Document Accession #: 20210316-3057 Filed Date: 03/16/2021

FEDERAL ENERGY REGULATORY COMMISSION
Washington, DC 20426
March 16, 2021

OFFICE OF ENERGY PROJECTS

Project No. 77-289–California
Potter Valley Project
Sonoma County Water Agency
Mendocino County Inland Water
Agency and Power Commission
California Trout, Inc.
County of Humboldt, California
Round Valley Indian Tribes

VIA FERC Service

Mr. Grant Davis
General Manager
Sonoma Water
404 Aviation Boulevard
Santa Rosa, CA 95403

**Reference: Determination on Requests for Study Modifications and New Studies for the Potter Valley Project**

Mr. Davis:

Pursuant to 18 C.F.R. § 5.15 of the Commission's regulations, this letter contains the determination on requests for modifications to the approved study plan for the proposed relicensing of the Potter Valley Project being conducted by the NOI Parties' (Parties).[1] The project is located on the Eel and East Fork Russian Rivers, in Lake and Mendocino Counties, California. The determination is based on the study criteria set forth in Sections 5.9(b) and 5.15(d) of the Commission's regulations, applicable law, Commission policy and practice, and staff's review of the record of information.

[1] The NOI Parties are proxies for a new Regional Entity that is intended to be the license applicant for the project. The Regional Entity has not yet been formed under California law, but once formed, the Regional Entity would supplant the NOI Parties in this Integrated Licensing Process. The NOI Parties include Mendocino County Inland Water Agency and Power Commission; Sonoma County Water Agency; California Trout, Inc.; County of Humboldt, California; and the Round Valley Indian Tribes.

Background

On April 6, 2017, Pacific Gas and Electric Company (PG&E) filed a Notice of Intent and Pre-Application Document (PAD) to relicense the Potter Valley Project. Pursuant to the Commission's Integrated Licensing Process (ILP), a study plan determination (SPD) was issued for the proposed relicensing of the project on February 15, 2018, based on PG&E's NOI and PAD.[2]

On January 25, 2019, PG&E withdrew its NOI and PAD, indicating it was discontinuing its effort to relicense the project. The withdrawal was effective on February 11, 2019. On March 1, 2019, the Commission issued a notice soliciting interest from parties to file NOIs, PADs, and requests to complete the pre-filing stages of the licensing process. On June 28, 2019, the NOI Parties filed an NOI to file an application for a new license for the project. On August 1, 2019, the Commission issued a public notice of the NOI Parties' intent to continue the licensing process initiated by PG&E and file a final license application by April 14, 2022.

On May 13, 2020, the NOI Parties filed a Feasibility Study Report that included information on its proposed changes to project facilities and operations compared to what PG&E originally proposed in its PAD. The proposed changes include the removal of Scott Dam and the 2,275-acre storage reservoir it impounds (Lake Pillsbury) and increasing the diversion capacity at the Van Arsdale diversion.

The NOI Parties filed an initial study report (ISR) on September 14, 2020, summarizing the status of the 21 studies being conducted in support of the relicensing process for the project. The NOI Parties held a meeting on September 29, 2020, to present the ISR results and filed a summary of the meeting on October 14, 2020. The ISR proposes to implement two new studies, modify 14 studies in the approved study plan, and eliminate one study.

Comments

On July 28, 2020, staff issued a revised scoping document (SD3) that solicited comments from stakeholders on potential project-related issues related to the NOI Parties' current proposal. In response, the California Department of Fish and Wildlife (California DFW) and the North Coast Regional Water Quality Control Board (Regional Water Board) filed separate requests for study modifications on August 27, 2020, and American Whitewater filed requests for study modifications on August 28, 2020.

[2] The SPD can be accessed at: http://elibrary.FERC.gov/idmws/file_list.asp?accession_num=20180215-3070.

Comments on the ISR and meeting summary, including requests for study modifications, were filed by the following entities: nine water agency contractors (Water Contractors) [3] jointly on November 9, 2020; the Mendocino National Forest (Forest Service) and the National Park Service (Park Service) separately on November 12, 2020; the California State Water Resources Control Board (Water Board), County of Lake, Friends of the Eel River (FER), Lake Pillsbury Alliance (LPA), Mendocino County Farm Bureau (MCFB), National Marine Fisheries Service (NMFS), Bob Anderson, and Lou Block separately on November 13, 2020; and the U.S. Fish and Wildlife Service (FWS), Sonoma County Farm Bureau (SCFB), and Jonathan Whipple separately on November 16, 2020. The NOI Parties filed reply comments on December 14, 2020.

Some of the comments received do not specifically request modifications to the approved study plan or the proposed new studies, and therefore, are not addressed herein. This includes comments related to the development of various resource management plans and other protection, mitigation, and enhancement (PM&E) measures. In addition, this determination does not address study requests that were received related to project alternatives that we do not plan to evaluate in our environmental analysis (e.g., decommissioning Cape Horn dam). This determination only addresses comments specific to the merits of approved and proposed studies submitted pursuant to Section 5.15 of the Commission's regulations.

Study Plan Determination

Pursuant to Section 5.15(d) of the Commission's regulations, any proposal to modify a required study must be accompanied by a showing of good cause and must include a demonstration that: (1) the approved study was not conducted as provided for in the approved study plan, or (2) the study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way. As specified in Section 5.15(e), requests for new information gathering or studies must include a statement explaining: (1) any material change in law or regulations applicable to the information request, (2) why the goals and objectives of the approved study could not be met with the approved study methodology, (3) why the request was not made earlier, (4) significant changes in the project proposal or that significant new information material to the study objectives has become available, and (5) why the new study request satisfies the study criteria in Section 5.9(b).

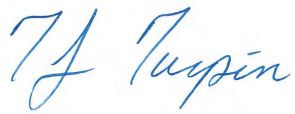
Appendix A summarizes our determination on requested modifications to the approved study plan. Specific modifications to the studies and the bases for modifying them are explained in Appendix B. Commission staff considered all study plan criteria in

[3] The nine water agency contractors include the Marin Municipal Water District; North Marin Water District; Valley of the Moon Water District; the Town of Windsor; and the cities of Cotati, Petaluma, Rohnert Park, Santa Rosa, and Sonoma.

accordance with Sections 5.9(b) and 5.15(d) of the Commission's regulations. However, only the specific study criteria relevant to the determination are referenced in Appendix B. Requested study modifications to which no entities objected are deemed approved under Section 5.15(c)(7) and not discussed in Appendix B. A summary of these modifications is provided in Appendix C.

Please note that nothing in this study plan determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies. If you have any questions, please contact Quinn Emmering at (202) 502-6382, or via e-mail at quinn.emmering@ferc.gov.

Sincerely,



Terry L. Turpin
Director
Office of Energy Projects

Enclosures: Appendix A – Summary of Determination on Requested Modification to Approved Study
Appendix B – Staff's Recommendations on Requested Modifications to Approved Studies
Appendix C – Requested Modifications Deemed Approved under Section 5.15(c)(7) of the Commission's Regulations

# APPENDIX A

## SUMMARY OF DETERMINATION ON REQUESTED MODIFICATION TO APPROVED STUDY

| Study | Recommending Entities | Approved | Approved with Modifications | Not Required |
|---|---|---|---|---|
| **Approved Studies – Requested Modifications** | | | | |
| AQ 1 – Hydrology and Project Operations Modeling | NOI Parties | X | | |
| | NMFS | | | X |
| AQ 2 – Water Temperature | NOI Parties | X | | |
| AQ 3 – Water Quality | NOI Parties | X | | |
| | NMFS | | | X |
| | Regional Water Board | | | X |
| AQ 4 – Fluvial Processes and Geomorphology | NOI Parties | X | | |
| | California DFW, NMFS, Regional Water Board | | | X |
| AQ 5 – Instream Flow | NOI Parties | X | | |
| | NMFS, California DFW | | | X |
| | NMFS | | | X |
| AQ 6 – Lake Pillsbury Fish Habitat | NOI Parties | | X | |
| | NMFS | | | X |
| | LPA | | X | |
| AQ 7 – Fish Passage | NOI Parties | X | | |
| | NMFS | | | X |

| Study | Recommending Entities | Approved | Approved with Modifications | Not Required |
|---|---|---|---|---|
| | California DFW | | | X |
| AQ 8 – Fish Entrainment | NOI Parties | X | | |
| AQ 9 – Fish Populations | NOI Parties | X | | |
| AQ 10 – Special-status Amphibians and Aquatic Reptiles | LPA | | | X |
| TERR 2 – Wildlife Resources | NOI Parties | | X | |
| | California DFW | | X | |
| REC 1 – Recreation Facility Assessment | NOI Parties | | X | |
| | Forest Service | | | X |
| | LPA | | | X |
| REC 2 – Reservoir Recreation Opportunities | Forest Service | | X | |
| | California DFW | X | | |
| | MCFB | X | | |
| REC 3 – Whitewater Boating Flow Assessment | Park Service | X | | |
| | American Whitewater | | | X |
| | Staff | X | | |
| LAND 1 – Project Roads and Trails Assessment | Forest Service | | | X |
| LAND 2 – Visual Resource Assessment | Forest Service | | | X |
| LAND 3 – Hazardous Fuels Reduction Assessment | NOI Parties | X | | |
| | Forest Service | | X | |
| CUL 1 – Cultural Resources | NOI Parties | X | | |

| Study | Recommending Entities | Approved | Approved with Modifications | Not Required |
|---|---|---|---|---|
| CUL 2 – Tribal Resources | NOI Parties | X | | |
| **New Study Requests** | | | | |
| AQ 12 – Scott Dam Removal | NOI Parties | X | | |
| | Water Board | | | X |
| | MCFB | | | X |
| | MCFB, SCFB | | | X |
| SE 1 – Socioeconomic Effects of Dam Removal | NOI Parties | | | X |
| | NMFS, County of Lake, Water Contractors, MCFB, SCFB, FER, LPA, Jonathan Whipple, Dave Luhrs | | | X |

# APPENDIX B

# STAFF'S RECOMMENDATIONS ON REQUESTED MODIFICATIONS TO APPROVED STUDIES

## GENERAL ISSUES

### Data Transfer between PG&E and the NOI Parties

In the ISR, the NOI Parties comment that PG&E's withdrawal in January 2019 halted all study implementation, which resulted in studies being terminated at varying levels of completion and documentation. The NOI Parties note that PG&E has reported the status of all approved studies in tabular form (see ISR, Attachment 2). For some studies PG&E provided more comprehensive technical study summaries which describe the completion status for each study and the preliminary results. However, the NOI Parties state that some of the supporting data, analyses, or models for many studies remain in the possession of PG&E's contractor; therefore, some data collection efforts may need to be repeated by the NOI Parties if the data collected by PG&E are not available.

Although the transfer of information for approved studies may be ongoing, Commission staff note that the NOI Parties are still responsible for filing all of the information and results required by the approved study plan in accordance with the Commission's regulations, and based on the schedule outlined in the revised process plan and schedule issued on June 3, 2020. The deadline for filing the Updated Study Report is September 14, 2021.

## PROPOSED STUDIES AND MODIFICATIONS

### Study AQ 1 – Hydrology and Project Operations Modeling

Background

The approved study plan requires the development of a project operations model (Operations Model) using the U.S. Army Corps of Engineer's Hydrologic Engineering Center Reservoir Simulation (HEC-ResSim) model to simulate current and potential future operations of the project. The model will simulate project operations for water years 1975 through 2016, which includes both the driest (1977) and wettest (1983) water years since 1922. Using generated daily unimpaired inflow data, the Operations Model will simulate basic decisions made during project operations including the management of flood control reservation, water supply management, dam releases, reservoir levels,

and hydropower generation. The model output will generate mean daily flow from existing project facilities (i.e., the Eel River below Scott dam, Eel River below Cape Horn dam, and East Fork Russian River below Potter Valley powerhouse) and daily reservoir elevations (Lake Pillsbury and Van Arsdale reservoirs). Model nodes (data output locations) will occur at each major inflow or outflow location, including reservoirs, diversions, gages, and tributary inflow/accretion locations. Other study components include: (1) an Indicators of Hydrological Alterations (IHA) analysis; (2) a flood frequency analysis for the unimpaired hydrology and modeled existing operations hydrology; and (3) a characterization of Lake Pillsbury spills and downstream ramping rates below Scott dam, Cape Horn dam, the Potter Valley powerhouse tailrace release and upstream of Lake Pillsbury.

A technical study summary that PG&E provided to the NOI Parties indicates that the following study components have been completed: (1) creation of a database of historical data; (2) development of an existing operations daily flow dataset from 2011 to 2017; (3) installation of stage recorders; (4) development of the HEC-ResSim model including an existing Operations Model run for the 1911– 2017 period of record (POR); (5) development of the daily unimpaired hydrology for 10 watersheds and travel time estimates for the Eel River; (6) unimpaired flow analysis; and (7) calculation of watershed accretions. Quality assurance/quality control for the data has not yet been completed, nor has the modeling or resulting analysis and reporting.

Requested Study Modifications

NMFS recommends that the study be modified to include a third-party review and sensitivity analysis on the development, assumptions, and results of the hydrology and project operations model.

Comments on the Requested Study Modifications

In their reply to NMFS, the NOI Parties state that the hydrology model that will be used in *Study AQ 1 – Hydrology and Project Operations Modeling* was developed in a transparent process by the Congressman Huffman Ad Hoc Committee Water Supply Working Group, which includes representatives from the NOI Parties, PG&E, and NMFS. The NOI Parties state that the approved study plan already requires collaboration with a technical modeling group made up of relicensing participants with modeling expertise on the use of the calibrated/validated HEC-ResSim model for simulating proposed operations and evaluating other operational alternatives, including climate change. As such, the NOI Parties state that they will continue to work with agencies and stakeholders to have an open and transparent process in the continued development of hydrology information and modeling, including any changes to model input,

assumptions, and model runs. Therefore, the NOI Parties believe that the requested additional third-party review and sensitivity analysis is unnecessary.

Discussion and Staff Recommendation

Collaborating with a technical modeling group that is made up of relicensing participants with modeling expertise is already required by the approved study plan. Therefore, there is no demonstrated need for a third-party review, and we do not recommend that the study be modified to include any additional third-party review and sensitivity analysis.

**Study AQ 3 – Water Quality**

Background

The goal of the study is to: (1) characterize physical, chemical, and bacterial water quality conditions in project reservoirs and affected river reaches through the collection of seasonal water quality data, and compare this data to the objectives of the 2018 Water Quality Control Plan (Basin Plan) for the North Coast Region and other water quality standards; and (2) characterize mercury levels in Lake Pillsbury fish by analyzing tissue from fish collected as part of *Study AQ 9 – Fish Populations* and compare the results to appropriate fish consumption standards for humans and wildlife.

The study area includes: (1) Lake Pillsbury; (2) the Eel River between Scott dam and the Middle Fork Eel River confluence (including Van Arsdale reservoir, which is primarily riverine in character); (3) the East Fork Russian River between the Potter Valley powerhouse and the ordinary high water mark of Lake Mendocino (non-project) located downstream of the powerhouse; and (4) tributaries upstream of Lake Pillsbury.

The approved study plan requires: (1) seasonal *in situ* water quality measurements and collection of water quality samples; (2) monthly Lake Pillsbury water quality sampling; (3) *in situ* river water quality sampling; (4) bacteriological monitoring; (5) sampling of cyanobacteria (i.e., blue-green algae) and toxins [collectively harmful algae blooms (HABs)]; (6) sampling of certain metals, including mercury and methyl mercury on a monthly and seasonal basis in accordance with EPA methods nos. 1630 and 1631; (6) fish tissue mercury sampling to characterize mercury levels in Lake Pillsbury fish and compare the results to appropriate fish consumption standards for humans and wildlife; use of water quality data previously collected (by PG&E) to support other studies including *Study AQ 2 – Water Temperature* and *Study AQ 6 – Lake Pillsbury Fish Habitat*.

Completed components of the approved study plan include: (1) study site selection; (2) seasonal river water quality sampling; (3) monthly Lake Pillsbury water

quality sampling; (4) in situ river water quality sampling; (5) bacteriological monitoring; (6) cyanobacteria and toxin sampling; and (7) fish tissue mercury sampling.

Requested Study Modifications

The NOI Parties request that the study be modified to include an additional component related to the proposed removal of Scott Dam. The NOI Parties propose to evaluate the effects of the proposed Scott Dam removal on water quality by using data from reference sites upstream of Lake Pillsbury as well as water temperature modeling from *Study AQ 2 – Water Temperature*, to inform potential changes to water quality parameters in the Eel River. In addition, the NOI Parties propose to sample for and identify benthic algae during summer and fall at upstream reference sites, and sites immediately downstream of Scott dam for comparison. The specific methods and level of detail would be determined in consultation with the Water Temperature/ Quality Technical Workgroup.

NMFS recommends that dissolved oxygen (DO) variability be modeled coincident with water temperatures based upon DO collected from a vertical array in Lake Pillsbury near Scott Dam to predict future changes in DO. The Regional Water Board recommends that the model chosen for the water quality analysis be able to model the dissolved oxygen impacts associated with the growth, respiration, and decay of algae.

Comments on Requested Study Modifications

The NOI Parties state that *Study AQ 3 – Water Quality* incorporates results from the water temperature modeling (*Study AQ 2 – Water Temperature*) to inform how other water quality parameters might perform under future project operations following the proposed removal of Scott Dam and Lake Pillsbury. Therefore, the NOI Parties believe the methods proposed in *Study AQ 3 – Water Quality* would provide sufficient information on the magnitude and trajectory of change in nutrients, algal biomass, and DO to evaluate potential effects of the proposed dam removal.

Discussion and Staff Recommendation

Water quality in the Eel River in the project area has the potential to be affected by the proposed removal of Scott Dam and the proposed operation of the project. In the short-term, during and after the proposed removal of Scott Dam, there is potential for elevated levels of biological oxygen demand related to high concentrations of algal biomass in the sediments of Lake Pillsbury, which could adversely affect DO levels downstream in Eel River in the project area. Therefore, staff recommends the NOI Parties' proposed study modification to evaluate the short-term effects of the proposed Scott Dam removal on water quality by including benthic algae sampling and identification during summer and fall at upstream reference sites and sites immediately

downstream of Scott Dam for comparison. In addition, the NOI Parties' proposed new *Study AQ 12 – Scott Dam Removal* would include an assessment of biological oxygen demand in the evaluation of biological impacts associated with high suspended sediment concentrations following proposed Scott dam removal. Sediment samples would be collected for laboratory testing of sediment oxygen demand, and results would be used to estimate dissolved oxygen levels in the Eel River during and following proposed dam removal. The information provided by these study components would adequately predict future short-term DO levels in the Eel River during and after proposed dam removal, making the DO modeling requested by NMFS and the Regional Water Board unnecessary.

Over the long-term following the proposed dam removal, DO through the project reach would be expected to reflect DO levels in the Eel River upstream of the project. Therefore, staff recommends the NOI Parties' proposed study modification to use water quality sampling results from reference sites in the Eel River and tributaries upstream of Lake Pillsbury, as well as the water temperature modeling from *Study AQ 2 – Water Temperature*, to evaluate the long-term effects of Scott Dam removal on water quality in the Eel River. The information provided by this study component should be sufficient to characterize water quality parameters in the Eel River, including DO levels, that would occur over the long-term after the proposed removal of Scott Dam.

**Study AQ 4 – Fluvial Processes and Geomorphology**

Background

To augment existing information on potential project-affected river reaches and reservoirs, the approved study plan requires the NOI Parties to: (1) characterize the hydrology in relation to geomorphic and riparian processes (in coordination with *AQ 1 – Hydrology and Project Operations Modeling*); (2) characterize sediment storage in Lake Pillsbury and coarse sediment supply in river reaches to identify downstream effects on coarse sediment; (3) model the initiation of motion for spawning-sized gravel substrate; (4) characterize the amount of spawning substrate including fine sediment in spawning substrates and pools; (5) characterize the size, amount, and function of LWD that occurs in project reservoirs and in the Eel River downstream of project dams; and (6) characterize geomorphology and woody riparian vegetation (in coordination with *Study TERR 1 – Botanical Resources*) at selected study sites. The study area includes a comparison site in the Eel River upstream of Lake Pillsbury and in the lower Middle Fork Eel River and an analysis of potential spawning gravel in selected river reaches upstream of Lake Pillsbury.

The NOI Parties note that the historical data have been compiled and field data collection has been initiated but analysis and reporting are incomplete for most of the study elements described above.

Requested Study Modifications

California DFW, NMFS, and the Regional Water Board request that the study be modified to: (1) evaluate the impacts of sediment released by the proposed removal of Scott Dam, including the estimated suspended sediment concentration and transport capacity and the effect on channel stability; and (2) extend the geographic study area downstream to the Eel River Estuary due to potential effects of the proposed dam removal on lower Eel River adult salmonid staging pools and estuarine habitat.

NMFS reiterates a request it originally filed in response to PG&E's PAD (filed August 4, 2017) that the approved study adopt specific methodologies included in "Effects of the Project on Fluvial Processes for Anadromous Fish Habitat" in light of the proposed removal of Scott Dam. NMFS states that the detailed study methodologies provided by NMFS are standard practice and were developed from relevant studies conducted in California.

Comments on Requested Study Modifications

In response to the study modification requests, the NOI Parties state that the study will assess sediment supply to the Eel River for key tributary basins downstream to the estuary. Additionally, elements of *Study AQ 1 – Hydrology and Project Operations* and *Study AQ 12 – Scott Dam Removal* will include investigating the potential effects of the proposed project on hydrology and sediment supply and transport characteristics at key locations downstream of the Middle Fork Eel River. The results from those studies will inform the study in assessing changes to channel conditions downstream of the Middle Fork Eel River.

Regarding the request to extend the study area downstream of the Middle Fork Eel River, the NOI Parties state that the need for doing so will depend on the results of sediment transport modeling, sediment mass balance assessment, and hydrology assessment, and therefore they are not proposing the extension at this time. The NOI Parties also state that establishing additional intensive study sites and collecting additional site-specific information from the Middle Fork Eel downstream to the estuary (approximately 120 miles) may not be necessary and would be very expensive and therefore it is not proposed at this time.

In response to NMFS request to include methods from its previous filing "Effects of the Project on Fluvial Processes for Anadromous Fish Habitat", the NOI Parties state

that the approved study already includes the same or similar objectives and approaches to those included in NMFS requested study. The NOI Parties also note that *Study AQ 4 – Fluvial Processes and Geomorphology*, in combination with *Study AQ 12 – Scott Dam Removal*, incorporate both the quantitative analyses and conceptual models necessary to address the same study elements and key questions identified in NMFS' requested study methodologies. The NOI Parties further note that the methods proposed in studies *AQ 4* and *AQ 12* are standard practice and consistent with relevant studies implemented for recent hydroelectric relicensing projects throughout the Pacific states.

Discussion and Staff Recommendation

The NOI Parties' proposed removal of Scott Dam would affect geomorphology and riparian resources in the Eel River; however, these effects would diminish with distance downstream from the dam removal site. The proposed study currently includes an assessment of sediment supply to the Eel River for key tributary basins downstream to the estuary. Additionally, the study area for the analysis of sediment supply and potential sediment transport modeling focuses on the 49-mile reach of the Eel River from Scott Dam to its confluence with the Middle Fork Eel River. The results from the sediment mass balance assessment, sediment transport modeling, and hydrology assessment components of the approved study will inform the potential need for extending the study area an additional 120 miles downstream. Therefore, extending the study area downstream to the estuary now, as recommended by California DFW, NMFS, and the Regional Water Board, would be premature and we do not recommend this modification at this time.

Regarding NMFS' request to adhere to its specified methods to assess the project's effects on fluvial processes for anadromous fish habitat, NMFS did not indicate why the proposed methods are not adequate. The methods required in *Study AQ 4 – Fluvial Processes and Geomorphology* and proposed for *Study AQ 12 – Scott Dam Removal* are consistent with generally accepted practices in the scientific community [Section 5.9(b)(6)], and should be sufficient to address the effects of the project proposal on fluvial processes for anadromous fish habitat. Therefore, we do not recommend NMFS' recommended study modification.

**Study AQ 5 – Instream Flow**

Background

The goal of the study is to augment existing information and identify potential project effects on anadromous fish habitat related to instream flows downstream of the project dams in the Eel River and below the powerhouse in the East Fork of the Russian River. The approved study plan requires the NOI Parties to: (1) review and update, if

appropriate, the current Eel River geomorphic segments (e.g., channel width, sinuosity, slope, bed material, single/multiple channel, and hydrology) and mesohabitat (e.g., low gradient riffle, moderate gradient riffle, riffle/run, shallow pool, and deep pool) proposed for study; (2) review the existing instream flow hydraulic model to verify the modeling approach and calibration; (3) review and update, if appropriate, anadromous species and life stage habitat suitability criteria (HSC), including juvenile steelhead water temperature HSC; (4) re-model habitat versus flow relationships for anadromous species and life stages using updated information, if appropriate; (5) evaluate fish stranding caused by stage changes and ramping rates; (6) identify the timing of Eel River juvenile salmon out-migration; (7) model foothill yellow-legged frog (FYLF) habitat; (8)select a modeling approach to model FYLF habitat as a function of flow and ramping rates; and (9) conduct an assessment of East Fork Russian River minimum flows for trout habitat suitability using the Delphi method.[4]

The study area includes the following project reservoirs and affected river reaches: (1) the Eel River between Scott Dam and the Middle Fork Eel River confluence (including Van Arsdale reservoir, which is primarily riverine in character); and (2) the East Fork Russian River between the Potter Valley powerhouse and the ordinary high water mark of Lake Mendocino (non-project) located downstream of the powerhouse.

Completed components of the approved study plan include: (1) historical data compilation and field data collection initiated; (2) Eel River geomorphic segments and mesohabitat mapping; (3) selection of target species and/or guilds; (4) review of historical PHABSIM hydraulic modeling and cross-sections; (5) four FYLF sites selected and data collected on bed geometry, substrate, and vegetation; (6) FYLF modeling approach selected; and (7) assessment of East Branch Russian River minimum flows for trout habitat suitability and recreation i.e., swimming.[5]

Requested Study Modifications

The NOI Parties propose to modify the study to: (1) run the PHABSIM model using updated hydrology information from *Study AQ 1 – Hydrology and Project Operations Modeling* developed to reflect Scott Dam removal and modified Van Arsdale diversions, and produce habitat time series analysis using the new hydrology and water temperature information; and (2) use 2-D hydraulic modeling sites developed under the

[4] The Delphi method uses a panel of experts (i.e., fishery biologists) to conduct on-site evaluations of trout habitat suitability.

[5] Although components (2) through (5) have been completed, refinement and interpretation of the data has not and remain with PG&E's contractor.

FYLF instream flow study to evaluate habitat and productivity of juvenile salmonids in relation to streamflow.

NMFS requests that the geographic scope of the study be extended downstream to the Pacific Ocean to assess the impact of long-term project operations and bypass flows on habitat conditions downstream of Cape Horn dam, particularly during sensitive salmonid migration periods (i.e., fall and spring, and during low flow winters fall to spring). NMFS and California DFW request that the study include a production capacity model, such as a lifecycle model, which NMFS states could be expanded to the entire Eel River watershed to support the objectives of the Fisheries Restoration Plan described in the NOI Parties' Feasibility Study. NMFS requests that the NOI Parties' proposed study modification also evaluate the anticipated short-term instream flow conditions during the Scott Dam removal process and the level of impacts to aquatic resources at the appropriate de-construction time-scale.

Reply Comments

The NOI Parties state that the proposed modifications to *Study AQ 5 – Instream Flow* will provide for an assessment of the effects of the proposed project and potential future operations on stream flows and fish habitat, as well as juvenile out-migration timing. The NOI Parties point out that the approved *Study AQ 5 – Instream Flow* includes study sites between Scott Dam and the Middle Fork Eel River, and additional instream flow modeling sites are not proposed downstream of the Middle Fork Eel River. The NOI Parties note that the approved *Study AQ 9 – Fish Populations* includes developing a conceptual life cycle model and analysis framework in collaboration with a technical working group. The NOI Parties do not propose a production capacity life cycle model for the entire river due to the large spatial extent and high cost, which they estimate would be between $150,000 - $250,000. In addition, the NOI Parties point out that the potential effects of the Scott Dam removal process on instream flows and aquatic resources is proposed to be evaluated as part of the new *Study AQ 12 – Scott Dam Removal*.

Discussion and Staff Recommendation

The effect of the project's regulated flow releases on fish habitat in terms of weighted usable area diminishes with distance downstream from Cape Horn Dam because of tributary inflow within the 37-mile project-affected reach and substantial inflow from the Middle Fork, North Fork, South Fork, and Van Duzen River downstream of the project-affected reach. Moreover, the approved *Study AQ 9 – Fish Populations* includes development of a conceptual life cycle model and analysis framework in collaboration with a technical working group. The conceptual life cycle model and analysis framework is designed to integrate historical fish population data (e.g.,

abundance trends, timing); new fish population data (e.g., escapement data, habitat upstream of Lake Pillsbury); and other ecological data, analyses, and tools developed as part of the relicensing studies (hydrology, water temperature, water quality, geomorphology, instream flow, fish passage, entrainment) to identify life stage specific limiting factors, formulate and compare alternative operations scenarios, and develop PM&E measures.

The approved study area for the conceptual life-cycle model includes the project-affected river reach in the Eel River from Lake Pillsbury down to the confluence of the Middle Fork Eel River. Expanding the geographic scope of this study to the entire Eel River basin as recommended by NMFS and related to recovery planning under NMFS guidelines, pertains to non-project management decisions and actions outside of the scope of project effects. Therefore, we do not recommend that the study plan be modified to extend the geographic scope of the instream flow study in the Eel River an additional 120 miles downstream to the Pacific Ocean.

**Study AQ 6 – Lake Pillsbury Fish Habitat**

Background

The goal of the study is to characterize the availability of coldwater and warmwater fish habitat in Lake Pillsbury during summer and early fall under existing project operations. The approved study requires the use of information developed through the performance of *Study AQ 1 – Hydrology and Project Operations Modeling*, *Study AQ 2 – Water Temperature*, *Study AQ 3 – Water Quality*, and *Study AQ 9 – Fish Populations*.

The approved study plan requires the following: (1) a summary of the current fish species assemblage data (e.g., coldwater and warmwater species) in Lake Pillsbury; (2) historical daily water surface elevations and pool volumes over the 1975–2016 hydrological POR, using available water surface elevation records; and (3) existing project operation data (i.e., instream flow requirements, infrastructure, and operations), daily water surface elevations, and pool volumes over the 1975–2016 hydrological POR.

The approved study plan also requires the identification of specific criteria to be used to define coldwater and warmwater fish habitat in consultation with stakeholders, including criteria for water quality, such as dissolved oxygen and hydrogen sulfide, and successful breeding and rearing. It also requires the identification of measures to reduce successful breeding and rearing for potential juvenile salmonid predators such as pikeminnow and bass (potential juvenile salmonid predators). The study plan states that the latter has application to improve the survival of potential downstream juvenile anadromous migrants through Lake Pillsbury, if passage is provided at Scott Dam.

Lastly, the study requires the hydrology data (reservoir elevations and pool volumes) to be used in combination with water quality information (epilimnion and hypolimnion water temperatures and dissolved oxygen concentrations) during the summer and early fall to provide a time-series analysis of the amount of available coldwater and warmwater fish habitat (including littoral zone spawning habitat) in Lake Pillsbury. The available habitat is to be analyzed over the 1975–2016 hydrological POR for modeled existing project operations, including the potential effects of climate change on existing operation. The completed component of the approved study plan includes initiation of field data collection for Lake Pillsbury fish species composition, relative abundance, and size in *Study AQ 9 – Fish Populations*.[6]

Requested Study Modification

The NOI Parties request that this study no longer be required because the proposed removal of Scott Dam would eliminate the reservoir's fish habitat.

Comments on Requested Study Modification

LPA disagrees with the rationale provided by the NOI Parties to not conduct *Study AQ 6 – Lake Pillsbury Fish Habitat*, contending that the proposed removal of Scott Dam and Lake Pillsbury is an insufficient reason under Section 5.15(d) for not conducting the study. LPA notes that the NOI Parties are studying other resources that would be affected by the proposal to remove Scott Dam and the study should be treated the same and be conducted.

NMFS agrees with the requested modification to not conduct the study because the NOI Parties' proposal to remove Scott Dam would eliminate Lake Pillsbury. However, because draining Lake Pillsbury may create short-term adverse habitat conditions for salmonids, NMFS requests an assessment of habitat conditions within the boundaries of the Lake Pillsbury footprint that are expected during Scott Dam removal.

Reply Comments

In response to LPA, the NOI Parties state that the removal of Scott Dam and Lake Pillsbury is a fundamental component of its proposed project and conducting a study on Lake Pillsbury fish habitat when the reservoir would be removed is not an efficient use of resources.

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[6] Although the field data have been collected, refinement and interpretation of the data has not been completed and remain with PG&E's contractor. PG&E is allowing the contractor to release the data but is not willing to incur the cost that would be required for the contractor to refine the data to be able to be interpreted accurately by other parties.

In response to NMFS, the NOI Parties state that the proposed new *Study AQ 12 – Scott Dam Removal* would assess the proposed dam removal under different removal approaches (one-time and phased) and would assess expected habitat conditions for salmonids within the reservoir footprint during dam removal.

Discussion and Staff Recommendation

Under the NOI Parties' proposal to remove Scott Dam, environmental conditions at the project would change with reservoir fish habitat in Lake Pillsbury being converted to riverine fish habitat. While LPA notes that the NOI Parties are studying other resources that could be affected by the proposed dam removal, the available information collected in Lake Pillsbury as part of *Study AQ 9 – Fish Populations* (e.g., fish species composition, relative abundance, and size) and *Study AQ 9 – Water Quality* (e.g., water temperature and dissolved oxygen profiles) should be adequate to characterize existing fish habitat and resources, making additional field work unnecessary. Therefore, we recommend the NOI Parties' requested modification to the study plan to no longer conduct *Study AQ 6 – Lake Pillsbury Fish Habitat*, except for the final report described below.

To provide information for staff to conduct an environmental analysis of the proposed removal of Scott Dam and the resulting conversion of the reservoir's fish habitat to riverine fish habitat, we recommend that the study plan be modified to require a final study report with a detailed description of the existing reservoir fish habitat and fish resources in Lake Pillsbury. The report should incorporate available information already collected under *Study AQ 6 – Lake Pillsbury Fish Habitat, Study AQ 9 – Fish Populations,* and from published and non-published resource agency technical reports, fish survey reports, and fish stocking records issued since 2010, and include citations or documentation of the sources. In addition, the final report should use available water quality information in Lake Pillsbury collected under *Study AQ 3 – Water Quality* to characterize the existing reservoir fish habitat. Concerning NMFS's requested assessment of the expected habitat conditions for salmonids within the reservoir footprint during dam removal, *Study AQ 12 – Scott Dam Removal* should provide the necessary information to predict expected habitat conditions and determine the need for a fish relocation and salvage plan.

**Study AQ 7 – Fish Passage**

Background

The goal of the approved study is to augment and evaluate existing information on fish passage to include the following elements: (1) document the location, nature, and characteristics of potential critical riffles that serve as fish barriers in the Eel River

between the Middle Fork Eel River and Scott Dam; (2) document tributary confluence access in the Eel River between the Middle Fork Eel River and Scott Dam, and in Lake Pillsbury; (3) characterize the effectiveness of upstream passage of adult anadromous species at Cape Horn Dam (e.g., monitor adult fish passage through the ladder to identify the number of fish entering the ladder, passing through the ladder, or falling-back at the ladder (including any mortality at the ladder); (4) characterize downstream passage of juvenile anadromous species at Cape Horn Dam with respect to potential injury; (5) evaluate potential anadromous fish habitat upstream of Scott Dam and Lake Pillsbury; (6) identify and evaluate (i.e., at a conceptual level) means for providing upstream and downstream passage of anadromous fish at Scott Dam; and (7) monitor adult anadromous salmonid escapement in the Eel River using Dual Frequency Identification Sonar (DIDSON).

The study area includes: (1) Scott Dam, Lake Pillsbury, and anadromous salmonid habitat upstream of Lake Pillsbury; (2) the Eel River between Scott Dam and the Middle Fork Eel River confluence (including the Cape Horn Dam fish ladder and the Van Arsdale intake facilities); and (3) selected river reaches upstream of Lake Pillsbury below existing fish barriers to characterize potential anadromous fish habitat and downstream of the Middle Fork Eel River confluence to monitor adult anadromous salmonid escapement.

The approved study plan specifically requires the NOI Parties to: (1) establish a Fish Passage Technical Working Group composed of stakeholders knowledgeable in issues related to fish passage; (2) review and synthesize the critical riffle analyses conducted previously on the Eel River between Cape Horn dam and Outlet Creek confluence; (3) evaluate tributary confluence fish passage; (4) review and characterize adult anadromous salmonid passage at Cape Horn dam; (5) review and characterize Pacific lamprey passage at Cape Horn dam; (6) assess downstream juvenile anadromous fish passage at Cape Horn dam; (7) assess downstream passage of adult steelhead kelts (i.e., post-spawned steelhead) at Cape Horn dam; (8) assess salmon and steelhead escapement in the Eel River; (9) assess anadromous fish habitat upstream of Lake Pillsbury; and (10) identify and, at a conceptual level, evaluate the feasibility of conceptual fish passage options at Scott Dam.

Completed components of the approved study plan include: (1) formation of a Fish Passage Technical Working Group; (2) site selection and prioritization of critical riffles; (3) field data collection on the distribution and relative abundance of Sacramento pikeminnow in tributaries upstream of Lake Pillsbury; and (4) monitoring of adult anadromous salmonid escapement in the Eel River using DIDSON.

Requested Study Modifications

The NOI Parties request that the study be modified to no longer: (1) fund and install DIDSON sonar fish counting stations at one location in the Eel River upstream of the South Fork Eel River confluence to monitor escapement during a year from mid-October through April; and (2) assess anadromous fish habitat in tributaries to Lake Pillsbury and in the Eel River upstream of Lake Pillsbury.

Comments on Requested Study Modifications

NMFS and California DFW request that the NOI Parties work with the resource agencies and tribes to continue and expand deployment of DIDSON sonar units in the Eel River and fund technician positions, because California DFW has DIDSON sonars available for use but requires more field technician support. NMFS and California DFW state that expanding the DIDSON sonar network into the Van Duzen River, Middle Fork Eel River, North Fork Eel River, and potentially other areas, would allow fisheries managers to establish the relative distribution of salmonids in the upper Eel River, which may provide insight to mitigating loss of refugia areas from Scott Dam removal activities. Furthermore, they state that the continuation of the current mainstem DIDSON sonar location, while extending the monitoring season into the spring, would capture the summer-run steelhead migration, an important component of assessing future project operation alternatives. California DFW requests that the NOI Parties conduct an evaluation of barriers (natural or man-made) to evaluate passage conditions within the approximately 300 miles of historically available habitats upstream of Scott Dam that salmonids may access after Scott Dam is removed.

Reply Comments

The NOI Parties state that the DIDSON monitoring that was performed in the mainstem Eel River upstream of the South Fork for 2 years provides valuable information on escapement of adult anadromous salmonids. The NOI Parties state that they understand that DIDSON monitoring will continue in some Eel River locations by California DFW and others. The NOI Parties believe that existing abundance and life history timing information is sufficient to inform the proposed studies within the study area, and do not propose funding the existing or an expanded DIDSON network at this time. However, the NOI Parties propose to consider any additional Eel River DIDSON fish population monitoring information for the Eel River made available to them during study implementation.

The NOI Parties also state that the requirement in the approved study plan to assess anadromous fish habitat in tributaries to Lake Pillsbury and in the Eel River upstream of Lake Pillsbury is no longer necessary because the proposed removal of Scott

Dam and elimination of Lake Pillsbury would remove impediments to anadromous fish access to tributary habitat.

Discussion and Staff Recommendation

As required by the approved study plan, DIDSON monitoring was conducted in the mainstem Eel River upstream of the South Fork Eel River for 2 years, providing information on the abundance and life history timing of salmonids that would inform the remaining components of the approved plan and would inform the need for license conditions related to the NOI Parties' proposal. Therefore, we do not recommend that the NOI Parties fund technician position(s) to continue DIDSON monitoring efforts in the Eel River. In addition, California DFW's request for an evaluation of anadromous fish habitat and barriers in tributaries to Lake Pillsbury is not warranted, because the project does not currently affect barriers to anadromous fish migration or anadromous fish habitat upstream of Scott Dam and the proposal to remove Scott Dam would similarly not affect those barriers or fish habitat [Section 5.9(b)(5)].

**Study AQ 10 – Special-status Amphibians and Aquatic Reptiles**

Background

To augment existing information on special-status aquatic species, including the foothill yellow-legged frog (FYLF), the approved *Study AQ 10 – Special-status Amphibians and Aquatic Reptiles Study* includes surveys to: (1) characterize, map, and document FYLF habitats; (2) document the distribution and abundance of FYLF breeding sites and populations in potential project-affected reaches; and (3) document the timing and length of the FYLF breeding season.

The NOI Parties filed separate privileged and public versions of its ISR. The privileged version includes georeferenced location information on special-status species, including geographic coordinates of reaches containing FYLF breeding sites and observed counts of FYLF egg masses (hereafter, clutch data) for each site. The ISR summarizes the results of FYLF field surveys, including general location data of identified breeding sites, and indicates that field surveys for the frog are complete.

Requested Study Modification

LPA disagrees with the NOI Parties' justification for filing FYLF clutch data as privileged because it believes the NOI Parties: (1) failed to meet the Commission's good cause standard for modifying an approved study [Section 5.15(d)]; and (2) the NOI Parties incorrectly reference Section 385.1112 of the Commission's regulations, which

only applies to the filing of privileged information for proceedings under the Natural Gas Policy Act.

Comments on Requested Study Modification

In response, the NOI Parties comment that the FYLF is designated as a species of special concern by the state of California and that it's common practice to protect survey information and data for sensitive species which, if made public, could jeopardize the species. The NOI Parties also note that a public version of the study was filed on October 14, 2020, as Attachment E to the ISR Meeting Summary.

Discussion and Staff Recommendation

Because the approved study plan states that "all data and analyses will be provided, as appropriate, to interested parties in an Excel spreadsheet (electronic format)"[7], we do not consider filing the clutch data as privileged to be a modification to the approved study plan. We also note that the clutch data does not appear to be protected by federal law or the Commission's regulations because none of the major acts, including ESA, designed to protect threatened and endangered species have provisions that restrict access to information related to protected species. As such, interested entities could request that the Commission provide them with the filed information pursuant to the Freedom of Information Act.

**Study TERR 2 – Wildlife Resources**

Background

To supplement existing information on wildlife species potentially affected by the project, the study plan includes: (1) identification of special-status wildlife species potentially occurring in the project area; (2) a reconnaissance survey to document incidental observations of special-status wildlife species; (3) assessment and mapping of potential nesting habitat for special-status northern goshawk and federally threatened northern spotted owl using available information and vegetation maps collected in *Study TERR 1 – Botanical Resource* and surveys to ground truth habitat maps; (5) bald eagle nesting surveys consistent with the existing Potter Valley Project Bald Eagle Management Plan, which is required by the current license (Article 54; PG&E 2004); (6) assessment and mapping of potential denning habitat for special-status fisher and Pacific marten using available information and vegetation maps collected in *Study TERR 1 – Botanical Resource* and surveys to ground truth habitat maps; and (7) surveys to identify project facilities potentially supporting roost sites for special-status bat species.

[7] PG&E's Revised Study Plan at AQ 10-11.

The study plan also includes an evaluation of the availability of tule elk foraging habitat within the seasonal inundation zone of Lake Pillsbury under existing project operations in different water years that includes: (1) using historical reservoir gaging data to characterize water surface elevations over the 1975–2016 POR; (2) incorporating existing topographic data in the lake into a geographic information system to characterize the amount, location, and timing of the exposed lakebed; (3) establishing three representative line transects, in consultation with resource agencies, to characterize habitat within the seasonal inundation zone on the north side of the lake; (4) conducting vegetation surveys in March, July, and September along transects using the line-intercept method for vegetation data to determine the percent cover of plant species, species diversity, and timing and growth rates of vegetation establishment after the lakebed is dewatered; and (5) comparing habitat availability under existing project operations to habitat anticipated under potential future operational alternatives under consideration using the Project Operations Model from *Study AQ 1 – Hydrology and Projects Operation Modeling*.

The ISR states that PG&E provided survey results and mapping data, including raw data files. Historical data gathering, field surveys, and preliminary mapping have been completed, but final analysis, reports, and maps have not yet been completed for the following: (1) reconnaissance surveys for special-status wildlife species and a list of special-status wildlife species potentially occurring in the project area has not been compiled; (2) nesting habitat assessments for northern goshawk and northern spotted owl; (3) annual bald eagle nest surveys through 2019; (4) denning habitat assessments for fisher and Pacific marten; (5) evaluation of project facilities potentially used by special-status bat species; and (6) evaluation of tule elk habitat including vegetation sampling along three representative foraging transects, but characterization and analysis of potential tule elk foraging habitat along the Lake Pillsbury shoreline has not yet been completed.

Requested Study Modifications

The NOI Parties request to modify the approved study to no longer evaluate elk habitat availability under future operational alternatives under consideration using the Project Operations Model (see *Study AQ 1 – Hydrology and Projects Operation Modeling*) to compare to elk habitat availability under existing operations. They also request to conduct additional consultation with the resource agencies to determine appropriate modifications to the approved methods (described above) for evaluating elk habitat under the proposed removal of Scott Dam and Lake Pillsbury.

In its letter filed in response to SD3, California DFW states that the proposed removal of Scott Dam could impact tule elk around Lake Pillsbury by reducing forage

habitat that would result from the decreased water availability in the lake basin. California DFW requests that the study plan be modified to include an effort to track the elk population's movements (by radio-collaring elk) before dam removal to help evaluate potential impacts. California DFW also notes that bald eagle and osprey both use Lake Pillsbury for nesting and rely on the lake's fish for food. California DFW comments that because eagle and osprey would be impacted by the proposed changes that would reduce suitable foraging habitat, they should also be analyzed in the study.

Comments on Requested Study Modifications

The NOI Parties did not provide comments on California DFW's two requests for modifications to the approved study plan.

Discussion and Staff Recommendation

*Tule Elk*

Regarding California DFW's requested modification, it's unclear how detailed spatial information on elk movements would be used to assess project-related impacts to elk habitat to inform staff's environmental analysis. Further, California DFW does not describe the study's goals and objectives [Section 5.9(b)(1)] nor describe the level of effort and cost associated with its requested modification [Section 5.9(b)(7)]. For these reasons we do not recommend adopting California DFW's requested study modification.

The NOI Parties would continue to evaluate the availability of elk habitat under existing project operations, as described in the study plan. However, because the NOI Parties propose to remove Scott Dam and dewater Lake Pillsbury, no potential future operational alternatives are under consideration that involve Lake Pillsbury. [Section 5.15(e)(4)]. Therefore, we recommend the NOI Parties' proposed modification to eliminate an evaluation of elk habitat under future operational alternatives using the Project Operations Model. The NOI Parties' request to conduct additional consultation with resource agencies on methods to evaluate elk habitat would defer potential modifications until after the issuance of this study modification determination. Staff cannot evaluate potential modifications to the approved study that could be recommended as a result of future consultation with multiple resource agencies. Therefore, we do not recommend this requested modification for further consultation.

*Study TERR 2 – Wildlife Resources*, as previously approved, will provide information on existing elk foraging habitat in the lake's inundation zone that could be affected by the proposed removal of Scott Dam and draining of Lake Pillsbury. Therefore, we recommend that this study component be completed as outlined in the approved study plan. In addition, the NOI Parties' proposed new *Study AQ 12 – Scott*

*Dam Removal* includes several provisions to inform any necessary revegetation plan within and around Lake Pillsbury following the proposed removal of the dam as well as predict the species composition, distribution, and timing of natural regeneration of existing plant communities. This information could also be used to evaluate the potential for future establishment of elk browse habitat within and around the Lake Pillsbury footprint to compare with existing habitat data collected for *Study TERR 2 – Wildlife Resources*. Therefore, in accordance with Section 5.15(d)(2) of the study criteria, we recommend that the study incorporate relevant vegetation data from *Study AQ 12 – Scott Dam Removal* to assess and describe elk forage habitat and potential impacts to tule elk under existing and future conditions of the project.

*Bald Eagle and Osprey*

The proposed removal of Scott Dam and the reservoir it impounds (Lake Pillsbury) would affect bald eagle and osprey that nest in the project area and forage for fish and other prey in Lake Pillsbury [Sections 5.9(b)(5) and 5.15(e)(4)].

The approved study plan includes a provision for compiling information collected during PG&E's annual bald eagle nesting surveys, which is required by the current license for the project (Article 54, *Bald Eagle Monitoring Plan*). This information should be adequate to inform an analysis of potential effects of the proposed project on bald eagles. Osprey could be similarly affected by the proposed changes. However, the approved study does not include nest surveys for osprey and the PAD provides almost no information on this species [Section 5.9(b)(4)]. Therefore, we recommend that the study be modified to include an evaluation of nesting osprey, as California DFW requests. To inform the evaluation, we recommend the study include surveys for osprey nests for at least one breeding season in the vicinity of Lake Pillsbury. Surveys should collect information to map active nest locations and estimate the number of breeding pairs that may be affected by the proposed changes to project facilities. Conducting the surveys in conjunction with the required annual surveys for eagle nests should provide this information at a reasonable additional cost and effort [Section 5.9(b)(7)]. The information collected from the surveys will be used to inform staff's environmental analysis.

**Study REC 1 – Recreation Facility Assessment**

Background

In order to assess the types of project facilities present in the project boundary, and the existing recreation use of, and access to, those facilities, the approved study requires the NOI Parties to: (1) conduct inventories and assessments at developed project recreation facilities to update information on facility capacity, condition, and consistency

with applicable accessibility standards; (2) conduct visitor surveys at the project recreation facilities to identify visitor needs, preferences, and perceptions regarding project recreation facilities and opportunities; (3) estimate existing recreation use using available information sources and information developed through vehicle counts; and (4) identify recreation trends, needs, and potential future recreation demand.

The approved study also requires that the survey instrument and protocols be developed in consultation with the Forest Service and requires the surveys to be: (1) conducted at all developed recreation facilities including the non-project Pine Point Day Use Area; (2) administered on randomly selected weekdays (one day per week), weekend days (one day per week), and all holidays throughout the peak recreation season (Memorial Day through Labor Day), according to a pre-established schedule, and as reservoir water levels decline, so that visitor responses can be correlated to specific water surface elevations; and (3) administered in English and Spanish.

The ISR states that PG&E did not provide a technical study summary. However, the ISR indicates that historical data compilation was in progress and surveys, data analysis, and reporting are incomplete for the study elements described above. No study variances were identified.

Requested Study Modifications

The NOI Parties request that the study be modified to: (1) conduct surveys to identify the nature and scope of Indian Tribes' recreation use of the Eel River downstream of Cape Horn dam; and (2) extend the visitor survey dates to include the tule elk wildlife viewing season in September/October, and during the prescribed tule elk hunting season.

The Forest Service states that the goals and objectives of the approved study cannot be met without modifications to the approved study methodology, because it does not address the changes to lake-based recreation and recreation facilities that may occur as result of the proposed removal of Scott Dam and Lake Pillsbury. Therefore, the Forest Service recommends that the study be modified to evaluate the effects of the proposed removal of Scott Dam on: (1) the viability of existing recreation facilities; and (2) how new recreation user groups could affect the project area (e.g., effects of the potential increase in motorized, off-highway vehicle (OHV) use on the dewatered lakebed on soil, vegetation, water quality, archeology, and wildlife). Additionally, due to changes in the project proposal, the Forest Service requests that the study be modified to no longer include an evaluation of existing recreation needs based on existing recreation facility features and capacities.

The Forest Service also requests that the visitor surveys be modified to include evaluations of visitor preferences related to potential recreation use following the proposed dam removal, including: (1) desired recreation activities; (2) if the existing user group would continue to recreate at the site; (3) other recreation user groups that may want to recreate; (4) the desired level of access; (5) the desired level of recreation development; (6) motorized and non-motorized recreation opportunities; and (7) user conflicts of new user groups.

Comments on Requested Study Modifications

LPA contends that the NOI Parties' requested modification to extend the visitor survey dates does not consider impacts to all recreation facility users. Therefore, LPA recommends that the study be revised to also consider seasonal and full-time residents who live and recreate at Lake Pillsbury. LPA indicates that its members and homeowners use the five general types of project recreation facilities (i.e., family campgrounds, group campgrounds, day use facilities, recreation access roads, and recreation trails), and that the study excludes LPA homeowners/residents, and Westshore Campers, who use the project recreation facilities. Additionally, LPA comments that the study could miss data gathering on certain peak-period recreation users if the visitor surveys are only conducted in the six campgrounds, and that data should be gathered related to certain seasonal recreation users with sport-specific peak-periods. Further, LPA states that administering surveys only during the peak seasons of major uses would exclude all other users and be a disservice to the public.

Reply Comments

In response to the Forest Service, the NOI Parties agree to continue to consult with the Forest Service on potential questions to include in the surveys related to future recreation opportunities that may occur as a result of the proposed dam removal. The NOI Parties state that although recreation use patterns and needs may change under the proposed project, assessing existing and future recreation use, demand, and potential impacts of new recreation users, including potential OHV use on the lake bottom after the dam is removed, will be evaluated in the license application. The NOI Parties also state that potential impacts of new recreation users, including potential OHV use, will be informed by the decommissioning plan. Further, the NOI Parties state that potential changes to existing recreation facilities, development of new recreation facilities, and changes to motorized and non-motorized recreation opportunities would be considered as potential PM&E measures.

The NOI Parties disagree with Forest Service's request to remove an evaluation of existing recreation needs compared to existing recreation facility features and capacities. The NOI Parties note that the primary goal of *Study REC 1 – Recreation Facilities*

*Assessment* is to assess current recreation use and demand relative to the capacity and features of existing facilities. The NOI Parties add, although recreation use patterns and needs may change under the proposed project, understanding existing use is necessary for Commission staff's environmental analysis and it will also be evaluated in the license application.

In response to comments by the LPA, the NOI Parties state that visitor surveys are intended to be administered to any recreation users, including Westshore Campers, if they are using project recreation facilities including campgrounds, boat launches, and day use areas. In addition, the NOI Parties state that *Study REC 2 – Reservoir Recreation Opportunities* includes the Westshore Campers, Lake Pillsbury homeowners, and local users as part of the "local users" category for the study's focus group meeting/workshop.

Discussion and Staff Recommendation

Regarding the NOI Parties' requested modification to conduct surveys of Indian Tribes who use the Eel River below Cape Horn dam, the NOI Parties do not explain how the modification relates to project recreation facilities [Section 5.9(b)(5)], since no project recreation facilities exist below Cape Horn dam. Additionally, the NOI Parties do not describe what relevant information would be provided from the surveys to inform our environmental analysis [Section 5.9(b)(5)]. Therefore, we do not recommend the NOI Parties' requested modification.

It's unclear how the study could be modified to predict future recreation use and the viability of existing recreation facilities following the proposed removal of Scott Dam and Lake Pillsbury, and the Forest Service does not recommend any methodologies [Section 5.9(b)(6)] to do so or estimate the level of effort and cost [Section 5.9(b)(7)] associated with its requested modifications to the approved study. The Forest Service also does not explain how the resulting information would be used in our environmental analysis of project effects on existing recreation resources [Section 5.9(b)(5)]. Predictions cannot be made about desired new recreation opportunities (including non-motorized opportunities), user conflicts between speculative recreation uses, the desired levels of access and development related to speculative recreation opportunities in an unknown project boundary, and whether the user groups associated with current recreational activities at Lake Pillsbury would continue to recreate at the site after the dam is removed. Additionally, predictions cannot be made with regards to how future recreation use would affect the project area. Further, the NOI Parties will assess future recreation use, demand, and the potential impacts of new recreation users in the license application. Therefore, we do not recommend Forest Service's requested modification to identify visitor needs, preferences, and perceptions regarding project recreation facilities and opportunities after the dam is removed and reservoir-based recreation is no longer available.

Regarding LPA's recommended modifications, LPA does not clearly explain why the NOI Parties' proposal to extend the visitor survey dates, to include the elk breeding season for wildlife viewing and during the prescribed tule elk hunting season, is inadequate. The extended survey dates, as proposed by the NOI Parties, would adequately capture visitor use related to wildlife viewing during the elk breeding season and during the prescribed tule elk hunting season and inform our environmental analysis of project effects on existing recreation resources [Section 5.9(b)(5)]. Therefore, we recommend the NOI Parties' proposed modification.

Likewise, LPA's argument is unclear on how the local user groups are excluded from *Study REC 1 – Recreation Facility Assessment*. In conjunction with *Study REC 1*, *Study REC 2 – Reservoir Recreation Opportunities* requires that visitor surveys be administered to anyone, including members of the local user groups, recreating at project facilities and at the non-project Pine Point Day Use Area. The study plan also requires the NOI Parties to conduct a focus group meeting/workshop with the Lake Pillsbury homeowners and local users (including the Westshore Campers), during which feedback will be collected using a survey developed in consultation between the NOI Parties and the group's participants. We also note that the study plan requires that visitor surveys be mailed to recreation groups and associations that frequent the project area.

Although LPA contends that other peak-period recreation users are likely to be missed if visitor surveys are only conducted in the project's six family campgrounds, LPA does not indicate the other peak-period recreation users that it thinks should be surveyed . Additionally, LPA does not describe how the data should be collected [Section 5.9(b)(6)] or estimate the level of effort and cost [Section 5.9(b)(7)] associated with collecting the additional data. As noted above, visitor surveys will be mailed to recreation groups and associations that frequent the project area, which will enable participation of those local user groups and visitors associated with other peak-period recreation uses in the study. Additionally, the study plan requires that the survey instrument and schedule be developed in consultation with stakeholders, which should aid in identifying local user groups or visitors associated with other peak-period recreational use to potentially receive visitor surveys by mail. Therefore, we do not recommend LPA's modifications to the study to survey other peak-period recreation users.

**Study REC 2 – Reservoir Recreation Opportunities**

Background

To supplement existing information regarding reservoir-based recreation opportunities associated with Lake Pillsbury that are potentially affected by the project,

the approved study requires the NOI Parties to: (1) characterize reservoir recreation opportunities and operational constraints; (2) characterize seasonal functionality of boat ramps and other project recreation facilities; (3) conduct a focus group meeting/workshop with the Lake Pillsbury homeowners to identify potential issues related to water surface elevations at the lake and identify possible solutions; (4) conduct visitor surveys at developed project recreation facilities surrounding the lake to identify potential issues related to reservoir water surface elevations using the visitor survey instrument from *Study REC 1 – Recreation Facility Assessment*; (5) identify dispersed recreation use areas to be located within the project boundary surrounding the lake; and (6) map dispersed recreation use areas footprints.

The approved study also requires that the survey instrument be developed in consultation with the Forest Service and stakeholders and that the surveys be: (1) conducted at all developed recreational facilities including the non-project Pine Point Day Use Area; (2) administered on randomly selected weekdays (one day per week), weekend days (one day per week), and all holidays throughout the peak recreation season (Memorial Day through Labor Day), according to a pre-established schedule, and as reservoir water levels decline, so that visitor responses can be correlated to specific water surface elevations; (3) administered in English and Spanish; and (4) mailed to recreation groups and associations that frequent the project area.

The ISR states PG&E did not provide a technical study summary. However, the ISR indicates that historical data were compiled, but conducting a focus group, administering surveys, data analysis, and reporting are incomplete for the study elements described above. No study variances were identified.

Requested Study Modifications

The Forest Service states that the goals and objectives of the approved study cannot be met without modifications to the study's methodologies, because the current study does not address the potential effects to lake-based recreation and recreation facilities that may occur from the proposed removal of Scott Dam and Lake Pillsbury.

Because the proposed draining of Lake Pillsbury would eliminate recreation opportunities at the reservoir, the Forest Service requests that the approved study no longer evaluate potential issues, adequacy, and maintenance related to: (1) water surface elevations in Lake Pillsbury; (2) reservoir recreation opportunities, including organized fishing events; (3) boat ramps; (4) the relationship between water surface elevations, user satisfaction and participation in activities, and timing of visitation; and (5) publicly available water surface elevation information. Instead, Forest Service requests the study be modified to evaluate potential dam removal effects on: (1) desired and potential recreation opportunities within the project boundary; (2) potential river access ramps; (3)

relationships between river level, user satisfaction and participation, and visitation timing; (4) public access to river-flow information; and (5) other potential issues related to dam removal.

California DFW requests that the approved study be modified to evaluate potential effects of the proposed removal of Scott Dam and Lake Pillsbury on tule elk wildlife viewing and tule elk hunting opportunities.

Reply Comments

In response to the Forest Service, the NOI Parties state that the study is designed to evaluate existing reservoir recreation use and conditions. As such, they do not agree with Forest Service's request to remove the evaluation of water surface elevations at Lake Pillsbury from the approved study. The NOI Parties also disagree with Forest Service's request to evaluate the adequacy of publicly available river flow information because *Study REC 3 – Whitewater Boating Flow Assessment* includes provisions to assess its adequacy. The NOI Parties also note that the license application will assess potential project effects, and that potential changes to recreation facilities could be considered as PM&E measures. As part of *Study REC 1 – Recreation Facility Assessment*, the NOI Parties agree to consult with the Forest Service on possible survey questions related to desired and future recreation opportunities if Scott Dam and Lake Pillsbury were removed.

The NOI Parties did not comment on California DFW's requested for modification to the approved study plan.

Discussion and Staff Recommendation

The Forest Service's requested modification that the study no longer evaluate potential issues associated with lake-based recreation opportunities related to water surface elevations in Lake Pillsbury (i.e., boat ramps, and the relationship between water surface elevations, user satisfaction, participation in activities, and timing of visitation) is reasonable because as a result of the proposed Scott Dam removal, Lake Pillsbury would no longer exist, and water surface elevations in the lake would no longer affect lake-based recreation opportunities. Therefore, we recommend Forest Service's request that the study no longer evaluate these study elements. However, their requested modification that the study no longer evaluate potential issues related to identifying and characterizing existing reservoir recreation opportunities, including organized fishing events, is not recommended because staff will need this information to evaluate the significance of losing these lake-based recreation opportunities if Lake Pillsbury no longer exists [Section 5.9(b)(5)].

It's unclear how the Forest Service's requested modifications that the study evaluate river flow information, the relationship between river level and user satisfaction, what recreation opportunities would be potentially desired or possible within the project boundary, and potential issues associated with river-based recreation opportunities as a result of dam removal, would be used to inform staff's analysis of project effects [Section 5.9(b)(5)]. The Forest Service also does not clearly explain the methodologies required to produce the additional information requested [Section 5.9(b)(6)], nor describe the additional effort and cost [Section 5.9(b)(7)] associated with its requested modifications. Effects of the proposed project (i.e., removal of Scott Dam and draining of Lake Pillsbury) on relationships between unknown river levels and user satisfaction, related to speculative recreation opportunities, cannot be predicted. Likewise, predictions cannot be made regarding what speculative recreation opportunities could occur in an unknown project boundary. Additionally, *Study REC 3 – Whitewater Boating Flow Assessment* includes an assessment using existing stream gaging stations to summarize Eel River hydrology, which also includes opportunities for stakeholders to evaluate, and provide information regarding, the adequacy of available river flow information. Therefore, we do not recommend these requested modifications.

Regarding California DFW's request, as discussed in *Study REC 1 – Recreation Facility Assessment*, we recommend the NOI Parties' requested modification to extend visitor survey dates to include the elk breeding season for wildlife viewing, and during the prescribed tule elk hunting season, which will allow staff to adequately evaluate these recreation opportunities.

**Study REC 3 – Whitewater Boating Flow Assessment**

Background

To supplement existing information on whitewater boating opportunities potentially affected by the project, and to develop additional information about whitewater resources and opportunities on the Eel River upstream of the Middle Fork Eel River confluence, the approved study requires a hydrology assessment to: (1) identify, map, and characterize existing stream gaging stations in the Eel River; (2) summarize the hydrology of the Eel River using existing gages; (3) describe how project operation affects hourly, daily, and monthly flows on the Eel River; (4) characterize historic spill and cessation rates; and (5) summarize water surface elevations in Lake Pillsbury in relation to flows in the Eel River upstream of Lake Pillsbury.

The ISR notes that PG&E provided a technical study summary that summarizes study status, work products, and important outcomes for the first year of study implementation. The ISR indicates that the following study elements have been completed: (1) evaluations of existing stream gage locations in the Eel River; (2)

summaries of existing hydrologic data from stream gages; (3) description of how project operations affect flows in the Eel River; (4) summaries of water surface elevations in Lake Pillsbury in relation to Eel River flow upstream of the lake; and (5) interviews and focus group sessions including resulting outcomes. The ISR indicates a variance to the approved study area to include the East Branch Russian River, from Three Rocks Falls to non-project Lake Mendocino (i.e., East Branch Run).

Requested Study Modification

In its letter filed in response to SD3, American Whitewater indicates support for a study that would analyze effects on five whitewater reaches on the Eel River by the proposed removal of Scott Dam and draining of Lake Pillsbury, including: (1) above Lake Pillsbury, from the put-in at Mt. Road bridge to the take-out at Sunset Campground; (2) below Lake Pillsbury, from the put-in before Elk Mountain Road bridge to the take-out at the Eel River Road bridge; (3) from below Van Arsdale reservoir to Hearst Run; (4) from the put-in at Hearst Run to the take-out at the Highway 162 bridge; and the (5) Eel River Outlet Creek to Dos Rios, from the put-in at the Highway 162 bridge to the take-out at the Highway 162 milepost 14.5 just above the Middle Fork Eel.

Reply Comments

The NOI Parties did not respond to American Whitewater's comments.

Discussion and Staff Recommendation

Because the NOI Parties propose to remove Scott Dam [Section 5.15(e)(4)] new hydrologic data will be developed to account for the resulting proposed changes to project facilities and operations as part of the *Study AQ 1 – Hydrology and Project Operations Modeling*. The results of the study would also help to characterize how new hydrologic conditions in the Eel River could affect whitewater boating flows, access, and opportunities, after dam removal. As such, we recommend that *Study REC 3 – Whitewater Boating Flow Assessment* be modified to use the new hydrological data developed as part of *Study AQ 1 – Hydrology and Project Operations Modeling* to evaluate how proposed changes could affect whitewater boating opportunities on the Eel River between Scott Dam and the Middle Fork Eel River confluence [Sections 5.9(b)(3) and 5.9(b)(5)] compared to current project operations [Section 5.9(b)(1)]. Because the hydrologic evaluation is already a required element of the approved *Study AQ 1 – Hydrology and Project Operations Modeling* minimal additional effort and cost is anticipated to develop the data for the whitewater boating assessment [Section 5.9(b)(7)]. Results from the study will be used to inform staff's analysis and potential license conditions [Section 5.9(b)(5)].

Regarding American Whitewater's request, the approved study will assess effects of the proposed project on the reaches identified by American Whitewater, with the exception of the reach located above Lake Pillsbury. American Whitewater does not describe the goals and objectives [Section 5.9(b)(1)] or the level of effort and cost associated with its recommendation [Section 5.9(b)(7)] to evaluate the additional whitewater reach. In addition, American Whitewater's recommendation does not indicate that a nexus exists between the current/proposed operation of the project and whitewater boating flows upstream of Lake Pillsbury [Section 5.9(b)(5)]. Therefore, we do not recommend American Whitewater's requested study modification.

**Study LAND 1 – Project Roads and Trails Assessment**

Background

To supplement existing information regarding roads and trails affected by the project, the approved study requires: (1) assessments of project road and trail conditions compared to applicable maintenance standards; (2) identification and characterization of current road and trail use, maintenance practices, and agreements; and (3) identification and characterization of user-created roads and trails located adjacent to Lake Pillsbury, within the project boundary.

The ISR indicates the completion of: (1) identification of current maintenance levels and standards for all project roads in consultation with the Forest Service and Lake and Mendocino Counties; (2) assessment of project road and trail conditions relative to established maintenance objectives and standards; (3) identification and characterization of maintenance practices and activities and project road and trail use; and (4) consultation with Mendocino National Forest, and Lake and Mendocino Counties regarding identification and characterization of current road maintenance levels and standards.

The ISR further indicates the following study elements are not complete: (1) identifying and mapping locations of environmental and cultural resources that may occur along project roads and trails; (2) identifying and characterizing current maintenance agreements between the licensee, resource agencies, local governments, and private property owners; (3) identifying PG&E's best management practices for protecting environmental resources along project roads and trails; (4) identifying, mapping, and photographing user-created roads and trails adjacent to Lake Pillsbury, within the project boundary; (5) data analysis and reporting; and (6) providing road and trail information to Mendocino National Forest.

Requested Study Modification

The Forest Service states that the goals and objectives of the approved study cannot be met without modifications to the approved study methodologies, because the study does not address the proposed removal of Scott Dam and Lake Pillsbury, and the changes to lake-based recreation and recreation facilities, and related resources areas, that may occur as result of the proposed changes. As such, Forest Service requests the study be modified to evaluate which roads and trails would no longer be necessary to support reservoir-based recreation.

Reply Comments

In response to the Forest Service, the NOI Parties state that the approved study is designed to assess the condition of existing project roads and trails, and identify user-created trails within the project boundary. The NOI Parties state that potential effects of the proposed project on existing roads and trails, including the potential loss of roads and trails that will no longer be necessary after the removal of Scott Dam, will be evaluated in the license application.

Discussion and Staff Recommendation

The Forest Service's requested modification related to determining which existing roads and trails would no longer be needed to support reservoir-based recreation after the removal of Scott Dam is not necessary. The NOI Parties are required to include in the license application a report on existing and proposed recreational facilities at the project, including a statement of the existing facilities to be maintained, prepared in consultation with any Federal agency with managerial authority over any part of the project lands.[8] Because the NOI Parties are required to report on and identify those existing facilities that will continue to be maintained and evaluate potential effects of the proposed project on existing roads and trails, including those that will no longer be necessary after the removal of Scott Dam, the license application should provide sufficient information to inform our environmental analysis of the potential effects of the project on the viability of current road and trail use for reservoir recreation and anticipated road and trail use that would occur if Scott Dam is removed. Therefore, we do not recommend the Forest Service's request to modify the study to determine which existing roads and trails would no longer be needed after the dam is removed.

[8] 18 C.F.R. § 4.51(f)(5) (2020).

**Study LAND 2 – Visual Resource Assessment**

Background

To identify effects of continued project operation and maintenance on the aesthetic quality of the project area, the approved study requires: (1) documenting the existing visual condition (EVC) of project facilities from key observation points (KOP) located along primary travel corridors, recreation areas, and water bodies; (2) assessing the compatibility of project facilities with surrounding landscape conditions and consistency of the project facilities with established Forest Service and/or Lake County and Mendocino County visual resource management objectives; and (3) documenting visual conditions at Lake Pillsbury at various water levels from Memorial Day through Labor Day.

The ISR states that PG&E did not provide a technical study summary. The ISR indicates that historical data have been compiled and key decisions with stakeholders regarding study elements have been reached, but related data and documentation were not provided by PG&E. Field surveys, data analysis, and reporting are incomplete for the study elements described above. No study variances were identified.

Requested Study Modifications

The Forest Service states that the goals and objectives of the approved study cannot be met without modifications to the approved study methodologies, because the approved study does not address the proposed removal of Scott Dam and draining of Lake Pillsbury, and the changes to lake-based recreation, recreation facilities, and related resources areas that may occur as result of the removals. Therefore, the Forest Service requests that the study be modified to evaluate the potential visual quality impacts to the project area with the proposed removal of Scott Dam and draining of Lake Pillsbury. The Forest Service also requests that the study utilize the visitor surveys from *Study REC 1 – Recreation Facility Assessment* to develop information about visitor satisfaction, preferences, and concern levels related to landscape and scenic character associated with the proposed dam removal.

Reply Comments

The NOI Parties state that the approved study is designed to assess the existing visual condition of project facilities. The NOI Parties state that analysis of potential effects of the proposed project on the existing visual condition will be informed by data collected by this study as well as the data collected from the visitor surveys in *Study REC 1 – Recreation Facility Assessment* describing visitor concerns regarding landscape and scenic character. The NOI Parties also state that the license application will evaluate

potential effects of the proposed project on visual conditions, and it will include a decommissioning plan that will describe the rehabilitation of lands following the proposed dam removal with consideration for Mendocino National Forest visual quality standards.

Discussion and Staff Recommendation

Forest Service's requested modifications to evaluate the proposed project's potential impacts to the visual quality of the project area if Scott Dam is removed are not necessary, because the approved study is adequately designed to provide information on existing visual conditions to inform our analysis of potential effects of the proposed project. Further, the Forest Service does not explain why the approved study would not provide sufficient information to assess potential visual quality impacts of the proposed dam removal, nor does the Forest Service describe the methodologies [Section 5.9(b)(6)] and the level of effort and cost [Section 5.9(b)(7)] associated with its requested modifications. We note that the NOI Parties are required to include in its license application a report on the protection of the scenic values of the project that describes proposed measures to ensure proposed project works, rights-of-way, access roads, and other topographic alterations blend, to the extent possible, with the surrounding environment.[9] The application will also assess potential effects of the proposed removal of Scott Dam and draining of Lake Pillsbury on the aesthetic quality of the project area. Therefore, we do not recommend Forest Service's requested modification.

**Study LAND 3 – Hazardous Fuels Assessment**

Background

To inform potential measures to reduce fire risk, the approved study requires the applicant to conduct a hazardous fuels assessment of project lands within the project boundary in consultation with the Forest Service. The approved study requires the hazardous fuels assessment to include: (1) a map of fuel conditions and existing defense zones (fuel treatment areas); (2) a description of fuel reduction measures that the licensee and/or the Forest Service would implement, including, current vegetation management practices as they pertain to fuel reduction; and (3) identification of existing fire prevention measures.

The ISR states that PG&E did not provide a technical study summary. Historical data have been compiled, but PG&E has not provided the data to the NOI Parties. Key decisions with stakeholders regarding study elements, field data collection, data analysis,

[9] 18 CFR § 4.51(f)(6)(ii).

and reporting are incomplete for the study elements described above. No study variances were identified in the ISR.

Requested Study Modifications

The Forest Service states that the goals and objectives of the approved study cannot be met without modifications to the approved study methodologies, because the approved study does not address the proposed removal of Scott Dam and Lake Pillsbury and the changes to lake-based recreation, lake-based recreation facilities, and related resources areas that may occur as result of the proposed removals. Therefore, the Forest Service recommends the study be modified to evaluate: (1) the cost of using water sources located on private property to replace fire suppression water provided by Lake Pillsbury, and (2) alternative water drafting sites for "other uses."

Reply Comments

In response to the Forest Service, the NOI Parties comment that the study is designed to collect information about current and alternative water drafting sites for fire suppression, and to characterize existing fuel loads and assess the ability to prevent, control, and suppress fires. Because the Forest Service does not clarify what it means by uses of alternative water drafting sites other than for fire suppression, the NOI Parties do not agree to the recommended modification.

Discussion and Staff Recommendation

The Forest Service is unclear regarding its request that the study should also "identify alternative water drafting sites for fires and other uses," and whether those other uses would need to be considered for purposes beyond firefighting [Section 5.9(b)(5)]. While we recommend that the study be modified to include the identification of alternative water drafting sites for fires, we do not recommend the component of Forest Service's request regarding "other uses" because the Forest Service does not explain what "other uses" pertain to, nor how the information would be used to inform our environmental analysis [Section 5.9(b)(5)].

Regarding the Forest Service's recommendation to evaluate the cost of using water sources located on private property, please see our discussion and recommendation regarding non-power resources for *Study SE 1 – Socioeconomic Effects of Dam Removal* below.

## STAFF RECOMMENDATIONS ON REQUESTED NEW STUDIES

### Study AQ 12 – Scott Dam Removal

NOI Parties' Proposal

The NOI Parties propose a new study to evaluate the potential effects associated with the proposed removal of Scott Dam and Lake Pillsbury, consisting of the following components: (1) hydrodynamic modeling, (2) sediment transport modeling, (3) changes in sediment supply and mass balance, (4) changes in channel morphology and aquatic habitat, (5) changes in suspended sediment concentrations, (6) Lake Pillsbury sediment management assessment, (7) Lake Pillsbury vegetation management assessment, and (8) Lake Pillsbury water diversion and groundwater supply review. These components are described in more detail below.

As part of the proposed study, the NOI Parties would establish a Scott Dam removal technical working group that would be consulted during study implementation. The working group would be composed of stakeholders knowledgeable in issues related to sediment transport, sediment management, vegetation management, hydraulic modeling, and dam removal.

*Hydrodynamic Modeling*

The NOI Parties propose to develop a one-dimensional (1-D) hydrodynamic model (e.g., HEC-RAS) for the Eel River from Scott Dam to the Middle Fork Eel river. The hydrodynamic model would support the sediment transport modeling component of this study as well as the water temperature modeling component of *Study AQ 2 – Water Temperature*. The NOI Parties also propose to survey channel bathymetry to supplement available LIDAR (Light Detection and Ranging, also Light Imaging, Detection and Ranging) from Scott Dam downstream to the Middle Fork Eel River confluence for use in both the hydrodynamic and sediment transport modeling.

*Sediment Transport Modeling*

The NOI Parties propose to conduct 1-D sediment transport modeling (DREAM-1,[10] and potentially DREAM-2) to assess the fate and transport of coarse

[10] Dam Removal Express Assessment Models (DREAM) was developed at Stillwater Sciences, Berkeley, CA for simulation of sediment transport following dam removal. DREAM-1 simulates sediment transport following the removal of a dam behind which the reservoir deposit is composed primarily of non-cohesive sand and silt,

sediment (i.e., gravel and potentially sand) and develop two-dimensional (2-D) morphodynamic models at select sites to better understand the geomorphic effects of erosion and sediment deposition (e.g., channel morphology, bank stability, flooding, aquatic habitat conditions, fish passage). The results of the 1-D modelling would describe the potential downstream extent and cross-sectional averages of changes in bed elevation due to erosion or aggradation in the mainstem Eel River between Scott Dam and the Middle Fork Eel River confluence under different hydrologic scenarios. Information from the 1-D modelling would provide input to the 2-D models, which would be used to estimate potential effects of sedimentation at Van Arsdale diversion, potential effects on water supply reliability, and to inform improved upstream and downstream fish passage alternatives at Cape Horn dam. This study component would also include: (1) estimating particle abrasion to inform the rate at which coarse substrates are expected to break down (fracture into smaller particles) during transport to inform the sediment transport modeling; and (2) characterizing the reservoir sediment by: (a) compiling historical information about pre-dam topography, reservoir bathymetry, reservoir sediment; (b) estimating the current volume and spatially distributed thickness of reservoir sediment deposits; and (c) characterizing the current stratigraphy and physical properties (e.g., grains size distribution and density) of reservoir sediment deposits.

*Changes in Sediment Supply and Mass Balance*

The NOI Parties propose to estimate changes in average annual sediment supply and sediment transport capacity resulting from the removal of Scott Dam relative to existing conditions. Computations of annual sediment mass balance under dam removal scenarios would be compared with estimates of mass balance under existing conditions (results from *Study AQ 4 – Fluvial Processes and Geomorphology*) at key locations in the mainstem channel of the Eel River from Scott Dam to the Middle Fork Eel River (i.e., sediment budget nodes) and at select downstream long-term gaging sites (i.e., Dos Rios, Fort Seward, Scotia).

*Changes in Channel Morphology and Aquatic Habitat*

The NOI Parties propose to estimate the potential changes to channel morphology and aquatic habitat conditions based on the sediment transport modeling, including the potential effects of sediment transport and deposition on tributary access for fish and fish passage, in the reach between Scott Dam and the Middle Fork Eel River.

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and DREAM-2 simulates sediment transport following the removal of a dam behind which the upper layer of the reservoir deposit is composed primarily of gravel. Both models are one-dimensional and simulate cross-sectionally and reach averaged sediment aggradation and degradation following dam removal.

*Changes in Suspended Sediment Concentrations*

The NOI Parties propose to: (1) estimate how fine sediment would be released from Lake Pillsbury under two dam removal options (one-time and phased notching); (2) compare predicted suspended sediment concentrations to applicable water quality objectives and total maximum daily load (TMDL) limitations in the downstream environments (e.g., North Coast Regional Water Quality Control Board Basin Plan); and (3) evaluate the potential biological impacts of suspended sediment releases resulting from proposed dam removal and compare with background concentrations.

*Lake Pillsbury Sediment Management Assessment*

The NOI Parties propose a sediment management assessment to inform the development of dam removal design plans, Lake Pillsbury revegetation plans, and the long-term monitoring and adaptive management plan for the project based on U.S. Bureau of Reclamation (USBR) dam removal analysis guidelines for sediment. Specifically, the assessment would include: (1) reviewing and analyzing the contaminants and risk associated with partial release of sediment; (2) reviewing potential Scott Dam removal and Lake Pillsbury sediment strategies; (3) using the sediment transport modeling and suspended sediment evaluation results to inform the potential need for management of Lake Pillsbury sediments to reduce downstream impacts; (4) develop potential geotechnical engineering approaches and costs for the identified potential sediment management approaches; and (5) identify potential downstream biological and geomorphic/geotechnical mitigation measures, as needed.

*Lake Pillsbury Vegetation Management Assessment*

To evaluate potential effects on terrestrial resources, assess appropriate revegetation methods (e.g., species selection, planting locations, costs) within the footprint of Lake Pillsbury following proposed dam removal, and inform the anticipated composition, distribution, and timing of natural regeneration of plant communities the NOI Parties proposed to collect and analyze: (1) historical and existing information on vegetation in the project area; (2) information on other post-dam removal, revegetation efforts; (3) data on site-specific environmental and geomorphological conditions including phenology, sun exposure and groundwater levels, topography, and water surface elevation of existing plant cover types to inform future species selection; (4) lakebed sediments to determine the species present in the existing seedbed, the particle size distribution of sediments, and the nutrient profile of the soil; (5) best management practices to manage invasive species; and (6) riparian species seed dispersal distribution.

*Lake Pillsbury Water Diversion and Groundwater Supply Review*

To identify a range of potential changes to water table elevations at existing groundwater wells adjacent to Lake Pillsbury, the NOI Parties propose to gather groundwater data, including groundwater well construction records from the Forest Service and Lake County (for well depth and screening intervals), and would work with Lake County, the Forest Service, and local agencies to obtain groundwater elevations in existing wells over time. The study would also evaluate the potential for sediment export to inhibit water diversions (private and public systems) on the Eel River downstream of Scott Dam. Sediment aggradation calculated from the sediment transport modeling described above would be compared to the location and elevation of existing surface water diversions between Scott Dam and Tomki Creek.

Comments on the Study Request

The Water Board requests that the proposed study be modified to include: (1) collection of LiDAR and bathymetry data in the Eel River downstream of Scott Dam through the Eel River estuary; (2) quantification of particle sizes for sediments in Van Arsdale reservoir and Lake Pillsbury along with the quantification of percentage and amount of sediment particle sizes in the Eel River at representative locations downstream through the Eel River estuary; and (3) identification of chemicals of potential concern in Lake Pillsbury, Van Arsdale reservoir, and the Eel River at representative locations moving downstream through the Eel River estuary.

MCFB requests that the proposed study be modified to extend the geographic scope of the sedimentation impact analysis to include Lake Mendocino and the Russian River. MCFB and SCFB both request that the study analyze the potential impacts of the proposed project on water rights in the Eel River and the Russian River from the project diversion point in Potter Valley to the confluence with the Pacific Ocean.

Reply Comments

The NOI Parties note that LiDAR data already exists for the entire Eel River corridor and their proposed study will include surveying channel bathymetry to supplement the LiDAR data for use in the hydrodynamic and sediment transport modeling. They state that due to the increased uncertainty in the sediment transport modeling results with distance downstream from Scott Dam, they are proposing to initially focus the bathymetry surveys in the reach from Scott Dam downstream to the Middle Fork Eel River confluence (approximately 49 miles) where the potential effects would be most pronounced. They further note that the need to collect additional bathymetry data downstream of the Middle Fork Eel River confluence would be dependent on the results of the sediment transport modeling and sediment mass balance

assessment; however, due to the high cost associated with collecting bathymetry data in the additional 120-mile reach downstream through the estuary, which they estimate to be $500,000, they are not proposing to do so at this time.

While the NOI Parties note that the proposed study already includes the quantification of particle sizes for sediments in Lake Pillsbury, they do not propose to do so in Van Arsdale reservoir since Cape Horn dam would remain in place under the project proposal and the sediment management in the reservoir would not change. In addition, the NOI Parties note that *Study AQ 4 – Fluvial Processes and Geomorphology* already includes sediment particle size characterization at geomorphic study sites upstream of Lake Pillsbury and from Scott Dam downstream to, and including, the Middle Fork Eel River. They state that they do not propose to characterize sediment particle size in the additional 120-mile reach downstream to the estuary; however, the need for additional effort downstream of the Middle Fork Eel River will be dependent on the results of the sediment transport modeling and sediment mass balance assessment.

The NOI Parties state that recent chemical sampling of Lake Pillsbury and Van Arsdale reservoir's fine sediments show no chemical contaminant concentrations of concern; however, they note that the proposed study will include additional chemical sampling in deeper/coarser Lake Pillsbury sediments than what was previously sampled. They note that any further expansion of chemical sampling in river sediments would be dependent on the results of the sampling of the deeper/coarser sediments in Lake Pillsbury, with additional sampling being considered if high concentrations of chemicals are detected.

In regard to not limiting the scope of the sedimentation impact analysis to the Eel River, the NOI Parties note that the potential effects of the removal of Scott Dam and changes to the diversion rates on the Russian River and Lake Mendocino are expected to be negligible but will be informed by the results of the proposed study. The NOI Parties state that if the results of the sediment transport analyses indicate a change in understanding of the potential sediment yield of the project diversion, then the issue of extending the scope of the impact analysis could be revisited.

Regarding analyzing the potential project impacts on downstream water rights, the NOI Parties state that *Study AQ 1 – Hydrology and Project Operations Modeling* will analyze impacts to water supply availability. However, because the Commission does not have jurisdiction to adjudicate water rights, the NOI Parties do not think that it would be appropriate to modify the proposed study to assess project impacts to them.

Discussion and Staff Recommendation

As noted by the NOI Parties, LiDAR data already exist for the entire Eel River, which they are proposing to supplement by collecting bathymetry data in the 49-mile reach of the river from Scott Dam to the Middle Fork Eel River confluence. Due to the likely diminishing project effects and certainty of the modeling with distance downstream, and confounding effects from other input sources downstream of the confluence, collecting additional LiDAR and bathymetry data in the 120-mile reach from the Middle Fork Eel River confluence downstream to the estuary would not inform an analysis of the proposed project's effects and would not be worth the estimated cost of $500,000 [Section 5.9(b)(7)]. Therefore, we do not recommend the Water Board's modifications to include additional LiDAR data collection and extending the bathymetry data collection downstream to the estuary. Should the results of the sediment transport modeling and sediment mass balance assessment suggest that pronounced effects could occur downstream of the Middle Fork Eel River confluence, the need for bathymetry data collection downstream of the confluence could be considered after that time.

Considering that the project proposal is to continue current Cape Horn dam operations and associated reservoir sediment management, it is not clear how quantifying sediment particle sizes in the reservoir, as requested by the Water Board, would inform our analysis of project effects associated with the proposed action [Section 5.9(b)(5)]. Quantifying the percentage and amount of sediment particle sizes in the Eel River downstream to the estuary also appears unnecessary for the same reasons explained above regarding extending the study area for the bathymetry and LiDAR data collection effort (i.e., diminishing effects, increased model uncertainty, confounding effects). Data has already been collected on particle size characterization in the Eel River upstream of Scott Dam and downstream to (and including) the Middle Fork Eel River as part of *Study AQ 4 – Fluvial Processes and Geomorphology*. We expect the data collected as part of *Study AQ 4* to be sufficient to support our analysis of project effects; however, as with the bathymetry data collection, the need to extend the study area further downstream would be based upon the results of the sediment transport modeling and sediment mass balance assessment. Therefore, we do not recommend the Water Board's modifications to include the quantification of sediment particle sizes in Van Arsdale reservoir and extend the quantification of the percentage and amount of sediment particle sizes downstream to the estuary.

The results of the recent chemical sampling in Lake Pillsbury and Van Arsdale reservoir show no chemical contaminant concentrations of concern in the fine sediments and the proposed study will include additional chemical sampling of deeper/coarser sediment. With the purpose of the study being to evaluate the potential effects of the removal of Scott Dam, the need for additional chemical sampling in the Eel River downstream to the estuary would depend on whether there are chemical concentrations of

concern in Lake Pillsbury that would be released downstream as a result of dam removal. Therefore, it is premature to consider whether additional chemical sampling in the downstream Eel River is needed until we have the results of the sampling of deeper/coarser sediment in Lake Pillsbury.[11] Therefore, we do not recommend the Water Board's modification to extend the study area for the chemical sampling.

As part of their project proposal, the NOI Parties would increase the maximum diversion rate to Lake Mendocino and the Russian River from 240 cubic feet per second (cfs) to 300 cfs; however, as with the current operation of the project, this diversion would be shut off during high flows with large sediment and debris loading (7,000 cfs). For this reason, the proposed project's contribution to suspended fine sediment in Lake Mendocino and the Russian River is expected to be minimal in comparison to the contribution from the unregulated tributaries in Potter Valley and Cold Creek that feed into Lake Mendocino due to their much higher peak flow magnitudes and frequencies (3,000 cfs to 8,000 cfs). Therefore, the MCFB's modification to expand the sedimentation impact analysis to include Lake Mendocino and the Russian River would not inform the analysis of project effects and we do not recommend it.

While the project proposal may affect the timing and quantity of water available for downstream users, these effects will be adequately identified and addressed in the water availability modeling included in *Study AQ 1 – Hydrology and Project Operations Modeling*. As noted by the NOI Parties, the Commission does not adjudicate water rights, so we do not need a water rights impact assessment to inform our analysis of project effects [Section 5.9(b)(5)]. Therefore, we do not recommend the MCFB's and SCFB's modification to include such an assessment.

We conclude that the extent of the study area and the study methodology in the proposed *Study AQ 12 – Scott Dam Removal* is consistent with the generally accepted practice in the scientific community [Section 5.9(b)(6)] and therefore recommend it without modifications.

[11] If chemical concentrations of concern are found during the sampling of the deeper/coarser sediments in Lake Pillsbury, some additional chemical sampling may be needed in the downstream Eel River to better understand the current baseline environment and how it would potentially be affected by the release of sediments from the removal of Scott dam.

**Study SE 1 – Socioeconomic Effects of Dam Removal**

NOI Parties' Proposal

The NOI Parties propose a socioeconomics study to quantitatively and qualitatively evaluate the social and economic effects of licensing the project, including removal of Scott Dam, on the human environment, specifically: water supply for agriculture, municipal and industrial (M&I), and domestic water users, and fire suppression; fishery values; non-fishing recreation; tribal interests; lakeside property values; and construction/infrastructure costs. The NOI Parties propose to use a mixed-method research style, employing literature reviews, surveys, and economic modeling[12] to quantify the economic costs and benefits of relicensing the project and qualitatively describe unquantifiable social effects. The NOI Parties propose a study area that broadly includes: Lake Pillsbury, Lake Mendocino (non-project), and the Van Arsdale reservoir; the Eel River from Scott Dam to the Middle Fork Eel River confluence and continuing downstream to the Pacific Ocean; the East Branch Russian River between the Potter Valley powerhouse and the ordinary high water mark of Lake Mendocino, and continuing downstream to the Pacific Ocean; the Pacific Ocean; and Mendocino, Humboldt, Lake, and Sonoma Counties, although the geographic extent of each study component (e.g., agriculture, fisheries, recreation, property values) varies.

Comments on the Study Request

Comments on the Socioeconomics Study were received from NMFS, County of Lake, Water Contractors, MCFB, SCFB, FER, LPA, Mr. Jonathan Whipple, and Mr. Dave Luhrs. In general, these comments relate to three broad topics: the study methodology, geographic scope, and the economic sectors to be considered.

*Methodology*

NMFS requests that the study methodology be expanded to capture the full net impact of the proposed action by assessing not only the overall socioeconomic costs of relicensing the project but the potential benefits. NMFS also requests that the model include an estimation of the "non-use value" of the Eel River beyond the values associated with fishing, recreation, or other uses.

[12] The NOI Parties propose to conduct economic modeling using IMPLAN software. IMPLAN is an economic modeling system that uses input-output analysis to estimate the direct effects of policy changes on the economy and analyze the subsequent indirect and induced effects.

The Water Contractors and LPA filed several comments related to the need to further define the methodology of the Socioeconomics Study. These include defining key terms, the need to distinguish between qualitative and quantitative analyses and how such analyses would be used for comparative purposes, and the criteria used for any relative ranking among impacts. The Water Contractors express specific concern about how the NOI Parties would assess the value of water supply reliability under existing and proposed conditions. Similarly, MCFB requests additional detail regarding the NOI Parties' methodology for the "least cost approach to determine the next available water supply source."

Regarding the economic assumptions used to develop the model in IMPLAN, MCFB states that "use values" should hold greater weight in economic modeling than "non-use values."

FER recommends that the study capture the costs of adopting the no-action alternative (i.e., continuing to maintain Scott Dam) in addition to an analysis of the socioeconomic costs and benefits of the applicants' proposal.

LPA comments that the NOI Parties' proposed study does not comply with the Commission's study plan criteria. Specifically, LPA states that the study plan lacks a clear discussion of the how the study would provide information relevant to the Commission's public interest analysis and argues that the scope of the study is too limited to capture all relevant public-interest criteria and that some public-interest factors such as aesthetics and cultural value are unquantifiable. Mr. Luhrs similarly questions the ability of the study to adequately capture all relevant socioeconomic values of Lake Pillsbury.

*Geographic Scope*

The Water Contractors request that the geographic scope of analysis extend to impacts on Lake Sonoma and address areas served by water users with appropriative rights. MCFB and SCFB request that the geographic scope of study for impacts to agricultural producers, M&I water users, and domestic water users extend to water users and water rights holders on the Russian River. MCFB and SCFB also request that the evaluation of seasonal fire-fighting water value be extended to include Lake Mendocino and private ponds on the Russian River. They request these modifications because they assert that the NOI Parties' proposal may have effects on water availability for agriculture in the Russian River Basin. Mr. Jonathan Whipple also comments that the study should address the economic effects of the licensing proposal on communities in the Russian River Basin.

*Economic Sectors*

MCFB requests that the analysis of effects of the licensing proposal on agricultural resource values include agricultural processing facilities used for pear and timber production in addition to wineries.

FER recommends that the study assess the social cost of human health impacts from methylmercury consumption, as it relates to the project's fishery resources.

Reply Comments

*Methodology*

In response to NMFS' comments, the NOI Parties state that, as proposed, the study would capture both socioeconomic costs and benefits of the proposed licensing action. With specific regard to non-use values, the NOI Parties indicate that such evaluations could occur outside of the official FERC-approved study plan.

When evaluating the relative importance of various socioeconomic factors, the NOI Parties state that they would use an objective methodology where all factors are equally weighted.

With regard to use of the "next least cost method" for determining economic impacts on water availability, the NOI Parties explain that the least-cost approach is an economics analysis tool used to determine the value of different water sources based on the next, least expensive water source available. The NOI Parties propose to use the least-cost approach to assess potential economic trade-offs to agricultural producers, M&I water users, and domestic water users as a result of a potential change in water supply availability from in the Eel and Russian river basins.

The NOI Parties also clarify that the Socioeconomics Study would use a standard hedonic property value modeling[13] approach for considering how property values might change as a result of the licensing proposal.

*Geographic Scope*

The NOI Parties indicate that, as proposed, the study is intended to be a comprehensive look at the socioeconomic effects of the licensing proposal on both the

[13] Hedonic property value modeling uses market prices and comprehensive, available data sets to determine the extent that environmental or ecosystem factors affect the price of a good, usually a home.

Eel and Russian River Basins and the effects on agricultural producers and communities on along the Russian River would be addressed as part of the study. For each study sub-component, the geographic extent would match the areas that could potentially be affected under the licensing proposal. For example, the NOI Parties state that they do not propose to study the socioeconomic effects of the licensing proposal on water availability in Lake Sonoma, because water availability in Lake Sonoma would not change under their licensing proposal.

*Economic Sectors*

The NOI Parties clarify that they intend to include affected agricultural producers and processors in the evaluation and would not limit the assessment of effects to wineries, which was provided as an example in the study plan.

Regarding the socioeconomic impacts of methylmercury concentrations in fish populations, the NOI Parties state that the results of fish tissue sampling from Lake Pillsbury were provided in the Initial Study Report. Under the NOI Parties' licensing proposal, the conditions that contribute to methylmercury accumulation would be reduced, therefore the NOI Parties do not propose to include the socioeconomic impacts of methylmercury accumulation in the fish populations in the study.

Discussion and Staff Recommendation

Section 5.18(b)(5)(ii) of the Commission's regulations requires that applicants for new licenses provide a description of the affected environment and an analysis of the project proposal on socioeconomic resources. Specifically, Section 5.6(d)(3)(xi) of the Commission's regulations requires that applicants provide a general description of socioeconomic conditions in the vicinity of the project including general land use patterns (e.g., urban, agricultural, forested), population patterns, and sources of employment in the project vicinity. Section 5.18(b)(5)(ii)(B) also requires that the final license application contain an analysis of how the project proposal would affect these socioeconomic conditions.

As part of staff's environmental analysis, we intend to evaluate, to the extent feasible, the effects of licensing the project, including the proposed removal of Scott Dam, on socioeconomic resources. Where the effects of the NOI Parties' proposal can be reasonably quantified (lost generation, for example), we will do so. For non-power resources, as has been our practice, our analysis will be qualitative in nature. We do not typically require studies that attempt to quantify the economic value of environmental, recreation, or cultural resources. Rather, the impacts on or benefits to these resources should be reasonably identified in studies *AQ 1 – Hydrology and Project Operations Modeling*, *AQ 2 – Water Temperature*, *AQ 3 – Water Quality*, *AQ 4 – Fluvial Processes*

*and Geomorphology*, *AQ 5 – Instream Flow*, *AQ 7 – Fish Passage*, *AQ 9 – Fish Populations*, *AQ 12 – Scott Dam Removal*, *LAND 1 – Road and Trails Assessment*, *LAND 3 – Hazardous Fuels Reduction Assessment*, *REC 1 – Recreation Facility Assessment*, *REC 2 – Reservoir Recreation Opportunities*, *REC 3 – Whitewater Boating*, *TERR 1 – Botanical Resources*, *TERR 2 – Wildlife Resources*, and *CUL 2 – Tribal Resources*. The results of these studies could be used to develop PM&E measures, as necessary. Therefore, we do not recommend adopting the socioeconomic study as proposed by the NOI Parties or recommended by the commenters, and as summarized above.

Should the NOI Parties' conduct the proposed study to assess the economic impacts of the licensing proposal on individual agricultural producers, M&I water users, and residents, we note that the Commission does not have authority to adjudicate claims for, or to require through license requirements or any other means, payment of damages for project-induced effects to private property [Section 5.9(b)(5)].[14]

[14] See, e.g., Ohio Power Co., 71 FERC ¶ 61,092, at 61,312 (1995) (citing to South Carolina Public Service Authority v. FERC, 850 F.2d 788, 795 (D.C. Cir. 1988)). Such property owners would need to seek redress with the licensee. See PacifiCorp, 133 FERC ¶ 61,232, at P 163 (2010), order on reh'g, 135 FERC ¶ 61,064 (2011); Portland General Electric Company, 107 FERC ¶ 61,158, at PP 27-33 (2004); FPL Energy Maine Hydro, LLC, 106 FERC ¶ 61,038, at PP 53-55 (2004). Moreover, Section 10(c) of the FPA makes clear that a licensee of a hydropower project "shall be liable for all damages occasioned to the property of others by the construction, maintenance, or operation of the project works…16 U.S.C. § 803."

# APPENDIX C

## REQUESTED MODIFICATIONS DEEMED APPROVED UNDER SECTION 5.15(c)(7) OF THE COMMISSION'S REGULATIONS

| Study | Modification | Recommending Entity |
|---|---|---|
| AQ 1 | Modify the following components to include proposed changes to project facilities and operation: (1) IHA analysis, (2) flood frequency analysis, (3) evaluation of ramping rates downstream of Cape Horn dam, and (4) HEC-ResSim Water Balance/Operations Mode. | NOI Parties |
| AQ 2 | Modify *Study AQ 2 – Water Temperature* to no longer model water temperatures in the Eel River for alternative operations of Scott Dam and instead develop a physical-based temperature model (e.g., HEC-RAS, or comparable model) to evaluate the potential effects of the proposed removal of Scott Dam on water quality. To supplement existing data for model development, collect additional water temperature data in Lake Pillsbury and in the Eel River downstream of Scott Dam. | NOI Parties |
| AQ 4 | Modify the study to: (1) identify sources of erosion and sedimentation, (2) identify mass wasting features and potentially unstable slopes within the rim of Lake Pillsbury, (3) characterize grain size distribution of sediment supplied to Lake Pillsbury, (4) characterize reservoir sediment in coordination with *Study AQ 12 – Scott Dam Removal*, (5) develop a sediment budget for the mainstem channel from Scott Dam to the Middle Fork Eel River in coordination with *Study AQ 12*, (6) estimate instead of model the initiation of motion for spawning-sized gravel substrate in coordination with *Study AQ 12*, (7) characterize the quality of the spawning substrate in project-affected river reaches, and (8) no longer characterize the geomorphology in project-affected river reaches. | NOI Parties, NMFS, California DFW, Regional Water Board |

| Study | Modification | Recommending Entity |
|---|---|---|
| AQ 5 | Modify the study to: (1) develop stage-change versus flow-change relationships at the riffle crest thalweg[15] elevations; (2) identify hourly ramping rates at project gages in the Eel River below Cape Horn dam to the Middle Fork Eel River; (3) reproduce, as necessary, fish stranding and stage change analysis using updated hydrology results to reflect Scott Dam removal; (4) no longer develop a stage-discharge relationship between Scott Dam and Cape Horn dam because Scott Dam is proposed to be removed; (5) use updated hydrology data and the PHABSIM model to quantify effective spawning habitat each year at each instream flow study site, and compare this to spawning habitat available upstream of Scott Dam; (6) re-model the effective spawning habitat at each instream flow study site using the updated hydrology with Scott Dam removal; (7) use 2-D hydraulic modeling at appropriate sites developed under the FYFL instream flow study to evaluate spawning habitat (and fish passage in *Study AQ 7*) of adult salmonids in relation to streamflow; (8) use updated steelhead and Chinook salmon out-migration timing data from *Study AQ 9* to identify existing and future out-migration timing and associated cues in relation to time-of-year, hydrology, fish size/growth, and water temperature; (9) include a time series of modeled future project operations hydrology and water temperature (*Study AQ 1 – Hydrology and Project Operations Modeling*; *Study AQ 2 – Water Temperature*) to identify out-migration environmental conditions; and (10) compare results of PHABSIM modeling with the Indicators of Hydrologic Alteration or equivalent analysis conducted as part of *Study AQ 1 – Hydrology and Project Operations Modeling*. | NOI Parties |
| AQ 7 | Modify the study to no longer: (1) identify and evaluate (conceptual level) means for providing upstream and downstream passage of anadromous fish at Scott Dam/Lake Pillsbury because Scott Dam is proposed to be | NOI Parties |

[15] A thalweg is a line connecting the lowest points along the course of a river channel.

| Study | Modification | Recommending Entity |
|---|---|---|
| | removed; (2) review and characterize adult anadromous salmonid and Pacific lamprey passage at Cape Horn dam using video or sonar; (3) assess downstream passage of juvenile anadromous fish and of adult steelhead kelts (i.e., post-spawned steelhead) at Cape Horn dam using balloon tags and PIT tags; and (4) assess salmon and steelhead escapement in the Eel River. | |
| AQ 8 | Modify *Study AQ 8 – Fish Entrainment* to: (1) evaluate proposed revised diversion patterns (seasonal diversions based on the results of *Study AQ 1 – Hydrology* and *Study AQ 5 – Instream Flow*), on potential fish entrainment risk at Van Arsdale diversion; and (2) evaluate proposed diversion patterns (seasonal diversions based on the results of *Study AQ 1 – Hydrology and Project Operations Modeling* and *Study AQ 5 – Instream Flow*), on potential fish entrainment risk at Van Arsdale diversion using a 2-D hydraulic model developed in *Study AQ 12 – Scott Dam Removal*. | NOI Parties |
| AQ 9 | Modify *Study AQ 9 – Fish Populations* to: (1) alter the objective of the Predatory Fish Working Group to review and identify potentially viable and cost-effective suppression techniques for pikeminnow and other non-native predatory fish populations in the upper Eel River; (2) provide input on and discuss the summary of information on predatory fish suppression techniques (described below); (3) review and provide input on the pikeminnow conceptual model (described below); (4) summarize information on predatory fish suppression techniques, effectiveness, and costs that are relevant to non-native species in the upper Eel River watershed; (5) develop a conceptual model that integrates life history, habitat requirements, and distribution of non-native pikeminnow with those of salmonids, Pacific lamprey, and Sacramento suckers to identify prey vulnerabilities and predator hot spots to inform effective suppression; (6) specify the use of snorkeling to determine pikeminnow and salmonid distribution at two representative locations in the | NOI Parties |

| Study | Modification | Recommending Entity |
|---|---|---|
| | Eel River and two in the Rice Fork; and (7) include estimates of the number and size of pikeminnow (and other species) in pools (e.g., two pools at each site, eight pools total) to provide qualitative estimates of predation potential. | |
| AQ 11 | No modifications were requested for *Study AQ 11 – Special-status and Invasive Aquatic Mollusks*. | – |
| TERR 1 | No modifications were requested for the *Study TERR 1 – Botanical Resources*. | – |
| REC 2 | Expand the study area in the approved plan to include the boat launch at Lake Mendocino (non-project), to evaluate whether the proposed removal of Scott Dam and Lake Pillsbury and the proposed increased diversion capacity at Van Arsdale diversion could result in water surface elevation changes in Lake Mendocino and potentially impact recreation. | MCFB |
| REC 3 | Modify the plan to include additional focus group discussion regarding whitewater runs that could be directly impacted by the removal of Scott Dam. The discussion would be planned during the site visit intended for the East Branch Russian River, and at locations previously identified during the focus group discussion (i.e., put-in at Benmore Creek; take-out at Bucknell Creek; and put-in below Cape Horn dam). | Park Service |
| LAND 3 | Modify the study to evaluate: (1) water availability for fire suppression activities in the absence of Lake Pillsbury, including extreme drought years; (2) potential for project facilities, O&M procedures, and visitors as sources of fire ignitions within the project boundary to inform the need for additional fire prevention measures; (3) alternative water drafting sites for fires in the absence of Lake Pillsbury including alternative sites available during drought years; and (4) alternative water sources outside of the project boundary to a reasonable distance for firefighting in the project vicinity (i.e., in those currently served by Lake Pillsbury for firefighting purposes). | NOI Parties |

| Study | Modification | Recommending Entity |
|---|---|---|
| | Modify the hazard fuels assessment to include: (1) consultation with Forest Service regarding preferred models for mapping/characterizing fuel loads including forest duff, crown base height, canopy height, crown bulk density, and diameter at breast height; (2) identification and mapping of fuel conditions at sample sites; (3) run selected models to analyze and predict fire behavior; and (4) describe vegetation density in terms of percent canopy. | |
| LAND 3 | Modify the study to evaluate: (1) information from CalFire, Forest Service, and the CalFire Fire and Resource Assessment Program on major fires that have occurred in the project vicinity, including acreage and ignition source; (2) changes in fire suppression response time-frames, strategies, and capabilities for fire suppression resources, particularly fire engines and aircraft in regard to water use after dam removal; (3) lack of water availability; and (4) changes in fire suppression capabilities as a result of having to utilize other water sources. | Forest Service |
| CUL 1 | Expand the project's APE to include inundated areas within the Lake Pillsbury footprint due to the proposed removal of Scott Dam. | NOI Parties |
| CUL 2 | Expand the project's APE to include inundated areas within the Lake Pillsbury footprint due to the proposed removal of Scott Dam, and expand the study area to include the Eel River between Cape Horn dam and the mouth of the river at the Pacific Ocean to evaluate the potential effects of the removal of Scott Dam from the resulting release of water and sediments down the Eel River. | NOI Parties |

Document Content(s)