.0	1,882.0	1,872.1
Dry	YCWA Proposal	1,913.7	1,902.3	1,883.3	1,866.3	1,855.8
	FWS/CDFW/FWN Complete Flow Recommendation	1,897.4	1,885.9	1,866.2	1,848.4	1,837.5
	NMFS Complete Flow Recommendation	1,896.5	1,883.5	1,863.7	1,845.9	1,834.9
Critically Dry	YCWA Proposal	1,855.8	1,843.0	1,823.5	1,807.0	1,795.4
	FWS/CDFW/FWN Complete Flow Recommendation	1,849.0	1,835.9	1,815.7	1,798.6	1,786.5
	NMFS Complete Flow Recommendation	1,854.8	1,841.6	1,822.5	1,806.6	1,797.4

[1] Red shading indicates the WSE is below the functional elevation of the Cottage Creek Boat Ramp (i.e., below 1,853.0 ft).

2. The FWS, CDFW, and FWN Complete Flow Recommendations and the NMFS Complete Flow Recommendation Would Reduce the Utilization of Developed Campgrounds.

A primary recreational use at New Bullards Bar Reservoir is developed camping at three vehicle-accessed campgrounds and two boat-in campgrounds. Figure 14 shows that as the WSE goes down, so does recreation at these campgrounds.

Figure 14. 2012 New Bullards Bar Reservoir campground occupancy rates relative to the WSE.

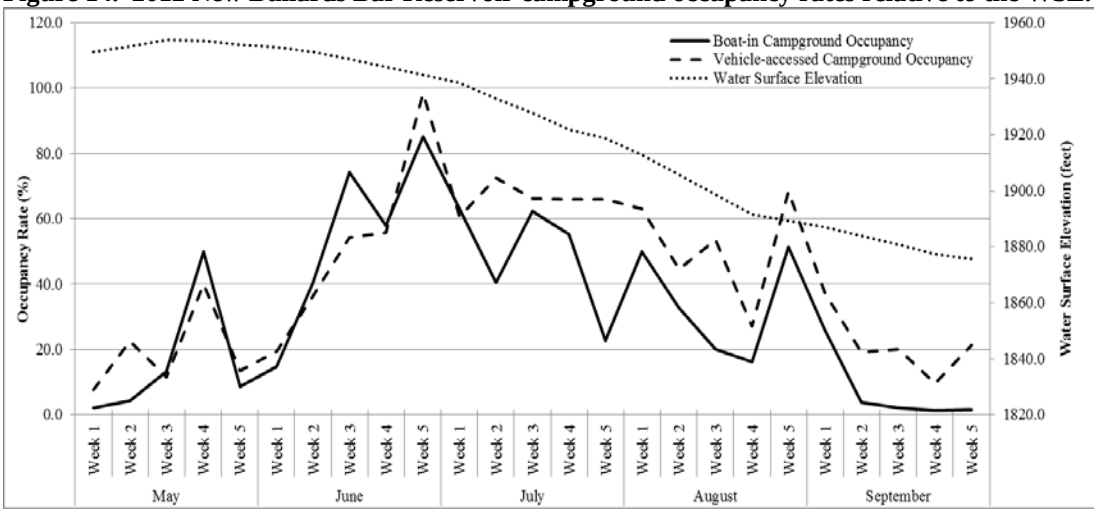

Table 13 shows that the FWS, CDFW, FWN, and NMFS flow proposals would reduce the WSE an additional four feet compared to the YCWA proposal in Wet WYs, anadditional 4.6 to 7.1 feet in Above Normal WYs, an additional 4.4 to 10.9 feet in Below Normal WYs, and an additional 17.2 to 19.3 feet in Dry WYs. This would reduce the utilization of the developed campgrounds, which in turn would reduce the overall use of the reservoir significantly. In its Proposed Condition RR1, YCWA has proposed to invest more than $27,000,000 in existing, expanded and new campgrounds over the new license term. These significant and costly improvements may not be justified if demand for the camping facilities drops with further reduced WSEs.

Table 13. Difference in the average end-of-month water surface elevation (feet) at New Bullards Bar Reservoir for the YCWA proposal, the FWS, CDFW, and FWN Complete Flow Recommendations and the NMFS Complete Flow Recommendation relative to the Base Case.

Water Year Type	Scenario	Average Difference in the End-of-Month Water-Surface Elevation (ft), Relative to the Base Case					
		May	Jun	Jul	Aug	Sep	Average
Wet	YCWA Proposal	-0.4	-1.1	-1.1	-0.7	-0.8	-0.8
	FWS/CDFW/FWN Complete Flow Recommendation	-4.7	-5.0	-5.1	-4.6	-4.7	-4.8
	NMFS Complete Flow Recommendation	-4.4	-4.8	-4.9	-4.5	-5.2	-4.8
Above Normal	YCWA Proposal	-0.3	-0.5	-0.7	-0.5	-0.5	-0.5
	FWS/CDFW/FWN Complete Flow Recommendation	-6.7	-5.8	-5.0	-4.0	-4.0	-5.1
	NMFS Complete Flow Recommendation	-8.2	-7.3	-7.6	-7.2	-7.4	-7.5
Below Normal	YCWA Proposal	-0.2	-0.4	-0.5	-0.4	-0.3	-0.4
	FWS/CDFW/FWN Complete Flow Recommendation	-11.9	-11.0	-11.2	-11.1	-11.1	-11.3
	NMFS Complete Flow Recommendation	-5.4	-4.5	-4.8	-4.5	-4.4	-4.7
Dry	YCWA Proposal	-0.8	-0.7	-0.5	-0.2	-0.1	-0.5
	FWS/CDFW/FWN Complete Flow Recommendation	-17.1	-17.0	-17.7	-18.2	-18.4	-17.7
	NMFS Complete Flow Recommendation	-18.0	-19.4	-20.2	-20.7	-21.0	-19.8
Critically Dry	YCWA Proposal	4.2	5.1	5.3	5.6	3.6	4.8
	FWS/CDFW/FWN Complete Flow Recommendation	-2.7	-2.1	-2.5	-2.8	-5.2	-3.0
	NMFS Complete Flow Recommendation	3.1	3.7	4.4	5.2	5.7	4.4

3. The FWS, CDFW, and FWN Complete Flow Recommendations and the NMFS Complete Flow Recommendation Would Increase Reservoir Crowding.

New Bullards Bar Reservoir provides 4,760 acres of surface area at normal maximum water surface elevation ("NMWSE") for boating and is managed for a

maximum capacity of 420 boats-at-one-time ("BAOT"). Based on BAOT counts for 2010 through 2012, the boating use levels are within the 420 BAOT capacity, on average, but approaching 70 percent of capacity on non-holiday weekends and near or exceeding capacity on peak use days. While this level of use is currently within the maximum carrying capacity threshold, it only accounts for the existing recreation facility build out and not the expansions and new facilities in YCWA Proposed Condition RR1. To ensure that YCWA continues to provide a quality and safe boating experience as new and expanded facilities are constructed, Condition RR1 includes a reservoir monitoring program that assesses boating use versus the maximum carrying capacity every six years.

Table 14 shows that during the May through September peak use period, the FWS, CDFW, FWN, and NMFS flow proposals would reduce the amount of usable water surface area by five times more than the YCWA proposal in Wet WYs, 10 to 15 times more in Above Normal WYs, 12 to 29 times more in Below Normal WYs, and 34 to 39 times more in Dry WYs. This further reduction in usable water surface area would result in increased reservoir crowding and impact the quality and safety of the boating experience, which is a principal recreational use at New Bullards Bar Reservoir. Historically, in drier WYs, New Bullards Bar Reservoir maintains higher WSE than other reservoirs in northern California resulting in a higher demand for recreation. Reducing WSE in New Bullards Bar Reservoir in dry WYs by 34 to 39 times more than currently occurs would have an adverse effect on regional recreation.

Table 14. Difference in the average end-of-month water surface area (acres) at New Bullards Bar Reservoir for the YCWA proposal, the FWS, CDFW, and FWN Complete Flow Recommendations and the NMFS Complete Flow Recommendation relative to the Base Case.

Water Year Type	Scenario	Average Difference in the End-of-Month Water-Surface Elevation (ft), Relative to the Base Case					
		May	Jun	Jul	Aug	Sep	Average
Wet	YCWA Proposal	-6.8	-17.2	-16.5	-9.2	-10.3	-12.0
	FWS/CDFW/FWN Complete Flow Recommendation	-68.8	-71.8	-67.8	-58.1	-58.7	-65.1
	NMFS Complete Flow Recommendation	-64.6	-68.3	-65.9	-57.4	-65.5	-64.3
Above Normal	YCWA Proposal	-4.0	-7.1	-10.6	-6.7	-6.6	-7.0
	FWS/CDFW/FWN Complete Flow Recommendation	-98.9	-83.1	-68.2	-52.0	-49.9	-70.4
	NMFS Complete Flow Recommendation	-122.1	-102.9	-102.7	-92.7	-93.3	-102.8
Below Normal	YCWA Proposal	-3.1	-5.5	-7.0	-5.8	-4.5	-5.2
	FWS/CDFW/FWN Complete Flow Recommendation	-173.6	-153.5	-149.8	-143.8	-140.4	-152.3
	NMFS Complete Flow Recommendation	-78.5	-62.5	-63.8	-57.8	-54.8	-63.5
Dry	YCWA Proposal	-11.5	-9.6	-7.2	-3.5	-2.2	-6.8
	FWS/CDFW/FWN Complete Flow Recommendation	-240.7	-232.1	-231.9	-230.0	-228.4	-232.6
	NMFS Complete Flow Recommendation	-253.4	-266.2	-265.9	-263.9	-261.7	-262.2
Critically Dry	YCWA Proposal	52.2	61.6	63.0	66.5	44.2	57.5
	FWS/CDFW/FWN Complete Flow Recommendation	-35.6	-28.0	-29.6	-33.7	-60.0	-37.4
	NMFS Complete Flow Recommendation	37.5	43.0	50.4	60.0	64.8	51.2

These significant adverse impacts on recreation are another important reason the Commission should reject the FWS, CDFW, FWN, and NMFS flow proposals.

F. Fish Passage

1. The Commission Should Reject Reservations of Authority to Recommend Fish Passage under FPA Section 10(j)

CDFW filed a 10(j) recommendation reserving its authority to recommend fish passage in the future.[283] The Commission should reject this recommendation. A reopener provision does not meet the criteria for a 10(j) recommendation because it is not a specific measure for the PM&E of fish and wildlife resources affected by the Project. In addition, both NMFS and FWS have submitted preliminary Section 18 prescriptions that include a reservation of authority to prescribe fishways at the Project during the license term. Moreover, the Commission's standard fish and wildlife reopener, which is

[283] CDFW Intervention, Enclosure A at 37 (Section 3.4.4).

included in every new license, serves the same purpose. It requires the licensee to construct, maintain, and operate reasonable facilities for the conservation and development of fish and wildlife resources, upon the recommendation of the Secretary of the Interior or state fish and wildlife agencies.[284] CDFW can make a fish passage recommendation under the standard fish and wildlife reopener during the license term, so a special reopener for this purpose is unnecessary. The Commission has rejected reservations of authority under Section 10(j) on these grounds in many proceedings.[285]

2. The Commission Should Reject Recommendations to Require Fish Passage at Englebright Dam

FWN recommends that the Commission designate Englebright Dam as a Project work, and require conditions in the new license to mitigate the impacts of the Project on fish passage.[286] The Commission should reject this recommendation.

FERC under the FPA does not have jurisdiction over federal facilities like Englebright Dam, and cannot license such facilities.[287] FWN provides no legal basis for FERC to include the USACE's facilities as part of the Project. In any event, while the Project passes water through the USACE's Englebright Reservoir, none of the Project facilities is an integral part of Englebright Dam: the Project's Narrows 2 Power Conduit

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[284] *See, e.g.*, Form L-5, *supra* note 51, at Standard Article 15.

[285] *See, e.g., City of Sturgis*, 105 FERC ¶ 62,132 at P 31 (2003) (rejecting reservation of authority as a 10(j) recommendation); *see also Cameron Gas & Elec. Co.*, 96 FERC ¶ 62,182 at p. 64,387-88 (2001) (rejecting state agency recommendation for a reopener "that would provide for the construction, maintenance, and operation of "reasonable" facilities for fish and wildlife, finding that FERC's standard fish and wildlife reopener provides for a similar provision).

[286] FWN Comments at 52-55.

[287] *See, e.g., Dep't of Water Res. of Cal.*, 51 FPC 529, 534 (1974) ("We have consistently licensed power facilities at projects where we have not licensed the remaining facilities because they were not part of the project or were not subject to our jurisdiction for other reasons. The most obvious example is those facilities licensed at government dams for the production of power even though we have no authority over the dam itself.").

and Narrows 2 Powerhouse, the lowermost elevation Project facilities, are not connected or attached to Englebright Dam in any way, nor do they intersect the dam in any way.

The Project does not block fish passage. Englebright Dam, which is operated by the USACE and is not a part of the Project, blocks fish passage. In fact, anadromous fish have not occurred upstream of Englebright Dam since its construction by the United States in 1941. This permanent blockage occurred over 25 years before the Project was constructed and has not been changed or affected in any way by the Project. The Commission has previously found that there is no nexus between Project effects and anadromous fish passage upstream of Englebright Dam because anadromous fish are not present above the dam.[288] A three-person, Formal Dispute Resolution Panel concurred in that finding.[289] The Commission further found that "it remains uncertain when fish passage might occur upstream of Englebright Dam, how fish passage would be accomplished, or which part of the basin would be targeted. To our knowledge, the USACE has not developed, approved, or funded any fish passage plans."[290]

For these reasons, the Commission should not designate Englebright Dam as a Project work, or require conditions to mitigate the impacts of the Project on fish passage.

G. Drought Management Plan

YCWA Proposed Condition WR9 would implement a Drought Management Plan that would describe how YCWA might address future droughts as they pertain to possible YCWA requests regarding relief from license conditions during a drought. The plan

[288] Determination on Requests for Modifications to the Yuba River Hydroelectric Project Study Plan, App. B at B-19, Project No. 2246-058 (issued Nov. 13, 2014).

[289] Director's Formal Study Dispute Resolution Determination, App. B at 9, Project No. 2246-058 (issued Dec. 28, 2011).

[290] Determination on Requests for Modifications to the Yuba River Hydroelectric Project Study Plan, App. B at B-48, Project No. 2246-058 (issued Mar. 29, 2013).

describes: (1) drought conditions under which YCWA might request relief from certain license conditions to mitigate the adverse effects of the drought; (2) which conditions in the license might be affected and how; and (3) a process under which drought relief could be swiftly implemented if needed and if all agencies agreed with YCWA's proposal. The plan does not modify any conditions in the license, but only sets-up a road map. As described in the Amended FLA,[291] YCWA could only estimate a cost for developing specific drought management plans when droughts occurred because the specific details of each plan would be different depending on the specifics of each drought. For costing purposes only, YCWA estimated the plan would be triggered three times during the term of the new license and development of each specific drought plan, including consultation, would cost $15,000, for a total over 30 years of $45,000.

FWS, CDFW, FS, BLM, and FWN each recommended a condition modifying YCWA Proposed Condition WR9.

FWS 10(j) Recommendation 14, CDFW 10(j) Recommendation 2.15, and BLM 10(a) Recommendation 6, are identical and recommend that when the new license is issued, YCWA's plan be revised in collaboration with the Ecological Group and to the satisfaction of FWS, FS, CDFW, and NMFS. The revision would include at a minimum a drought definition so that the plan would only be triggered in "extreme drought conditions," which the commenters did not define.

FWN states that it does not believe a drought management plan condition was necessary in the new license.[292] However, FWN states that if one is included in the new license, it should include the process clarifications described in FWN Recommendation

[291] Amended FLA, Exh. E at E4-8 (Table 4.3-2).

[292] FWN Comments at 55.

IV, which are similar to the recommendations described above and added other process steps.

FS did not include in its comments a Section 4(e) condition or Section 10(a) recommendation regarding a drought management plan, but offered comments addressing drought definition, process, and mandatory conditioning agency approval.

The Commission should not adopt the FWS, CDFW, BLM, and FWN recommendations and should determine that YCWA Proposed Condition WR9 provides adequate protection.

YCWA provided in its Amended FLA a well thought-out and concise road map of: the conditions that might trigger YCWA's consideration of requesting variances to license conditions to mitigate drought effects; what license conditions might be affected and how; what YCWA might do when those triggers occur, including outreaching to the Commission and agencies; and the process to put those relief measures in place as soon as possible to mitigate drought impacts. Commenters had an opportunity to recommend to the Commission substantive improvements to YCWA's proposed plan but instead recommended that everyone go back to the drawing board once the new license is issued.

None of the commenters provided an estimate to develop a drought management plan following the process in their recommendations. Based on YCWA's experience in relicensing in developing over 20 implementation plans, YCWA estimates the cost would be approximately $60,000 over 30 years.

The Commission should find that YCWA Proposed Condition WR9 is adequate, and should not adopt the FWS, CDFW, BLM, and FWN recommendations.

H. Recreation Recommendations

1. Implement Recreation Facilities Plan and Provide Recreation Flow Information

Under YCWA Proposed Condition RR1, YCWA would implement a Recreation Facilities Plan, and under Proposed Condition RR2, YCWA would make streamflow and reservoir elevation information available to the public during the new license term.

FWN stated its support for YCWA Proposed Conditions RR1 and RR2, but recommended they be modified such that FERC become involved in the off-license Recreation Settlement Agreement between the FS and YCWA.[293] YCWA did not propose a condition related to the FWN's recommendation because it relates to issues outside of relicensing.

YCWA was unable to estimate the cost to implement this recommendation because it is vague.

FERC should not adopt the FWN's recommended addition to YCWA Conditions RR1 and RR2 because FWN has not demonstrated a Project nexus—the item is outside-of relicensing.

2. Provide Whitewater Boating Below Our House Diversion Dam

YCWA included two conditions in its Amended FLA, Proposed Conditions RR3 and AR7, which address whitewater boating and related monitoring below Our House Diversion Dam in the Middle Yuba River. Each condition was developed in consultation with Stakeholders, including American Whitewater. Proposed Condition RR3 would require YCWA to 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 and 2,000 cfs, as

[293] FWN Comments at 82.

measured at the USGS streamflow gage blow the dam. The condition further provides a detailed table showing how many days of whitewater boating flows YCWA would provide by WY type. As shown in Appendix 2, YCWA's proposed condition was supported by the FS, FWS, CDFW, and FWN. YCWA estimated the cost to implement its condition to be $54,000 over 30 years (i.e., $1,800/year), excluding lost generation costs.[294]

YCWA Proposed Condition AR7 would require YCWA to develop information regarding aquatic resources in response to changes in flow conditions from the initial license to the new license. The primary goal of Condition AR7 is to collect data under the new license on the distribution, abundance, and condition of stream fish, especially rainbow trout, benthic macroinvertebrates, FYLF, western pond turtle, channel morphology riparian habitat, and LWM. As shown in Appendix 2, YCWA's proposed condition was supported by the FS and FWN, which includes American Whitewater. YCWA estimated the cost to implement its condition is $5,765,400 over 30 years (i.e., $192,180/year).[295]

FWS supported YCWA Proposed Condition RR3, but recommended it be modified to include that if FYLF is listed under the ESA, Section 7 consultation may be necessary.[296] FWN also supported YCWA Proposed Conditions RR3, but recommended that it be modified such that FERC become involved in the off-license Recreation Settlement Agreement between the FS and YCWA.[297]

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294 Amended FLA, Exh. E at E4-13 (Table 4.3-2).

295 *Id*. at E4-10 (Table 4.3-2).

296 DOI Comments at 44.

297 FWN Comments at 82.

The Commission should not adopt the FWS or FWN recommendations. The FWS's recommendation is not necessary for the reasons described *infra* Section III.I.3 of this response. FWN has not demonstrated a Project nexus—the item is outside of relicensing.

3. River Access to the North Yuba River

The CDFW, FS, the National Park Service ("NPS"), FWN, and SWRCB each recommended a condition for YCWA to provide river access to the North Yuba River downstream of New Bullards Bar Dam. YCWA did not include in its Amended FLA a proposed condition regarding access to the North Yuba River below New Bullards Bar Dam due to lack of Project nexus.

CDFW 10(j) Recommendation 2.22 would require YCWA to provide public access to the North Yuba River downstream of New Bullards Bar Dam by allowing vehicle access on the existing road to the USGS gaging station (11413517) downstream of New Bullards Bar Dam or by building an alternative access road to this area. In addition, YCWA would be required to provide an area sufficient to park up to five vehicles. CDFW stated that the road from the parking area to the base of the dam may be gated and fenced in order to provide for security of Project facilities. Also, the recommendation would require YCWA to construct a trail from the proposed parking area to the trail leading to the gaging station downstream of New Bullards Bar Dam. The CDFW did not provide any additional information, including cost to implement the recommendation.

FS 10(a) Recommendation 17, NPS 10(a) Recommendation 14, and FWN Recommendation XIII,[298] are essentially identical to the CDFW 10(j) recommendation, with the exception that the FWN stated if YCWA determined it is unacceptable to provide public access at the base of New Bullards Bar Dam using the existing access road, YCWA would build an alternative access point that would provide security for Project facilities and parking and access for whitewater boaters at the top of the whitewater boating run. The FS, NPS, and FWN did not provide an estimated cost to implement their recommendation.

SWRCB preliminary WQC Condition 22 provides that it will likely require YCWA, in consultation with the relevant resource agencies and interested parties, to develop and implement a plan to provide public access to the North Yuba River below New Bullards Bar Dam. Under the SWRCB's condition, the plan would include, at a minimum, development and maintenance of an access road from Marysville Road near New Bullards Bar Dam to a boater put-in location on the North Yuba River below New Bullards Bar Dam or, alternatively, YCWA's access road to the North Yuba River below New Bullards Bar Dam could be used for this plan. The plan would include potential construction (e.g., fencing and warning signs) to protect Project facilities from public vandalism or harm. SWRCB did not provide an estimated cost to implement its recommendation.

The Commission should not include the CDFW, FS, NPS, SWRCB, and FWN recommendations in the new license for the following reasons.

[298] *Id.* at 82-88; DOI Comments at 116; FS Comments at 11.

First, CDFW 10(j) Recommendation 2.22 should not be considered by the Commission under Section 10(j) because it is not for the protection of fish or wildlife.

Second, the commenters have provided no evidence that the Project affects public access to the North Yuba River. The public has the same challenging options for access to this steep sided, remote, mostly privately-owned canyon that it would have if the Project was not in place. In addition, neither YCWA nor a Stakeholder has recommended a release from New Bullards Bar Dam for boating purposes in the North Yuba River. Contrary to the FWN's assertions,[299] YCWA's proposal to improve the existing recreational access trail at New Colgate Powerhouse is not related to the North Yuba River but to YCWA Proposed Condition RR3 that would provide whitewater boating flows in the Middle Yuba River. In fact, boating in the North Yuba River is extremely dangerous, and there is little realistic opportunity for angling or whitewater boating input at that location. As described in the Amended FLA,[300] the North Yuba River below New Bullards Bar Dam is a very challenging Class V to VI whitewater boating run with numerous difficult portages best suited to highly elite, hard-shell kayakers, and there are no egress points in case of injury (i.e., helicopter would be the only option). In short, the FS, NPS, and FWN have not demonstrated a Project nexus.

Third, access from Marysville Road to the river via YCWA's existing, gated (i.e., at the Marysville Road intersection) dam access road is not a reasonable option for public safety reasons. As described in Section III.C.2, foremost, there are security and safety issues involved with access to the base of this high hazard dam. Further, the existing access road was not designed for, and is not suitable for public use. Most of the road is

[299] FWN Comments at 87.

[300] Amended FLA, Exh. E at E.3.6-34.

very steep, narrow, winding, and subject annually to rock falls, erosion and landslides. In addition, in winter and early spring the road is frequently wet, or covered with snow and black ice, creating a public safety issue. The photographs in Figure 15 demonstrate this point.

Figure 15. Photographs of Dam Access Road

Fourth, the road experiences heavy traffic by Project operations staff and heavy maintenance vehicles whose use could be impacted or prevented by the presence of public recreational vehicle and pedestrian use.

In the event YCWA's existing road is not an option due to safety, which it is not, the recommendations, especially FWN's, would require YCWA to construct a new public access road from the Marysville Road to the river. This is unreasonable for two reasons. First, as described above, the Project does not inhibit in any way the public's access to the river. Second, the cost to construct and maintain such a road, even if a private

landowner would allow YCWA to construct it, is prohibitively expensive. See *supra* Section III.C.2 for additional discussion.

4. Daguerre Point Dam Trail

YCWA did not include in its Amended FLA a proposed condition regarding Daguerre Point Dam due to lack of Project nexus.[301]

BLM 10(a) Recommendation 11 would require YCWA to provide and maintain trails, one on each side of the Yuba River, around the USACE's Daguerre Point Dam so that non-motorized boaters can exit the river and re-enter the river safely. BLM's rationale for its recommendation is that development of portage trails would help address the public safety hazard that exists when boaters go over the Daguerre Point Dam. BLM did not provide an estimated cost to implement its recommendation.

The Commission should not include BLM's recommendation in the new license because BLM has not established a nexus between public safety at Daguerre Point Dam and the Project. The USACE dam is located approximately 12.6 miles downstream of YCWA's Narrows 2 Powerhouse, and below numerous non-project water diversions. The recreational use on the river at this location would exist regardless of the Project. YCWA estimates the cost to implement BLM's recommendation if it was included in a new license is between $200,000 and $300,000 over 30 years (i.e., $6,666 to $10,000/year).

[301] *See Georgia Power Co*., 149 FERC ¶ 62,210 at PP 59, 70 (holding that a proponent of a Section 10(a) or 10(j) recommendation must establish a nexus between the need for the measure and the resources affected by the project).

5. Hammon Grove Takeout

YCWA did not include in its Amended FLA a proposed condition regarding takeout at Hammon Grove County Park due to lack of Project nexus.

BLM 10(a) Recommendation 12 would require YCWA to provide and maintain a takeout for boaters, tubers, and water-play recreationists on BLM land adjacent to Hammon Grove County Park. BLM's rationale for its recommendation is that public egress is needed for river users below Englebright Lake. BLM did not provide an estimated cost to implement its recommendation.

The Commission should not include BLM's recommendation in the new license because BLM has not established a nexus between recreational use at this downstream site and the Project. Hammon Grove County Park is located approximately 12.6 miles downstream of YCWA's Narrows 2 Powerhouse, and below numerous non-project water diversions and a USACE dam. The recreational use on the river at this location would exist regardless of the Project. Additionally, there currently exists a paved ramp in the Hammon Grove facility where non-powered boats can take out. YCWA estimates the cost to implement BLM's recommendation if it was included in a new license is between $75,000 and $120,000 over 30 years (i.e., $2,500 to $4,000/year).

6. Develop a Sign Plan

YCWA did not include in its Amended FLA a proposed condition regarding signage in the lower Yuba River due to lack of Project nexus.

BLM 10(a) Recommendation 13 would require YCWA to develop a sign plan for recreational signage at all public land put-in and takeout locations on the Yuba River downstream of Englebright Dam. Signs and their content would be approved by BLM, CDFW, FWS, USACE, NMFS, and the NGOs. BLM's rationale for the recommendation

is to improve public awareness of public access points along the lower Yuba River. BLM did not provide an estimated cost to implement its recommendation.

The Commission should not include BLM's recommendation in the new license because BLM has not established a nexus between signage along the lower Yuba River and the Project. Recreational use at the sites targeted by the Sign Plan is non-Project use and is recreation use that would exist regardless of the Project. Moreover, YCWA Proposed Condition RR1, *Recreation Facilities Plan*, adequately addresses signage and public information at Project-related recreation sites. YCWA estimates the cost to implement BLM's recommendation if it was included in a new license is between $50,000 and $75,000 over 30 years (i.e., $1,666 to $2,500/year).

I. Other Recommendations

1. Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan

YCWA Proposed Condition GS3 would address the management of LWM at Our House and Log Cabin Diversion dams and also at New Bullards Bar Reservoir. The goal of the Plan is to ensure that the safe passage of LWM at Our House and Log Cabin diversion dams and annual collection, storage and disposal of woody material on New Bullards Bar Reservoir are protective of environmental and recreational resources. At Our House and Log Cabin diversion dams, all sizes of LWM greater than eight inches in diameter and up to 36 feet in length would pass downstream past the dams. Large pieces may be cut to allow for safe passage over the dam. Smaller sized woody material would be allowed to pass beyond the dams. All root wads would be allowed to pass downstream unless YCWA determined that a root wad presented a risk to the safety of

the dam. Passage of any woody material may be revised or ceased if the situation becomes unsafe or a threat to the facility or the public.

At New Bullards Bar, floating woody material would be collected beginning after March 16 and only if sufficient material exists to warrant disposal to ensure public safety. Collection would occur by capturing portions of the material in enclosed floating log booms and dragging the woody material by boat to two designated storage areas. At the storage areas, the material would be burned, removed by truck, or addressed through any other method discussed and deemed acceptable to YCWA and FS. Prior to disposal, FS may allow a third party to remove some or all of the woody material, but the third party would be responsible for any damage to the skid road used for access and also be required to re-pile stacked wood as necessary. The method of disposal would be addressed with FS annually.

As shown in Appendix 2, FS, FWS, CDFW, and FWN supported YCWA's proposed condition. YCWA's proposed condition comes at a notable cost. The condition would require YCWA to excavate roads to facilitate debris management that would require $500,000, and YCWA estimates annual O&M would be $900,000 or $47,000 annualized.

FWS, NMFS, and FWN each recommended modifications to YCWA Proposed Condition GS3. Generally the modifications are of a similar nature and address holding select debris for alternative uses.

FWS 10(j) Recommendation 7 supported YCWA Proposed Condition GS3 with the following revisions regarding LWM at New Bullards Bar Reservoir:

- When the amount of woody material to be removed from New Bullards Bar Reservoir exceeds the capacity of the two designated storage sites (i.e., approximately 3,000 cubic yards), YCWA would remove the wood upstream of

Cottage Creek Boat Ramp with an excavator placed on dry land and would load the material directly onto trucks or store the wood for no more than 1 day at YCWA's operations ramp.

- YCWA would make 200 key pieces (i.e., 24-36 inches in diameter and over 25 feet in length) of the LWM removed this way available to entities conducting salmonid restoration acts in the lower Yuba River. YCWA would haul the material at cost to restoration or stockpile areas.

- If less than 200 pieces are available, than YCWA would provide the balance of LWM to be used to construct engineered log jams in the lower Yuba River.

FWS did not provide a cost estimate to implement its recommendation.

FWN Recommendation IX is the same as FWS's recommendation with the exception that FWS did not include the measure regarding providing wood for engineered log jams in the lower Yuba River.

NMFS 10(j) Recommendation 3 did not modify YCWA Proposed Condition GS3, but would require YCWA to collect and stockpile wood from all Project reservoirs for use in enhancements projects downstream. Specifically, NMFS's recommendation would require YCWA to:

- Annually remove wood greater than three feet long and eight inches in diameter at five feet from the large end from all Project Reservoirs and store the wood for future placement at locations proximal to enhancement projects.

- Place at least 100 pieces of wood in the lower Yuba River annually until a frequency of 100 pieces per mile of stream channel is reached on average from Timbuctoo Reach to the Hallwood Reach. Once the target number was reached, monitor after flow events to determine if additional material should be added to replace displaced wood.

NMFS did not provide a cost estimate to implement its recommendation.

YCWA agrees with FWS and FWN that it would be prudent to incorporate into YCWA Proposed Condition GS3 the woody material removal methods used at New Bullards Bar Reservoir in 2017, a year in which an unusually large amount of wood entered reservoir. YCWA, FS, FWS, and CDFW jointly developed a plan for this work,

which was approved by the Commission and successfully executed by YCWA. Therefore, YCWA includes in Appendix 12 a revised "Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan" to include the approach used in 2017. This includes: removing floating wood from the reservoir upstream of Cottage Creek Boat Ramp using an excavator placed on dry land owned by YCWA; loading the material directly onto trucks or storing the wood for no more than one day at YCWA's operations ramp; disposal of the wood off-site, after entering into the appropriate timber sales agreement with the FS; and monitoring during excavator work to assure the work does not disturb nesting raptors. YCWA has not included in its revised plan that it would make the wood available at YCWA's cost to entities for use in restoration projects elsewhere or otherwise store wood for such use.

The Commission should not adopt FWS and FWN's other recommendations as they would require YCWA to provide wood from New Bullards Bar Reservoir to third parties conducting salmonid restoration actions in the lower Yuba River. These actions are undertaken by a third party for projects they deem appropriate, and have no Project nexus.[302]

In addition, the Commission should not adopt NMFS's recommendation due to a lack of Project nexus. NMFS focuses on placement of wood in the lower Yuba River. Englebright Dam captures wood that would otherwise enter the lower Yuba River, and in recognition of this, the USACE is undertaking an LWM placement plan in the lower

[302] *See Georgia Power Co*., 149 FERC ¶ 62,210 at PP 59, 70 (holding that a proponent of a Section 10(a) or 10(j) recommendation must establish a nexus between the need for the measure and the resources affected by the project).

Yuba River. *See* Section III.C.2 of this response for additional discussion regarding LWM in the lower Yuba River.

2. Implement Aquatic Invasive Species Management Plan

YCWA Proposed Condition AR5 would implement an Aquatic Invasive Species ("AIS") Management Plan that was developed in consultation with FS, FWS, CDFW, SWRCB, and FWN. The plan incorporates numerous components, including: best management practices for the prevention of introduction/infestation of AIS into Project reservoirs and impoundments; a public education program on New Bullards Bar, Log Cabin Diversion Dam and Our House Diversion Dam; houseboat inspections; monitoring for quagga and zebra mussels and Asian clams in Project reservoirs; incidental observations for other AIS; management of AIS, should any be detected and reasonable methodologies for management exist; and American bullfrog (*Rana catesbeiana*) suppression on land within 100 feet of the NMWSE on both banks of the cove upstream of the Moran Cove Boat Ramp, on land 300 feet upstream of the NMWSE in Little Oregon Creek, and on land 200 feet upstream of the NMWSE in each of the two unnamed tributaries north of Little Oregon Creek.[303] As shown in Appendix 2, FS, CDFW, and FWN supported YCWA's proposed condition. YCWA estimated the cost to implement its condition is $407,000 over 30 years (i.e., $15,523/year).[304]

FWS states its support for YCWA Proposed Condition AR5, but recommends the plan be expanded to include suppression efforts for American bullfrogs in the river reaches downstream of Log Cabin and Our House diversion dams.[305] FWS recommends

[303] *See* Amended FLA, Exh. E, App. E2 at E2-47 (containing a detailed description of the plan).

[304] Amended FLA, Exh. E at E4-9 (Table 4.3-2).

[305] DOI Comments at 39.

that YCWA conduct American bullfrog surveys in the areas in Below Normal, Dry, and Critically Dry WYs following a Below Normal, Dry, or Critically Dry WY. It recommends that if American bullfrogs are located, suppression efforts would be warranted. The survey would be in addition to the American bullfrog suppression proposed in YCWA Condition AR3. In addition, FWS recommends that if YCWA places LWM in Moran Cove, American bullfrog monitoring take place for the duration of the storage of LWM in the cove. Should bullfrogs be detected, YCWA would be required to conduct bullfrog suppression in the summer following the detection. FWS did not describe specific suppression or survey/monitoring methods, or estimate the cost to implement its recommendation.

The Commission should not adopt FWS's recommendations for three reasons. First, as described in YCWA's response to FWS 10(j) Recommendation 8, additional American bullfrog suppression efforts to protect FYLF in the event FYLF is listed under the ESA are not needed.[306] If the species is listed under the ESA and the Project has a reasonable potential to affect it, the Commission would consult with the FWS under Section 7.

Second, FWS has not demonstrated that its recommendation would provide any additional protection as compared to YCWA's proposed conditions.[307] American bullfrogs are a ubiquitous, invasive species in the Yuba Basin—a Project nexus to downstream river reaches is tentative at best since the species may be invading from any areas, not just the Project areas. In addition, suppression is unlikely to have any demonstrable effect that would justify the substantial effort that would be required. The

[306] *See* Section III.I.6 *infra*.

[307] *See id.*

rivers represent miles of streams, much of which are not accessible to any type of control effort and are privately-owned. Therefore, efforts to remove American bullfrogs, no matter which life stage was targeted, would undoubtedly represent only partial removal, from which the populations would quickly recover.

Third, with regard to the use of Moran Cove for LWM placement, YCWA does not propose using this cove to store LWM.[308] Therefore, FWS's recommendation provides no additional protection.

3. Implement Upper Yuba River Aquatic Monitoring Plan

YCWA Proposed Condition AR7 would implement an Upper Yuba River Aquatic Monitoring Plan, which was developed in consultation with FS, FWS, CDFW, and FWN. The plan would require YCWA to monitor FYLF each year in the first year of license issuance and in a pattern of two years of monitoring followed by three years of no monitoring until a new license is issued. Additional FYLF monitoring would occur in drier years. In addition, the plan would require YCWA to collect incidental observations of American bullfrog and of CRLF during all monitoring.[309] As shown in Appendix 2, FS and FWN supported YCWA's proposed condition. YCWA estimated the cost to implement its condition is $5,765,400 over 30 years (i.e., $192,180/year).[310]

FWS recommends expanding YCWA's proposed condition so that, in the event that FYLF becomes a federally-listed species, YCWA would conduct additional monitoring in Below Normal, Dry, and Critically Dry WYs following a Below Normal,

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[308] *See* Appendix 12.

[309] *See* Amended FLA, Exh. E, App. E2 at E2-47 (containing a detailed description of the plan).

[310] Amended FLA, Exh. E at E4-10 (Table 4.3-2).

Dry, or Critically Dry WY.[311] These monitoring events are meant to be in addition to the FYLF monitoring already proposed in YCWA Condition AR7. FWS did not include any details, including anticipated cost to implement its recommendation.

It would be premature for the Commission to adopt FWS's recommendation because this will be addressed in the course of the Commission's consultation with the FWS under ESA Section 7.

4. Implement Fire Prevention and Response Plan

YCWA Proposed Condition LU2 would implement a Fire Prevention and Response Plan that was developed in consultation with FS, FWS, CDFW, and FWN. The plan incorporates numerous components, including best management practices for the prevention of fire, information for getting burn permits for NFS lands, Project activity level planning requirements, fire reporting procedures, road access information, procedures for investigating fire, and agency fire contacts.[312] As shown in Appendix 2, FS and FWN supported YCWA's proposed condition. YCWA estimated the cost to implement its condition is $30,000 over 30 years (i.e., $1,000/year).[313]

In its comments, FWS stated it conceptually agreed with YCWA Proposed Condition LU2, but stated that "emergency ESA consultation should be addressed in the plan."[314] FWS did not provide any additional detail regarding its recommendation.

The Commission should not adopt FWS's recommendations for the addition of emergency ESA consultation into the Fire Protection and Response Plan because FWS

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311 DOI Comments at 39.

312 *See* Amended FLA, Exh. E, App. E2 at E2-47 (containing a detailed description of the plan).

313 Amended FLA, Exh. E at E4-14 (Table 4.3-2).

314 DOI Comments at 44.

did not provide any details regarding what the emergency consultation would involve or why it is needed. The ESA and ESA Consultation Handbook govern emergency consultation.[315]

5. Report Unplanned Flow Reductions in a Timely Manner

YCWA did not propose a reporting obligation for unplanned flow reductions at the Narrows 2 facilities.

FWS 10(j) Recommendation 5 would require YCWA to report unplanned flow reductions of 500 cfs or higher lasting greater than five minutes to FWS, NMFS, and CDFW as a potential fish-stranding event. If the event occurs on a weekday, YCWA would be required to report the event on the same day. If the event occurs on a weekend, YCWA would be required to report the event on the following Monday. FWS explains that this condition is needed to allow the agencies to count stranded fish, rescue fish, or collect DNA in the event of a fish-stranding event.

CDFW 10(j) Recommendation 2.28 requires the identical measure, but specifies that the flow reduction would be measured at the Smartsville – USGS Streamflow Gage 11421000.[316]

The Commission should reject these recommendations. As discussed above, YCWA is currently obligated to monitor for stranded fish in the vicinity of the Narrows 2 facilities and provide notice to the agencies upon discovery of a fish mortality or stranding incident. This obligation will continue under the new license. Because YCWA is already required to report potential fish stranding events to the agencies, it is

[315] Endangered Species Consultation Handbook, Provedures for Conducting Section 7 Consultation and Conferences, U.S. Fish and Wildlife Service and National Marine Fisheries Service (Mar. 1998) (Chapter 8, Emergency Consultation).

[316] CDFW Intervention, Enclosure A at 34 (Section 3.4.3).

duplicative and burdensome to require YCWA to report all unplanned flow reductions for this same purpose.

6. Develop a Sensitive Amphibians Management Plan

YCWA has proposed multiple conditions related to sensitive amphibian species monitoring and protection, including GEN1 (Ecological Group), AR5 (Implement the Aquatic Invasive Species Plan), AR7 (Implement the Upper Yuba River Aquatic Monitoring Plan), and TR1 (Implement the Integrated Vegetation Management Plan).

YCWA Proposed Condition GEN1 includes the creation of an Ecological Group and hosting of annual meetings with the group. The annual meeting would include discussions of the previous year's ecological-related FERC filings and a review of monitoring data and reports, including any for sensitive amphibians. The meeting would also include discussions of the upcoming license-required ecological-related monitoring, any license-related ecological-related agency consultation, and any license-related proposals that could have ecological consequences, such as construction that would require ESA consultation.

YCWA Proposed Condition AR5 would implement an AIS Management Plan, which was developed in consultation with FS, FWS, CDFW, and FWN. The plan would provide for continued documentation of American bullfrogs as part of incidental observations and active management at one location within the Project Boundary, and American bullfrog population suppression in Moran Cove during the first five years after license issuance.

YCWA Proposed Condition AR7 would implement an Upper Yuba River Aquatic Monitoring Plan, which was developed in consultation with the FS, FWS, CDFW, and FWN. The plan would require YCWA to monitor FYLF each year in the first year of the

license, and in a pattern of two years of monitoring followed by three years of no monitoring until a new license is issued. Additional FYLF monitoring would occur in drier years. In addition, the plan would require YCWA to collect incidental observations of American bullfrog and of CRLF during all monitoring.

YCWA Proposed Condition TR1 would implement an Integrated Vegetation Management Plan, which was developed in consultation with FS, FWS, CDFW, and FWN. The plan would include specific direction on hazard tree management including required notifications to agency staff, including FWS, and approval by FS staff. If necessary, YCWA may perform required investigations (e.g., special-status amphibians) prior to hazard tree removal. If sensitive resources are discovered, the guidelines for sensitive area protections in Section 3.3 of the plan would be followed. The hazard tree would be felled and be cut and disposed of in a manner agreed to by FS.

FS, FWS, CDFW, and FWN each supported YCWA Proposed Conditions GEN1 and AR5. FS, CDFW, and FWN each supported YCWA Proposed Condition TR1, and FS and FWN supported Condition AR7.[317] As described in the Amended FLA, YCWA estimated the cost to implement these conditions, which includes items related to sensitive amphibian monitoring and protection, to exceed $8,000,000 over 30 years.[318]

In addition, YCWA anticipates that if it proposed any Project work that could adversely affect ESA-listed species under FWS's jurisdiction, such as CRLF, the Commission would consult with FWS prior to approving the work.

FWS 10(j) Recommendation 8 would require YCWA to develop a Sensitive Amphibians Management Plan in collaboration with the FS, FWS, and CDFW. The plan

[317] *See* Appendix 2.

[318] Amended FLA, Exh. E at E4-5 to E4-14 (Table 4.3-2).

would include 12 elements: (1) American bullfrog suppression at Moran Cove, Middle Yuba River and Oregon Creek; (2) conservation of CRLF in the Woody Material Management Plan; (3) protection of potential CRLF habitat along the YCWA-proposed new New Bullards Bar Reservoir west shoreline trail; (4) direction for formal consultation with FWS for any pesticide use within the Project area; (5) evaluation of the status of chytrid fungus within the Project area; (6) establishment of decontamination protocols; (7) monitoring of FYLF within the Project area; (8) hazard tree removal; (9) development of additional minimization measures for ground disturbing activities within 300 feet of wetlands, riparian areas, and critical habitat; (10) consideration of actions within the CRLF Recovery Plan appropriate to the Project; (11) development of recovery actions for CRLF within the Project Boundary, including actions at Cottage Creek Pond; and (12) inclusion of a discussion regarding CRLF during the annual meeting (Condition GEN1). In addition, the condition would require YCWA to conduct formal Section 7 ESA consultation with FWS prior to the construction of the west shoreline trail. FWS's recommendation did not provide any additional detail, including cost to implement the condition or anticipated measures that would be implemented in the plan.

The Commission should not adopt FWS Recommendation 8 for six reasons. First, seven of the 12 items FWS recommends to be included in the Sensitive Amphibians Management Plan are related to ESA consultation. As stated above, appropriate consultation regarding ESA species and potential effects of the Project will occur between FERC and FWS prior to FERC's issuance of a new license; therefore, FWS's recommendation would provide no additional protection for fish and wildlife. If new species become federally listed during the term of the license and those species may be

affected by the Project, consultation would occur with FERC, as the action agency, at that time.

Second, FWS's recommended additional American bullfrog suppression efforts downstream of Our House and Log Cabin diversion dams to protect FYLF in the event it is listed under the ESA are not needed for the reasons stated above. This action would provide no additional protection to fish and wildlife. American bullfrogs are a ubiquitous, invasive species in the Yuba Basin—a Project nexus is tenuous, at best, since bullfrogs would occur whether or not the Project was in place.

Third, FWS recommends that the plan include an evaluation on the status of chytrid fungus within the Project area, which would include its vectors for movement and interactions between the disease and other stressors. FWS provided no details on how this evaluation would be used or a nexus to the Project. The recommendation is essentially a research study, and should not be adopted by the Commission.

Fourth, FWS recommends the plan to include decontamination protocols when activities occur between watersheds. YCWA has already included a requirement for decontamination protocols in its proposed conditions that require travel between watersheds, including in YCWA Conditions AR5, AR7, TE2, WR7, and WR8. Therefore, FWS's recommendation for this item would provide no additional protection for fish and wildlife.

Fifth, FWS's recommendation to include additional FYLF monitoring in its proposed plan is unnecessary because YCWA Proposed Condition AR7 already includes adequate monitoring for FYLF.

Sixth, FWS's recommendation includes requirements related to hazard tree removal and ground-disturbing activities. These recommendations would provide no

additional protection for fish and wildlife, and such measures are already included in YCWA's proposed Integrated Vegetation Management Plan.

7. Forecasted Target Flow and Flow Ramping Information Condition

YCWA did not include in its Amended FLA any proposed conditions requiring the publication of forecasted Project flows because such publications are not needed to improve public safety.

FWN Recommendation XIV would require YCWA to provide to the public on an internet site forecasted flows at Our House Diversion Dam whenever YCWA Proposed Conditions AR2 and AR11 are in effect. Condition AR2, Control Project Spills at Our House Diversion Dam, would require YCWA to implement a gradual spill recession process in spring at Our House Diversion Dam when the dam is spilling and based on the previous day's flows. Condition AR11, Periodically Close Lohman Ridge Diversion Tunnel, would require YCWA to close the Lohman Ridge Diversion Tunnel periodically in the spring and fall when certain target conditions occur. FWN's rationale for the recommendation is that the Middle Yuba River below Our House Diversion Dam would likely be a recreational area for kayakers in the future. In addition, FWN's recommendation would require YCWA to provide, via an internet site, year round forecasted flows at the Smartsville and Marysville gages in the lower Yuba River using "best efforts." The FWN does not state how often the forecasts for the lower Yuba River would be provided, and its rational is that the lower Yuba River is and will be a popular angler destination. It concludes that providing forecasted flows would improve public safety.

FERC should not adopt the FWN's recommendation as it pertains to Our House Diversion Dam for two reasons. First, with regards to the Our House Diversion Dam, Condition AR11 requires YCWA to post public notices at Our House Diversion Dam in advance of tunnel closures and to coordinate with the FS to post such notices at downstream public access sites on the Middle Yuba River. In addition, YCWA has provided real-time flow data for over a decade and will continue to provide real-time flow information regarding Our House Diversion Dam on CDEC, a well-known public website that is adequate to protect public safety during tunnel closures.

Second, with regards to Condition AR2, during the collaborative development of the measure it was acknowledged that the condition could be implemented in numerous instances each year, including many times when the recession process would begin, cease, and then re-commence, and that YCWA could not feasibly provide advance notice since it would not know until that day if a spill recession would be implemented. Therefore, it would be extremely difficult for YCWA to post prior notices.

FERC should not adopt the FWN's recommendation for year round forecasted flows via an internet site at the Smartsville and Marysville gages as it pertains to the lower Yuba River for three reasons.

First, the California Nevada River Forecast Center already provides a five day flow forecast for the Marysville gage that includes forecasted flows for the Middle and South Yuba that are outside YCWA's operations.[319]

[319] California Nevada River Forecast Center, Yuba River – Marysville (MRYC1), http://www.cnrfc.noaa.gov/graphicalRVF.php?id=MRYC1 (last visited Oct. 8, 2017) (the site is updated at least daily and more frequently when needed).

Second, CDEC provides year-round real-time streamflow data on the internet via CDEC at Smartsville and Marysville, the only two gage sites on the lower Yuba River. These CDEC sites are the "go to" site that the public has used for over a decade to obtain real-time flow that allows boaters and anglers to take advantage of suitable, safe recreation flows. The public can determine recreation opportunities through trends from flow information at these sites, as well as from flow information at upstream sites where real-time flow information is readily available. It should be noted that flows from the South Yuba River, which are unaffected by YCWA along with large magnitude flow change from the Middle Yuba River, which are largely unaffected by YCWA, greatly affect total flows downstream of Englebright Dam in ways that can't be readily predicted by YCWA. Further, the Marysville gage is located over 30 miles downstream of the Project and below several significant non-project diversions.

Third, except for storm and certain spill conditions, the various lower Yuba River flow-related conditions proposed by YCWA ensure that most controllable changes in flows occur very gradually over time. Therefore, the public would not be endangered by such Project changes in flow. In fact, YCWA proposed lower Yuba River flow conditions are almost identical to current conditions that have provided safe recreation on the lower Yuba River since 2006. Requiring YCWA to, at some unspecified frequency, make a best guess at downstream flows would not provide the public with any additional level of safety, and may in fact reduce safety if the public was to assume YCWA's forecasts are ironclad, which they may do over time.

8. Placeholder for Future Actions for USACE's Yuba River Ecosystem Restoration Program

FOR recommends that the Commission "include as a placeholder in the Project 2246 license future actions for Daguerre Point and Englebright dams that will be recommended in the USACE's Yuba River Ecosystem Restoration Program."[320]

The Commission should reject this recommendation, as it bears no nexus to the Project. The USACE's feasibility study is ongoing and will continue years into the new license. Should the feasibility study, once completed, make specific recommendations to improve habitat conditions for salmon and steelhead in the Yuba River watershed, the Commission's standard fish and wildlife reopener provision which will be included in the new license is a potential vehicle to address any needed new measures.

9. Develop General Restoration Plan

YCWA has proposed a number of conditions for the protection, mitigation and enhancement of resources potentially affected by the Project. These include increasing minimum flows (AR1, AR3, and AR10), gradually reducing spills (AR2, AR4, and AR9), closing tunnels (AR11), augmenting sediment and LWM downstream of Project dams (GS2 and GS3), managing AIS (AR5), managing bald eagle and American peregrine falcon (TR2), enhancing fish stocking (AR6), providing for whitewater boating (RR2 and RR3), and monitoring (GEN2, WR4, WR7, WR8, AR7, and AR8). Many of these proposed conditions were developed in consultation with Relicensing Participants

[320] Comments of Friends of the River, South Yuba River Citizens League, the Sierra Fund, Northern California Council International Federation of Fly Fishers, Native Fish Society, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, Patagonia, and Stoecker Ecological at 8, Project No. 2246-000 (filed Aug. 25, 2017).

and are supported by the resource agencies.[321] YCWA's estimated costs to implement the conditions are provided in the Amended FLA.[322]

SWRCB's preliminary WQC Condition 3 states that it would likely require YCWA, in consultation with relevant resource agencies, to develop and implement a restoration plan. The plan would include the total area to be restored, restoration method, performance metrics, maintenance, and implementation and effectiveness monitoring. WQC Condition 3 did not provide any additional detail, including costs to implement the condition or specific restoration projects, and the condition does not seem to specifically overlap with any of YCWA's proposed conditions, but YCWA cannot be sure of that since the SWRCB did not provide any specific details.

YCWA requests that the Commission and SWRCB accept YCWA's proposals for the protection, mitigation and enhancement of resources potentially affected by the Project, many of which are supported by FS, FWS, CDFW, and FWN, and not require a general, open-ended restoration plan.

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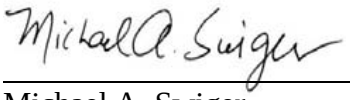
321 *See* Appendix 2.

322 Amended FLA, Exh. E at E4-5 to E4-14 (Table 4.3-2).

IV. CONCLUSION

For all of the above reasons, the Commission should adopt YCWA's proposed conditions as set forth in the Amended FLA and as modified in this Response, and reject all of the Stakeholder-proposed conditions which are inconsistent with YCWA's proposal.

Respectfully submitted,



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Dated: October 9, 2017

Appendices

List of Appendices

Appendix 1 Commenters Who Provide Full Support to YCWA's Proposal

Appendix 2 Proposed Conditions for which Stakeholders Reached Agreement

Appendix 3 Chart of Recommendations and Cost

Appendix 4 Revised YCWA Proposed Conditions

Appendix 5 Project Vicinity Maps

Appendix 6 Technical Report: Modeling Approach to Support Responses to Flow-Related Recommendations (HDR Engineering, Inc. and Stephen Grinnell, P.E.)

Appendix 7 Technical Report: Response to Comments on Flow Requirements for the Yuba River Downstream of Englebright Dam (YCWA Proposed Condition AR3) (HDR Engineering, Inc. and Stephen Grinnell, P.E.)

Appendix 8 Technical Report: Response to Comments on Project Ramping and Flow Fluctuation Downstream of Englebright Dam (YCWA Proposed Condition AR9) (HDR Engineering, Inc. and Stephen Grinnell, P.E.)

Appendix 9 Technical Report: Response to Comments on the "Combined CDFW/USFWS/FWN Recommendation" (HDR Engineering, Inc. and Stephen Grinnell, P.E.)

Appendix 10 Technical Report: Response to NMFS FPA Section 10(j) Recommended Conditions (HDR Engineering, Inc. and Stephen Grinnell, P.E.)

Appendix 11 Technical Report: Response to Recommended New Condition: Use of New Colgate Power Tunnel Intake (HDR Engineering, Inc. and Stephen Grinnell, P.E.)

Appendix 12 Revised Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Large Woody Material Management Plan

Appendix 13 New Bullards Bar Dam Reach Photos

Appendix 14 Water Temperature Data for AR10

CERTIFICATE OF SERVICE

Pursuant to Rule 2010 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission, I hereby certify that I have this day caused the foregoing document to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, DC, this 9th day of October, 2017.

/s/ Mealear Tauch

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