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August 25, 2016

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SUBJECT: COMMENTS FROM THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE ON SOUTH SUTTER WATER DISTRICT'S PRE-APPLICATION DOCUMENT AND PROPOSED STUDY PLANS AND REQUESTS FOR NEW STUDIES FOR THE CAMP FAR WEST HYDROELECTRIC PROJECT, FERC NO. 2997

Dear Mr. Arnold:

The California Department of Fish and Wildlife (Department) has received and reviewed the Notice of Intent to File Application for New License (NOI), Pre-Application Document (PAD), and Proposed Study Plans filed by South Sutter Water District (SSWD, Licensee) for the relicensing of the Camp Far West Hydroelectric Project (Project, FERC No. 2997). The NOI, PAD, and request to use the Traditional Licensing Process (TLP) were filed by Licensee with the Federal Energy Regulatory Commission (FERC) on March 14, 2016. FERC approved Licensee's request to use the TLP on May 13, 2016. Licensee held a site visit and scoping meeting for the Project on June 27, 2016, both of which the Department attended. With this letter, the Department submits comments on the contents of the PAD and proposed study plans and provides requests for additional resource studies.

AUTHORITIES

The Department is the appropriate State fish and wildlife agency for resource consultation and Federal Power Act Section 10(j) (16 U.S.C. section 803 (j)) purposes. The fish and wildlife resources of the State of California are held in trust for the people of the State by and through the Department (Fish & G. Code § 711.7). The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish & G. Code § 1802). The mission of the Department is to manage California's diverse fish, wildlife, and plant resources, and the habitats on which they depend, for their ecological values and for their use and enjoyment by the public. It is the goal of the Department to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife, and plant species within the FERC-designated boundaries of the Project, as well as the areas adjacent to the Project in which

resources are affected by ongoing Project operations and maintenance activities and recreational use.

COMMENTS ON PRE-APPLICATION DOCUMENT (PAD)

General Comments

Occurrence of Fish, Wildlife, and Plant Species in the Project Area

The PAD provides a list of fish, wildlife, and plant species that occur or have the potential to occur within the Project area and whether they are known to occur based on Licensee's research conducted for the PAD. One of the resources utilized by the Licensee to obtain species occurrence information was the Department's California Natural Diversity Database (CNDDB; CDFW 2016a). The Department would like to note that CNDDB is not a complete database and mainly contains species information voluntarily submitted by the public, researchers, agencies, and other entities. CNDDB does not provide a comprehensive list of which species occur where in California. Additionally, CNDDB is backlogged and numerous data records regarding species occurrence have not been entered into the database. Further, the absence of a species occurrence record in CNDDB does not imply the species does not occur within the Project area, especially if suitable habitat is present. Thus, the Department believes that additional fish, wildlife, and plant species listed in the PAD as not known to occur may actually occur within the Project area. The Department intends to work collaboratively with Licensee to develop appropriate study plans to determine the occurrence of species that may be affected by the Project.

Reporting New Species Occurrence Data to the Department

The Department requests that all species occurrence data obtained by Licensee during Project relicensing studies or through incidental observations by Project staff during Project operations and maintenance activities are submitted to the Department using the CNDDB Online Field Survey Form located on the Department's website: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The Department requests data are submitted to CNDDB within six months of surveys or incidental observations.

Notification of Project Field Activities

The Department requests Licensee provide sufficient notification of planned Project field activities, including Project site visits and implementation of Project studies described in the study plans, so the Department and other Project relicensing participants have the opportunity to be onsite to participate in Project field activities. The Department considers sufficient notification to be no less than two weeks.

Authorization to Conduct Surveys

Studies that involve the handling or collection of fish, wildlife, or plant species may require a permit or other authorization from state and/or federal agencies, including the

Department, National Marine Fisheries Service (NMFS), and the United States Fish and Wildlife Service (USFWS). Specific to the Department, the following permits and authorizations may be required to conduct surveys:

- Scientific Collecting Permit (SCP) is required to take, collect, capture, mark, or salvage mammals, birds and their nests and eggs, reptiles, amphibians, fishes, and invertebrates (see https://www.wildlife.ca.gov/Licensing/Scientific-Collecting).

- Voucher Collection Permit is required to collect rare, threatened, and endangered plant species (see https://www.wildlife.ca.gov/Conservation/Plants/Permits).

- Memorandum of Understanding (MOU) is required for several species, subspecies, and groups of animals designated as standard exceptions to the SCP, including fully protected species, State and/or federally endangered, threatened, and candidate species, State species of special concern, and other protected species (see http://www.dfg.ca.gov/wildlife/nongame/research_permit/mou.html).

The Department recommends Licensee pursue any necessary permits or authorizations from the Department and other appropriate State and federal agencies for the studies listed in the proposed Project study plans as soon as possible to avoid delays in implementing studies.

Qualification of Surveyors

The Department strongly encourages that all persons conducting surveys for special-status species (i.e., those species listed as endangered of threatened or candidates for listing under the California Endangered Species Act (CESA), fully protected species, California species of special concern, and rare plants) are knowledgeable of the life history, behavior, and habitat requirements of the species being surveyed and are experienced in the survey protocol required by the Project's final study plans. The Department requests that Licensee provide the name and qualifications of all surveyors for study plans involving special-status species for review and approval prior to implementing study plans.

Section 2.1.4 – Operations

Typical Operations

Section 2.1.4.3 states:

> *Power is produced at Camp Far West Powerhouse during the winter/early spring months when the reservoir is spilling and during the spring and summer months when releases are being made for irrigation and to meet instream flow requirements. Because of the generating unit's operating characteristics, power can only be generated when the elevation of the reservoir water* ***surface is at or***

> ***above 236 ft and when reservoir outflow is greater than 130 cfs.*** *If these two criteria cannot be met, water is released through the low-level outlet. This condition normally occurs each year starting in September and continuing into the fall until such time that surplus inflows are available to be passed through the powerhouse.*

Whereas Section 3.1.2.1 states:

> *Power is produced at Camp Far West Powerhouse during the winter/early spring months when the reservoir is spilling and during the spring and summer months when releases are being made for irrigation and to meet instream flow requirements. Because of the generating unit's operating characteristics, power can only be generated when the elevation of the reservoir water* ***surface is at or above 235 ft and when the flow is greater than 270 cfs****. If these two criteria cannot be met, water is released through the low-level outlet. This condition normally occurs each year starting in September and continuing into the fall until such time that surplus flows are available to be passed through the powerhouse.*

According to the constraints listed in the operations model, it appears that the information in Section 2.1.4.3 is correct, while Section 3.1.2.1is not. Licensee should ensure the corrected information is provided in future Project documentation (i.e., draft license application, etc.).

Project Operations Model

The Department appreciates Licensee's preparation and inclusion of the Camp Far West operations model in the PAD. At this time, the Department has only begun to review the development and calibration of the modeling. We look forward to working with Licensee and the technical team that developed the model during the Project relicensing process to achieve the goals specified in the Section 2.1.4.6 for the model:

1. *It can be used by all interested Relicensing Participants during the relicensing to simulate current and potential future operations of the Camp Far West Hydroelectric Project (Project).*

2. *All Relicensing Participants have an opportunity to review the Ops Model and conclude that it is reasonably reliable for these purposes.*

3. *Relicensing Participants agree to use this single Ops Model to make relicensing recommendations.*

The Department encourages Licensee to facilitate the formation of an operations model technical working group early during the Project relicensing process so technical staff from the resource agencies, non-governmental organizations (NGOs), and Licensee can meet to collaboratively work through model development and calibration so that Project relicensing participants can better understand the model and come to an agreement on the model utility as specified in goal #3 above.

Appendix F of the PAD contains a technical memo titled *Bear River Hydrology Methods* dated November 9, 2015. Development of unimpaired hydrology for the Project was completed by Licensee's consultant, HDR. The Department believes the methods and development of this complicated approach should be the subject of one or more technical meetings with Project relicensing participants. Project hydrology is one of the key pieces of information upon which the Project operations model is built, and all Project relicensing participants need to agree that the unimpaired hydrology dataset represents the best professional estimate for this Project watershed. Data included in Appendix F allows the Department to look at results of HDR's synthesis, but not the underlying calculations that went into their gage proration method. Thus, the Department requests Licensee work with the proposed operations model technical working group to discuss the unimpaired hydrology dataset for the Project.

Section 3 – Existing Environment and Potential Project Effects

Licensee infers in Table 3.1-1 in the PAD that the only reach of the Bear River directly affected by the Project is the 1.3 miles of the lower Bear River from Camp Far West Dam at River Mile (RM) 18.2 downstream to the non-Project diversion dam at RM 16.9. Table 3.1-1 further implies that the Bear River reach downstream of RM 16.9 and the "non-Project Diversion Dam" to the confluence with the Feather River is *cumulatively* affected by the Project rather than directly affected. However, Article 29 of the current FERC license for the Project specifies instream flows that must be released from the Project to protect and enhance the fishery resources in the Bear River below the diversion dam. Further, Section 2.1.4.3 of the PAD states:

> *During normal reservoir releases for furnishing irrigation water, all releases are utilized for power production except under those conditions as described above when the combination of head and flow are outside the operating characteristics of the turbine. During dry periods outside of the irrigation season, reservoir releases can be limited to minimum instream flow requirements, which are at times controlled by inflow per the existing license (see Article 29).*

Since minimum instream flows specified in Article 29 of the current FERC license govern flow in this reach during the non-irrigation season, the Department considers this reach to be *directly* affected by Project operations and as such urges FERC and Licensee to consider this reach as "directly affected" not just "cumulatively affected" by the Project.

Section 3.2.3 – Aquatic Resources

Green and White Sturgeon

Licensee provides very little information in the PAD regarding the historic presence of green (*Acipenser medirostris*) and white sturgeon (*Acipenser transmontanus*) and no information regarding the adverse effects Project operations and maintenance may have on the distribution, holding, spawning, and rearing behaviors of sturgeon in the lower Bear River. Specifically, the only mention of sturgeon in the PAD is on Page

3.2.3-2, where Licensee states, “Anadromous sturgeon may have also occurred” in the Sacramento-San Joaquin Drainage, which includes the Bear River. The Department believes this is a mischaracterization of the historical presence of green and white sturgeon because both historical and recent documentation reviewed by the Department confirms both green and white sturgeon occasionally occur in the Bear River (Beamesderfer, Kopp, and Demko 2004). Adult sturgeon have been periodically observed in the Bear River during the spring in most wet and some normal water years (USFWS 1995). Specifically, adult sturgeon were observed in shallow pools in the river between the Highway 70 and 65 Bridges during 1989, 1990, and 1992. During 1989, approximately 100 sturgeon were found trapped in pools in the lower Bear River and at least 30-40 of these sturgeon (ranging in weight from 60 to 100 lbs and measuring at least five feet in length) were poached from these pools during a 2-week period in July (Beamesderfer et al. 2005). More recently, the California Department of Water Resources (CDWR) recorded sturgeon in the lower mile of the Bear River using DIDSON camera technology (A. Seesholtz, personal communication, April 4, 2016). Further, recreational fishermen have reported capturing sturgeon in the Bear River below the Highway 65 Bridge and near the confluence with Dry Creek (Department unpublished creel data) and USFWS (1995) concluded that evidence suggests that sturgeon reproduction occurs in both the Feather and Bear Rivers.

Page 3.2.3-5 of the PAD states, “Based on SSWD’s review, six special-status aquatic species may occur in the Project area or otherwise be affected by continued Project operations and maintenance.” This list of special-status aquatic species does not include green or white sturgeon or steelhead (*Oncorhynchus mykiss*). The southern distinct population segment (DPS) of North American green sturgeon was listed as threatened under the federal Endangered Species Act (ESA) in 2006. Additionally, both green sturgeon and white sturgeon are California Species of Special Concern. The California Central Valley steelhead DPS was federally listed as threatened in 1998 and the listing was reaffirmed by NMFS in 2006. As discussed above, both green and white sturgeon have been documented in the lower Bear River. Additionally, steelhead were historically documented by the Department in the lower Bear River (CDFG 1981). Table 3.2.3-1 of the PAD acknowledges that steelhead are native to the Bear River watershed; however, they are incorrectly labeled as “winter steelhead”. The correct designation for the steelhead in the Bear River is Central Valley steelhead. The Department recommends Licensee revise the name designation for steelhead in future Project relicensing documents as well as add steelhead and green and white sturgeon to the list of special-status fish species that occur in the lower Bear River.

Although the Department understands both green and white sturgeon have been documented in the lower Bear River, little is known regarding the distribution and spawning and rearing activities of sturgeon in the lower Bear River. This information is needed to determine whether Project operations and maintenance adversely affects sturgeon in the lower Bear River. Thus, the Department requests Licensee conduct a study to assess green and white sturgeon distribution, spawning, and rearing within the Lower Bear River from the non-Project diversion dam to the confluence of the Feather River. A formal study request is provided below under the requests for new project licensing studies header in this letter.

Benthic Macroinvertebrates

Page 3.2.3-31 of the PAD references a 2014 study in which benthic macroinvertebrates (BMI) were "collected and identified" in the Bear River. Based on taxonomic identification of BMI collected at the study sites, Licensee concludes in the PAD that the "Bear River is a warm-water system with more environmental stressors" and that "When compared with other area rivers...the Bear River has the lowest species diversity (i.e., taxa richness) and the lowest quantity of EPT taxa". The PAD also mentions a BMI sample collected in 2013 in the Bear River upstream of Camp Far West Reservoir near Little Wolf Creek. Licensee states in the PAD that BMI metric calculations were not performed for this sample, but concludes that the sample indicates a diverse assemblage of BMIs as well as a more stressed warm water system due to the type of taxa collected in the sample.

Licensee does not provide information in the PAD regarding the location or sampling methodology of the BMI study conducted in 2014. Additionally, biological scoring using BMI metrics to assess stream health was not completed for the 2014 study. Licensee's description of the 2014 study in the PAD implies that a complete BMI study following standard State protocols (*Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California* (Ode 2007)) and appropriate analysis of the data collected was not conducted. The Department does not agree with the conclusions drawn by the Licensee that the 2014 study suggests "a more stressed warm-water system" as the study did not include any biological scoring using BMI metric calculations to support this determination. Biological scoring using BMI metrics is supposed to be performed with data collected during BMI community structure studies to measure overall stream health. Since BMI metrics were not calculated during the 2014 study, it is not appropriate for Licensee to compare the Bear River's BMI community structure and corresponding overall stream health with other local rivers. The 2013 BMI sample referenced by Licensee was collected upstream of the Project and Camp Far West Reservoir and does not provide any insight into the condition of the BMI community in the Bear River downstream of the Project and reservoir. Thus, the Department does not have enough information from the 2014 BMI study and 2013 BMI sample to determine the current BMI community structure in the lower Bear River downstream of the Project and determine how Project operations and maintenance activities may affect this BMI community.

The Department recommends that the Licensee use standard State protocols to conduct a BMI study that includes an analysis of overall stream health in the lower Bear River from Camp Far West Dam to the confluence with the Feather River. Information collected during the study will be utilized by Licensee, the Department, and other relicensing participants to understand the current BMI community structure in the lower Bear River and determine if the BMI community is affected by Project operations and maintenance. A formal study request is provided below under the requests for new project licensing studies header in this letter.

Section 3.2.4 – Terrestrial Resources

Vegetation Mapping and Typing

Licensee utilized the Forest Service CalVeg mapping system to determine vegetation types within the FERC Project boundary. Table 3.2.4-1 provides the acres and percentage and Figure 3.2.4-1 provides a map of the vegetation types identified by the Forest Service system within the FERC Project boundary. Vegetation types identified by the Forest Service system include the following alliances: Blue Oak, Grey Pine, Interior Live Oak, Interior Mixed Hardwoods, Lower Montane Mixed Chaparral, Annual Grass-Forbs, water, barren/rock, and urban or developed. No riparian tree alliances were identified in the FERC Project Boundary utilizing the Forest Service system. Additionally, Section 3.2.4.6.2.1 of the PAD states, "no riparian habitat was identified in the existing FERC Project Boundary in the NWI (USFWS National Wetlands Inventory)."

The Department's Vegetation Classification and Mapping Program (VegCAMP) develops and maintains California's expression of the National Vegetation Classification System. VegCAMP implements a 2007 State Legislative requirement for the Department to develop and maintain a vegetation mapping standard for the State. Through VegCAMP, the Department worked collaboratively with the California Native Plant Society (CNPS) and Aerial Information Systems (AIS) to produce a fine-scale vegetation map of the northern foothills of the Sierra Nevada. To validate the map, 1,295 accuracy assessment field surveys were conducted by CNPS and Department staff. Camp Far West Reservoir and adjacent areas are included in this map (Klein et al. 2007, CDFW 2016b).

The Department utilized the report for the VegCAMP mapping project, *Classification of the Vegetation Alliances and Associations of the Northern Sierra Nevada Foothills, California* (Klein et al. 2007) along with the vegetation data layers in the Department's Biogeographic Information and Observation System (BIOS) to compare the vegetation results from the VegCAMP map with the results obtained by Licensee utilizing the Forest Service Vegetation mapping system. The vegetation types resulting from the VegCAMP report and vegetation layers include: Blue Oak Woodland/Forest Alliance, Interior Live Oak Woodland/Forest Alliance, Foothill Pine Woodland/Forest Alliance, three grassland alliances, and riparian tree alliances, including, California Buckeye Woodland/Forest, Fremont Cottonwood Woodland/Forest, and Red Willow Woodland/Forest (Klein et al. 2007; CDFW 2016c). Some of the vegetation types identified by Licensee in the PAD are the same as those identified by the Department utilizing VegCAMP; however, Licensee's vegetation mapping exercise did not reveal any riparian vegetation in the Project area. VegCAMP identified riparian tree alliances along the southern shoreline of Camp Far West Reservoir and in the Bear River arm of the reservoir. Additionally, the Department observed riparian vegetation including willows (*Salix spp.*) and California buckeye (*Aesculus californica*) along the Bear River below Camp Far West Dam and the powerhouse in August 2016.

The Department is concerned the federal vegetation mapping system utilized by Licensee does not provide the accuracy of the State program, VegCAMP. Additionally,

VegCAMP is the State standard vegetation classification and mapping program implemented by the Department, which is a Trustee Agency under the California Environmental Quality Act (CEQA; Pub Resources Code § 21070) and has jurisdiction over the natural resources (i.e., fish, wildlife, native plants, and habitat for those species) that may be affected by the Project. Current and accurate vegetation mapping and classification is important to determine which fish, wildlife, and plant habitats occur within the Project area and how these habitats and the species that depend on these habitats may be affected by Project operations and maintenance activities and recreational use.

Thus, the Department requests Licensee revise the vegetation classification and mapping for the Project area utilizing VegCAMP classifications and vegetation layers for the Northern Sierra foothills. Additionally, the Department requests Licensee ground-truth vegetation types subsequent to remapping with VegCAMP; and map, describe, and classify any riparian vegetation identified during ground-truthing along the shoreline of Camp Far West Reservoir, within any stream, creek, and other drainage inlets to the reservoir, within the Bear River upstream of Camp Far West Reservoir, within the Bear River downstream of Camp Far West Dam (including the channels extending from the spillway, low level outlet, and powerhouse), extending 100 feet from the FERC Project Boundary. A formal study request is provided below under the requests for new project licensing studies header in this letter.

Bats

Table 3.2.4-5 states that five special-status bats species may have the potential to occur in the Project area, including: pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), western mastiff bat (*Eumops perotis*), and western red bat (*Lasiurus blossevillii*). All of these species are California Species of Special Concern and additionally Townsend's big-eared bat is a candidate species for listing under CESA. Licensee states in the PAD that pallid bat, spotted bat, and western mastiff bat are not known to occur in the Project area, but potentially occur in suitable habitat. Additionally, Licensee states that for Townsend's big-eared bat and western red bat "neither the species or suitable habitat was observed during BA surveys (Sycamore and Associates 2013a)."

The Department does not agree that the Project area does not contain suitable habitat for Townsend's big-eared bat and western red bat. Further, the Department believes the Project area contains suitable habitat for all five of the special status bat species identified in the PAD and thus all five bat species have the potential to occur in the Project area. Specifically:

- Pallid bats are known to roost in bridges, buildings, and trees, including oaks and deciduous riparian trees (WBWG 2016). Potentially suitable habitat for pallid bats in the Project area includes the bridge over the dam, recreation buildings (bathroom and stores), the powerhouse, other Project buildings, and vegetation types that include oaks and deciduous riparian tree species such as Blue Oak Woodland/Forest Alliance, Interior Live Oak Woodland/Forest Alliance, Foothill

Pine Woodland/Forest Alliance, California Buckeye Woodland/Forest Alliance, Fremont Cottonwood Woodland/Forest Alliance, and Red Willow Woodland/Forest Alliance.

- Townsend's big-eared bats are known to roost in buildings and bridges and forage along streams and in a variety of wooded habitats (WBWG 2016). Potentially suitable habitat for Townsend's big-eared bats in the Project area includes the bridge over the dam, recreation buildings, the powerhouse, other Project buildings, streams such as the Bear River upstream of Camp Far West Reservoir and downstream Camp Far West Dam, and wooded vegetation alliances such as Blue Oak Woodland/Forest, Interior Live Oak Woodland/Forest, Foothill Pine Woodland/Forest, California Buckeye Woodland/Forest, Red Willow Woodland/Forest, and Fremont Cottonwood Woodland/Forest.

- Spotted bats have been found in various vegetation types, including riparian areas and fields (WBWG 2016). Potentially suitable habitat for spotted bat in the Project area includes riparian vegetation alliances such as California Buckeye Woodland/Forest Alliance, Fremont Cottonwood Woodland/Forest Alliance, and Red Willow Woodland/Forest Alliance. Additional potentially suitable habitat for spotted bat in the Project area includes fields containing annual and perennial grasslands.

- Western mastiff bats are known to roost in buildings and forage in oak woodland, and grassland (WBWG 2016). Potentially suitable habitat for western mastiff bats in the Project area includes recreation buildings, the powerhouse, other Project buildings, and Blue Oak Woodland/Forest, Interior Live Oak Woodland/Forest, and annual and perennial grassland vegetation alliances.

- Western red bats are known to roost in trees and shrubs adjacent to streams or open fields and in riparian areas (WBWG 2016). Potentially suitable habitat for western red bat in the Project area includes all wooded and riparian vegetation alliances, including Blue Oak Woodland/Forest, Interior Live Oak Woodland/Forest, Foothill Pine Woodland/Forest, California Buckeye Woodland/Forest, Fremont Cottonwood Woodland/Forest, and Red Willow Woodland/Forest.

The Department reviewed Sycamore and Associates (2013), referenced by Licensee in the PAD as a source of information regarding the presence of special status bat species and their habitat in the Project area. The "BA surveys" referenced by Licensee as documented in *Sycamore and Associates* (2013) consisted of:

> *An evaluation of biological resources...to determine whether any special-status plant or wildlife species, or their habitat, or sensitive habitats occur in the BSA (Biological Study Area)...Biological surveys consisted of walking through the BSA to determine if any special-status species or their habitat were present. Wildlife species observed, their sign, and potential habitats were recorded.*

Focused bat surveys (i.e., roost surveys, acoustic monitoring, mist net surveys, etc.) were not conducted during the "BA surveys". The presence of bat species cannot be determined without conducting appropriate focused surveys. Additionally, bats are nocturnal species and would not have been observed by walking around during the daytime, especially if the interior of Project facilities were not inspected for day roosting bats. Thus, the Department recommends Licensee does not rely on Sycamore and Associates (2013) to determine the presence of special status bat species within the Project area.

Section 3.2.4.4.2 of the PAD provides a summary of an evaluation conducted by Licensee in September 2015 at all Project recreation facilities within the Project area for evidence of bat activity. Project recreation facilities that were evaluated included: the store, restrooms 1 through 4, and the storage shed at the South Recreation area (SRA) and the store, restrooms 1-4, and the old snack bar at the North Recreation area (NRA). The Project powerhouse and bridge over the dam were not included in the evaluation. At the evaluated recreation facilities, Licensee surveyed the interior and exterior of the buildings for active bat roosts and signs of historic use via the presence of guano and staining. During the survey, Licensee considered the following types of bat roosts: maternity roosts, day roosts, night roosts, and winter hibernacula. Licensee did not see any bats during the survey of Project recreation facilities, but concluded that some facilities may be suitable for roosting although there was no presence of guano and Licensee believes the staining observed was most likely from birds. Licensee notes that a few of the screens that cover the exterior windows of several facilities were damaged, providing possible points of entry for bats, but no bat exclusionary devices have been installed by the Licensee on any Project facilities.

The Department believes the bat activity evaluation conducted by Licensee in September 2015 at recreation facilities was not adequate to determine use of Project facilities by bats and whether bats are present within the Project area. Since the evaluation was conducted in September, it does not provide information regarding the presence of maternity roosts, which bats utilize during their maternity season, generally April through August; or winter hibernacula, which bats utilize during the winter months, generally December through February. Additionally, since the evaluation was conducted during the day, it does not provide any information on the use of recreation facilities by bats as night roosts. Licensee did not provide photos from the evaluation showing the "staining" observed at recreation facilities, so the Department cannot confirm whether bats or birds were the source of the staining. Additionally, the Department does not believe that the absence of guano or staining indicates that bats do not utilize a particular facility. The Department requests that Licensee provide photos of staining from the evaluation. Finally, the evaluation did not include the powerhouse and associated buildings or the bridge over the dam, which provide potentially suitable habitat for pallid bats, Townsend's big-eared bats, and western mastiff bats.

Based on the Department's review of the information provided in the PAD and local bat species life history information, the Department believes the Project area contains suitable habitat for five special-status bats species: pallid bat, Townsend's big-eared bat, spotted bat, western mastiff bat, and western red bat. Thus, the Department

believes these species have the potential to occur in the Project area and may be adversely affected by ongoing Project operations, maintenance, and recreational activities. In this letter, the Department provides comments and suggests study revisions to Licensee's proposed study, *Study 4.3 Special-Status Wildlife, Bats*, to determine the presence of special-status bats in the Project area, determine the use of Project facilities by bats, and evaluate potential Project effects to special-status bats related to ongoing Project operations and maintenance activities and recreational use.

COMMENTS ON PROPOSED STUDY PLANS

General Comments

The Department (and likely other Project relicensing participants), has several questions and concerns regarding the most efficient way to collect useful data for Licensee's proposed study plans and the study plans requested by the Department. The Department recommends, although not a requirement under the TLP, Licensee host two or three meetings to discuss and develop the Project study plans collaboratively with Project relicensing participants. These meetings will allow Licensee and Project relicensing participants to resolve differences of opinion on study plans more quickly and efficiently prior to Licensee finalizing the study plans.

Study 2.1 Water Temperature Monitoring

Licensee is proposing *Study 2.1 – Water Temperature Monitoring* to provide information to determine whether continued Project operations and maintenance has an adverse effect on water temperature. The Department requests Licensee revise *Study 2.1* to incorporate the comments and recommendations provided below.

For *Study 2.1*, Licensee proposes to collect stream water temperature data at two locations upstream of the Project area in the Bear River and Rock Creek and at ten locations downstream of the Project area, seven of which are in the Bear River, one in Dry Creek, and the remaining two in the Feather River. Licensee will also collect reservoir water temperature profile at three locations in Camp Far West Reservoir. Licensee installed temperature recorders in these locations in 2015 and proposes to continue collecting data through 2016.

The Department recommends Licensee continue to collect water temperature data at all stream and reservoir locations through 2017 in order to overlap with the timing of other relicensing studies and accumulate more data for the proposed *Study 2.2 – Water Temperature Modeling Study*, for which the Department provides comments below. The results of *Study 3.1 – Salmonid Redd Study*, *Study 3.2 – Stream Fish Populations Study*, and other studies conducted during 2017 involving the survey of aquatic resources may need to be compared to the results of *Study 2.1*. Spot water temperature data collected during other Project relicensing studies will not be sufficient when analyzing trends and spatial distribution of water temperature throughout the entire lower Bear River. Extending the water temperature data collecting period through 2017

will provide Project relicensing participants with nearly three years of data to compare water temperatures during a range of variable hydrologic conditions.

The Department believes the requested modifications to *Study 2.1* described above will provide the information needed to determine whether continued Project operations and maintenance has an adverse effect on water temperature.

Study 2.2 Water Temperature Modeling Study

Licensee is proposing *Study 2.2 – Water Temperature Modeling Study* to determine if Project operations and maintenance adversely affects water temperature in Camp Far West Reservoir and in the Bear River downstream of Camp Far West Dam. The Department requests Licensee revise *Study 2.2* to incorporate the comments and recommendations provided below.

For *Study 2.2*, Licensee proposes to use only one year of data for the calibration period of the water temperature model. The proposed period of calibration is listed as April 2015 through March 2016. The Department requests that water temperature monitoring and meteorologic data collected through the end of 2016 is also used in the calibration of this model. The hydrologic year of 2015 came at the end of one of the driest periods on record in California. Conversely, the hydrologic year of 2016 has been wetter than 2015. The Department does not believe one (dry) year of water temperature data presents a wide enough range of hydrologic conditions to develop a robust calibration.

Data collected on the Bear River and reported on the California Data Exchange Center (CDEC) at the station Bear River at Pleasant Grove Road show the variation in flow recorded thus far in 2015 and 2016 (see Figure 1 below):

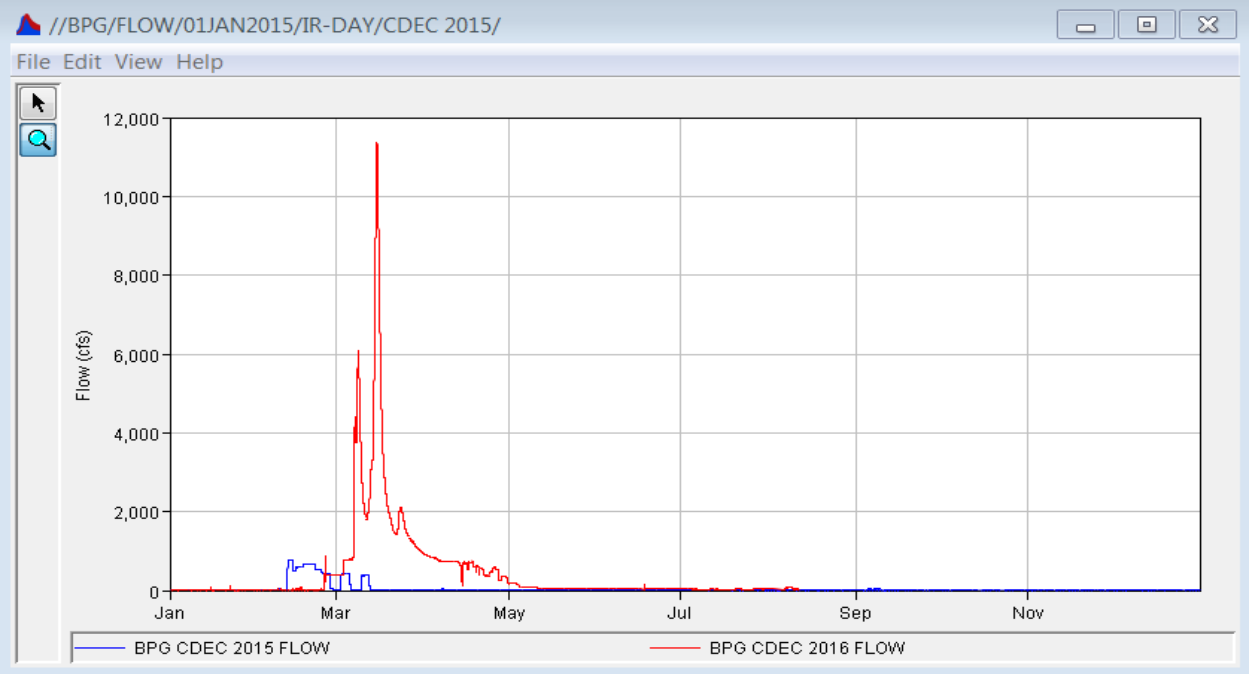

Figure 1. Bear River at Pleasant Grove Road flow data during 2015 and 2016.

The study plan implementation schedule listed in Study 2.2 is as follows:

Develop and Calibrate Model (Step 1) .....February 2016 – August 2016
Develop Input Data Set (Step 2) .....October 2016 – December 2016
Validate Model (Step 3).....January 2017 – March 2017
Develop Base Case (Step 4).....April 2017 – May 2017
Prepare Model and Reports (Step 5).....May 2017 – June 2017

The Department recommends inclusion of one additional summer of water temperature modeling data (data collected through the end of 2016) for water temperature model calibration purposes. Including this additional data should not delay this schedule any further than it has already been delayed by Project pre-filing activities. Thus, water temperature data through 2016 can and should be included in the model calibration.

The Department believes the requested modifications to *Study 2.2* described above will provide the information needed to determine if Project operations and maintenance adversely affects water temperature in Camp Far West Reservoir and in the Bear River downstream of Camp Far West Dam.

Study 3.1 Salmonid Redd Study

Licensee is proposing *Study 3.1 – Salmonid Redd Study* to determine if Project operations and maintenance has an adverse effect on anadromous fish in the lower Bear River. The Department requests Licensee revise *Study 3.1* to incorporate the comments and recommendations provided below.

The Department believes the goal of this study is too vague and that the salmonid redd survey goals should be: 1) assess spawning of salmonids (Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead) in the lower Bear River; 2) evaluate how flows released from Camp Far West Dam affect salmonid spawning activities and related aquatic habitat conditions in the lower Bear River; and 3) if Project operations and maintenance have an adverse effect on anadromous fish in the lower Bear River.

To meet the study goals as revised by the Department, salmonid redd surveys should:

- Describe the temporal and spatial spawning distribution of Chinook salmon and steelhead in the lower Bear River downstream of the non-Project diversion dam.
- Identify and describe habitats utilized for spawning by salmonids.
- Examine potential relationships between the spatial and temporal distribution of steelhead spawning, and abiotic factors including flow and water temperature.
- Characterize the size and shape of salmonid redds.
- Obtain salmonid spawning microhabitat utilization data.

- Provide an estimate or index of salmonid spawning abundance.

On Page 7 of the study plan, Licensee states, “each sub-reach will be surveyed, once, on consecutive days during each month of the survey.” The Department is concerned that the sampling frequency proposed will not be frequent enough to achieve the data needs described in the study of “an estimate of escapement in the lower Bear River” (Page 2 of the study plan). Specifically, the sample frequency proposed by Licensee is not robust enough to validate the use of redd counts for estimating salmonid escapement and does not meet primary criteria established by Gallagher (2007). Those criteria include: 1) redds are counted with minimal error (no double, over, or undercounting errors), and 2) all surveys sites are visited at least once every 14 days (Hoobler 2015). Therefore, the Department recommends that redd surveys are conducted less than fourteen days apart throughout the spawning run (Gallagher and Gallagher 2005, Gallagher 2007). Specifically, surveys should begin prior to the onset of spawning of the species of interest and continue at least biweekly until spawning is complete. Redd count surveys should include marking newly made redds and recounting marked redds to estimate observer efficiency and reduce counting errors.

Page 8 of the study plan states, “(i)n the Sacramento River basin, average redd size for steelhead is 56 ft^2 (5.2 m^2).” The Sacramento River basin is not comparable to the Bear River in terms of the size, width, and magnitude of flows annually observed. Further, data suggests that steelhead redd size for rivers of similar quality to the Bear River have an average redd size of 1.6 m^2 (see Table 1 below; S. Hoobler, unpublished data).

Consolidated Agency California Steelhead Redd Data

Location	# Redds	Years sampled	Avg. Area (m^2)
Battle Creek[1]	162	2003-2004	1.9
Clear Creek[1]	445	2003-2012	1.9
Trinity Tributaries[2]	450	2008-2011	0.8
American River[3]	372	2003-2005	2.0
	1429	10 years	1.6

[1]USFWS [2] CDFW [3]USBR

Table 1. Steelhead redd size data in Battle Creek, Clear Creek, Trinity River tributaries, and the American River.

Additionally, page 8 of the study plan states, “All redds will be identified for species use”, and “If a determination of species cannot be made for a redd it will be reported as an unknown salmonid redd.” Because “a set of visual estimations will be made to establish its overall size” rather than recording actual redd measurements, the Department believes Licensee may have difficulty identifying redds to species level.

It is important to accurately estimate the area of a redd so data can be used to differentiate between salmonid species and provide a reasonable estimate of escapement. Therefore the Department recommends Licensee collect physical

measurements of the pot area and tail spill of each newly constructed redd. Total area of the redd should be calculated from the field measurements treating the pot as a circle or ellipse and the tail spill as a square, triangle, or rectangle depending on the individual measurements. This data can then be used to conduct a discriminant analysis similar to steelhead redd surveys completed by Yuba County Water Agency (YCWA) in 2015 for the Yuba River Development Project (FERC No. 2246; YCWA 2015). Discriminant analysis is a multivariate classification technique that uses a set of *n* quantitative observations on *p* variables belonging to two or more groups (e.g., the set of redd size measurements associated with redds assigned to Chinook salmon or steelhead), normally referred to as the "training set", to estimate a linear or quadratic function that explains the grouping of a given set of observations, and can further be used to assign additional observations (e.g., the redd size measurements of unassigned salmonid redds) to the correct group. For the proposed study discriminant analyses, the training data set should consisted of the pot length (PL), pot width (PW), tailspill length (TSL), tail-spill widths (TSW1 and TSW2), and date of observation expressed as day of the year (DoY).

The Department believes the requested modifications to *Study 3.1* described above will provide the information needed to assess spawning of salmonids in the lower Bear River, evaluate how flows released from Camp Far West Dam affect salmonid spawning activities and related aquatic habitat conditions in the lower Bear River, and whether Project operations and maintenance activities have an adverse effect on anadromous fish in the lower Bear River.

Study 3.2 Stream Fish Populations Study

Licensee is proposing *Study 3.2 – Stream Fish Populations Study* to determine if Project operations and maintenance has an adverse effect on fisheries in the Bear River downstream of Camp Far West Dam. The Department requests Licensee revise *Study 3.2* to incorporate the comments and recommendations provided below.

For *Study 3.2*, Licensee is proposing to conduct stream fish population surveys in the Bear River below Camp Far West Dam in four reaches: Camp Far West Dam downstream to the non-Project diversion dam (Reach 1), within one mile downstream of the diversion dam (Reach 2), within 0.5 miles of the Highway 65 Bridge (Reach 3), and within 0.5-mile of the Highway 70 Bridge (Reach 4). For Reach 1, Licensee proposes to split the reach into three sites and conduct qualitative electrofishing surveys once during spring and once during the fall. For Reaches 2-4, Licensee proposes to conduct snorkel surveys once in the spring and once in the fall.

The Department has the following comments and recommendations regarding Licensee's proposal to survey stream fish populations in the Bear River below Camp Far West Dam:

- Licensee's proposal to sample each reach once during spring and fall does not provide adequate opportunity to sample the species and lifestages of special-status species that are expected to occur in the Bear River below Camp Far

West Dam, including, but not limited to: fall- and late fall-run Chinook salmon, both California Species of Special Concern and NMFS Species of Concern; steelhead, a federally threatened species; white sturgeon, a California Species of Special Concern; green sturgeon, a federally threatened species, NMFS Species of Concern, and California Species of Special Concern; hardhead (*Mylopharodon conocephalus*), a California Species of Special Concern; and California roach (*Lavinia symmetricus symmetricus*), a California Species of Special Concern. The Department recommends stream fish sampling via electrofishing in Reach 1 and snorkel surveys in Reach 2-4 be increased from once during the spring and fall to once per month during April, May, and June, and then October, November, and December. Sampling during three spring months will increase the likelihood of observing juvenile salmonids (salmon and steelhead) and adult sturgeon. Sampling during three fall months will increase the likelihood of observing adult salmonids.

- The Department requests Licensee provide more detail in the study plan to clarify whether the study is intended to be qualitative (i.e., presence/absence) or quantitative (i.e., catch per unit effort).

- The Department is concerned that snorkel surveys alone may not be adequate for conducting population surveys in Reaches 2-4. Decreased water visibility during snorkel surveys reduces the number of fish observed by surveyors. The Department recommends Licensee supplement snorkel surveys with beach seining once per month during the three spring months and the three fall months. Licensee should utilize a seine net with the appropriate mesh size to capture juvenile and adult special status fish species during the respective sampling periods (spring and fall). Supplementing snorkel surveys with beach seining will allow Licensee to collect information about individual fish in Reaches 2-4, including confirmation of species, length, weight, estimated age, and condition.

- The Department requests Licensee collect Environmental DNA (eDNA) during *Study 3.2* to assist in determining the occurrence of fish species in the lower Bear River. The Department would like to collaboratively determine the locations, timing, and methodology for eDNA sampling with Licensee and other Project relicensing participants during a study plan meeting.

- Licensee proposes to visually estimate turbidity as low, moderate, or high during electrofishing surveys. The Department believes visual turbidity measurements are too subjective and requests Licensee utilize a secchi disk to measure turbidity prior to each electrofishing sampling event.

The Department requires all persons conducting stream fish population surveys in the Project area to be: 1) able to identify fish species expected to occur in the Bear River below Camp Far West Dam; 2) knowledgeable of the life history, behavior, and habitat requirements of the fish species being surveyed; 3) experienced in conducting snorkel and electrofishing surveys; and 4) experienced in collecting data on sampled fish.

The Department believes the requested modifications to *Study 3.2* described above will provide the information needed to determine which stream fish, including special-status species, occur in the Bear River below Camp Far West Dam and how they may be affected by Project operations and maintenance.

Study 3.3 Instream Flow Study

Licensee is proposing *Study 3.3 – Instream Flow Study* to determine if Project operations and maintenance affects habitat for fishes in the Bear River downstream of Camp Far West Dam. The Department requests Licensee revise *Study 3.3* to incorporate the comments and recommendations provided below.

For *Study 3.3*, Licensee proposes two study sites for preliminary information review, located: 1) between RM 15.3 and RM 14.0 and 2) in the vicinity of Pleasant Grove Road, between RM 8.1 and RM 6.9. Additionally, Licensee states that they will select final study site locations. The Department requests that site selection for *Study 3.3* be performed in consultation with the Department and other interested Project relicensing participants, including, but not limited to NMFS, USFWS, and the State Water Resources Control Board (SWRCB).

With respect to habitat modeling at the two study sites, Licensee proposes to only use Habitat Suitability Criteria (HSCs) for two fish species: 1) fall-run Chinook salmon, and 2) hardhead. The study plan states that habitat modeling will be conducted for additional ESA-listed or special-status fish species if results from *Study 3.1 – Salmonid Redd* or *Study 3.2 – Stream Fish Populations Study* document these fish species in the study area. The Department requests that additional species and life stage habitat modeling is added based on the results of these fisheries studies and in consultation with the Department and other interested Project relicensing participants. Based on the study plan implementation schedules provided in the *Studies 3.1*, *3.2*, and *3.3*, data collected in the fisheries studies may not be ready in time to facilitate an HSC development discussion. This potential schedule conflict should be discussed with the Project relicensing participants during the “study planning” phase of the relicensing process and/or in a study plan meeting.

Regarding HSC, *Study 3.3* also states:

> *It is anticipated that these HSC may require some modification to appropriately be used in this Study as the general river conditions under which the curves were developed may differ significantly from current conditions in the lower Bear River. Modifications to HSC will be made by a regional HSC expert familiar with the proposed curves and any changes will be thoroughly documented in the final report.*

The Department requests that any modifications to the existing HSCs proposed by licensee should be discussed and agreed upon in consultation with technical staff from the Department and other Project relicensing participants.

Additionally, as part of the *Study 3.3*, the Department requests that the flow stage change impact from existing and proposed ramping rates is addressed. Although 2D modeling alone shows stage changes due to flow within the modeling reaches, actual stage change throughout the entire lower Bear River down to the confluence with the Feather River can be highly attenuated. The Department requests that stage loggers are installed at no less than four locations in the lower Bear River for at least one calendar year. The Department requests the exact locations for stage loggers are selected in consultation with the Department and other interested Project relicensing participants.

The Department believes the requested modifications to *Study 3.3* described above will provide the information needed to determine if Project operations and maintenance affects habitat for fishes in the Bear River downstream of Camp Far West Dam.

Study 4.1 Special-Status Plants and Non-Native Invasive Plants Study

Licensee is proposing *Study 4.1 – Special-Status Plants and Non-Native Invasive Plants Study* to provide information to determine whether continued Project operations and maintenance or recreational use of Project facilities may have an adverse effect on special-status plant species or spread non-native invasive plants (NNIPs). The Department requests Licensee revise *Study 4.1* to incorporate the comments and recommendations provided below.

The proposed study area for *Study 4.1* consists of four specific areas, each with a 100-foot wide buffer around them, within the existing FERC Project boundary: 1) the NRA; 2) the SRA; 3) the Camp Far West Dam and associated dikes and Spillway; and 4) the Camp Far West Dam Powerhouse. The Department does not believe the proposed study area is adequate to capture all occurrences of special-status plants within the FERC Project Boundary and in adjacent areas outside of the FERC Project boundary that may be affected by the Project or determine if the Project may have an adverse effect on special-status plant species. The Department recommends the study area for special status plants be expanded to include the entire FERC Project Boundary plus 100 feet upslope of the shoreline of the reservoir and banks of the Bear River upstream of Camp Far West Reservoir and downstream of Camp Far West Dam, and 100 feet around all Project facilities. Changes in reservoir level, changes in the place (i.e., powerhouse, low level outlet, or spillway) and magnitude of flows released from the reservoir, recreational use, and any vegetation maintenance or other ground-disturbing Project activities along the shoreline of the reservoirs, banks of the Bear River, and around all Project facilities have the potential to have an adverse effect on special-status plant species.

Expanding the study area for *Study 4.1* as suggested by the Department will sufficiently document any special status plant species within or adjacent to the FERC Project Boundary that may be adversely affected by the Project as long as surveys are conducted according to the survey protocols proposed in the plan, *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). The Department has requested or agreed to similar

study areas for special-status plant studies in other FERC Project relicensing proceedings (see *Study 5.1 Special-Status Plants* for the relicensing of the Yuba River Development Project, FERC Project No. 2246 and *Study Description RTE-S5 Special-Status, Elderberry Shrub, and Culturally Significant Plants* for the relicensing of the Bucks Creek Hydroelectric Project, FERC Project No. 619).

The Department requires all persons conducting surveys for special-status and non-native invasive plants in the Project area to be: 1) able to identify plant species in the field; 2) knowledgeable of the life history and habitat requirements of the plant species being surveyed; 3) experienced in plant surveys and voucher collection (if needed).

Study 4.2 Special-Status Wildlife – Raptors

Licensee is proposing *Study 4.2 – Special-Status Wildlife, Raptors* to provide information to determine if special-status raptors may be adversely affected by Project recreation features or activities and Project operations and maintenance. For *Study 4.2*, focused surveys will be conducted for bald eagle (*Haliaeetus leucocephalus*), a State endangered and fully protected species; golden eagle (*Aquila chrysaetos*), a State fully protected species; and Swainson's hawk (*Buteo Swainsoni*), a State threatened species. The Department requests Licensee revise *Study 4.2* to incorporate the comments and recommendations provided below.

Figure 4.1-1 in the study plan indicates the study area for special-status raptors will include the FERC Project Boundary plus a 0.25-mile buffer, however, this information is not explicitly stated in the text of the study plan. The Department requests that Licensee clearly state the proposed study area for all raptor surveys within the text of the study plan.

The description in the study plan for golden eagle surveys mentions conducting surveys "in conjunction with bald eagle surveys..." and the description for Swainson's hawk remarks "conducting surveys in conjunction with bald and golden eagle surveys..." The Department does not agree with conducting concurrent surveys for bald eagle, golden, and Swainson's hawk if surveys are conducted by the same surveyor(s) on the same days. If survey days for two or three of the raptor species overlap, surveys for each species must be conducted by a different surveyor(s) to ensure surveyors are focused on the specific species being surveyed. For example, 3 individual surveyors should survey for each of the three raptor species if surveys for all three raptors are conducted on the same days; one surveyor cannot conduct surveys for more than one raptor species at the same time.

The Department requires all persons conducting surveys for bald eagle, golden eagle, and Swainson's hawk in the Project area to be: 1) able to identify the species in the field; 2) knowledgeable of the life history, behavior, and habitat requirements of the species being surveyed; and 3) experienced in raptor surveys (preferably the specific species being surveyed), nesting searching, and using spotting scopes and binoculars.

Bald Eagle

Licensee proposes to conduct winter bird and night roost surveys as well as nesting surveys for bald eagle. *Study 4.2* states with respect to winter bird surveys, "The January survey will be conducted during the 2-week nationwide, mid-winter bald eagle survey coordinated state-wide by Cal Fish and Wildlife and the University of California, Santa Cruz, Predatory Bird Research Group..." The Department would like to inform Licensee that we no longer coordinate a statewide winter survey due to staffing constraints, however, the national bald eagle midwinter survey is coordinated by the United States Army Corps of Engineers (USACE) and takes places during the first two weeks of January according to their website: http://gis.nacse.org/eagles/. The Department recommends Licensee conduct January winter bird surveys consistent with the national survey during the first two weeks of January.

The study plan states that the initial nesting survey for bald eagles will be conducted "in areas that have historical data available." The Department is only aware of one nest record at Camp Far West Reservoir, which is described in the PAD as being located on the "riverine" arm of the reservoir, which is the eastern most portion of the Project area where the Bear River enters the reservoir. The Department believes suitable habitat for nesting bad eagles may be present throughout the Project area in wooded habitats and thus does not agree that surveys should be restricted to areas that have historical data available. The Department recommends all bald eagle nesting, as well as winter bird and night roost, surveys be conducted along the entire FERC Project boundary plus the 0.25 mile buffer proposed by Licensee in Figure 4.1-1 of the study plan.

The Department requests Licensee record bald eagle nesting data for the Project on the Department's *California Bald Eagle Nesting Territory Survey Form* (CDFG, 2010) and submit this form by September 1 of the survey year to the Department's Wildlife Branch Nongame Wildlife Program located at 1812 Ninth Street, Sacramento, CA 95814 with attention to Carie Battistone.

Golden Eagle

Licensee references two documents in the PAD that will be utilized for monitoring golden eagles nests in the Project area: *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel, Whittington, and Allen 2010) and *Protocol for Golden Eagle Occupancy, Reproduction, and Prey Population Assessment* (Driscoll 2010). These documents have some differences, so the Department would like to clarify our expectations of Licensee with respect to conducting golden eagle nesting surveys for the Project based on the information provided in these two documents.

The Department recommends Licensee survey for nesting golden eagles during four survey periods for a minimum of four hours within all suitable habitats in the FERC Project boundary plus 0.25 mile buffer as described below. The Department is recommending a fourth "Occupancy Survey" in addition to the three surveys proposed by Licensee due to the fact that use of the Project area by nesting golden eagles is unknown and thus there is no historical nest information available to allow Licensee to start with incubation surveys.

- Occupancy Survey: Between January 1 and February 28, conduct one 4-hour survey to document courting behavior and nest building. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) GPS location of all golden eagles observed, and 6) weather.

- Incubation Survey: During March, conduct one 4-hour survey to document nests and egg incubation. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) number of eggs observed, 6) GPS location of all golden eagles observed, and 7) weather.

- Nestling Survey: Between April 1 and May 15, conduct one 4-hour survey to document nestlings. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) number of nestlings observed, description of plumage, and behavior, 6) GPS location of all golden eagles observed, and 7) weather.
- Fledgling Survey: Between May 15 and June 30, conduct one 4-hour survey to document fledglings. Data collected should include: 1) description and GPS location of any nests or partial nests, 2) description and GPS location of any perches, 3) number of adults observed and behavior, 4) number of subadults observed and behavior, 5) number of fledglings observed, description of plumage, and behavior, 6) GPS location of all golden eagles observed, and 7) weather.

Licensee should conduct the four surveys at least 30 days apart. Licensee shall utilize the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel, Whittington, and Allen 2010) and *Protocol for Golden Eagle Occupancy, Reproduction, and Prey Population Assessment* (Driscoll 2010) as references during surveys to determine nesting behavior and assist in implementing the Department-recommended survey periods described above.

Swainson's Hawk

Licensee proposes to conduct nesting surveys for Swainson's hawk utilizing the protocol, *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (CDFW and CEC 2010). The Department does not believe the CDFW and CEC (2010) protocol is appropriate for use in the Project area as this survey protocol is specific to renewable energy projects proposed under the Desert Renewable Energy Conservation Plan (DRECP) in the Antelope Valley of southern California. The Project is not within the DRECP Plan area, thus this protocol is not applicable. Additionally, DRECP renewable energy projects include geothermal, solar, and wind power plants, not hydroelectric projects. Further, the Swainson's hawk nesting habitat in

the Antelope Valley is different than what occurs in the Project area. Thus, the CDFW and CEC (2010) protocol cannot be applied to Project Swainson's hawk nesting surveys. The Department recommends Licensee instead utilize the protocol, *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000). This protocol can be found on the Department's website: https://www.wildlife.ca.gov/Conservation/Birds/Swainson-Hawks. The detailed survey periods for Swainson's hawk surveys described in the study plan need to be revised to reflect the Department recommended protocol as the number of survey periods and the survey period timing in the two protocols (SHTAC 2000 vs CDFW and CEC 2010) are different.

The Department believes the requested modifications to *Study 4.2* described above will provide the information needed to determine the presence and nesting status of special-status raptors in the Project area and how special-status raptors may be adversely affected by Project operations and maintenance or recreational use.

Study 4.3 Special-Status Wildlife – Bats

Licensee is proposing *Study 4.3 – Special-Status Wildlife, Bats* to provide the data necessary to perform an analysis of how special-status bats may be affected by Project operations and maintenance or recreational use. The Department requests Licensee revise *Study 4.3* to incorporate the comments and recommendations provided below.

In *Study 4.3*, Licensee states that the information collected during their evaluation (conducted in 2015 according to the PAD; conducted in 2014 according to *Study 4.3*) of Project recreation facilities for bat activity will be utilized "to identify and prioritize locations that will be targeted during the Study." As discussed by the Department earlier in this letter, we do not believe the evaluation conducted by Licensee was adequate to determine use of Project facilities by bats and whether bats are present within the Project area, especially since the powerhouse and associated buildings and the bridge over the dam were not included in the evaluation.

Licensee has proposed to conduct long-term acoustic monitoring at four sites within the Project area based on potential bat use: the powerhouse, storage shed and Restroom 2 at the SRA, and Restroom 4 at the NRA. Long-term acoustic monitoring would involve the deployment of bat detectors for monitoring bat use over time and then utilize specialized software for analyzing the data recorded by the detectors. Licensee will deploy the detectors in select riparian zones adjacent to Project facilities such as the dam and powerhouse. Licensee will deploy detectors from early April through October in order to capture spring migration, young rearing, periods of peak bat activity, and fall migration. Licensee proposes to visit detectors every two weeks in April and May, thence once every three weeks or once every month through October, to download recorded bat calls and ensure equipment is functioning properly.

The Department has the following comments and recommendations regarding Licensee's long-term acoustic monitoring proposal:

- Based on the species of bats expected to occur and available habitat within the Project area the Department agrees four long-term acoustic monitoring sites should be established. The Department agrees to sites located in suitable bat foraging habitat near the powerhouse, Restroom 4 at the NRA, and Restroom 2 at the SRA, but recommends the fourth site be located near the bridge over the dam rather than the storage shed at the NRA. The bridge may provide suitable habitat for special-status bats and thus needs to be included in Project bat surveys.

- Long-term acoustic monitoring sites should be located in potential bat foraging habitat adjacent to or downstream of and not directly next to Project facilities that are potential bat roosts. Bats do not always echolocate when they are leaving a roost, however, they echolocate continuously while flying around and hunting for food in the dark.

- The Department requests Licensee select long term acoustic monitoring sites in cooperation with the Department prior to the commencement of surveys.

- The Department recommends long-term acoustic monitoring is conducted monthly for 5 consecutive days (recording from dusk until dawn each day) at each of the four sites from April through October rather than continuously during these months. For example, Long-term acoustic monitoring would occur for 5 consecutive days in April, then 5 consecutive days in May, continuing for 5 consecutive days each month through October. Acoustic detectors are subject to error the longer they are deployed without frequent (once per week) visits to download data and ensure equipment is functioning properly, which can result in a loss of data and bias the study. The Department believes deploying long-term acoustic detectors for 5 consecutive days each month April through October will provide the information needed regarding the presence of bats in potential foraging areas near Project facilities and potential Project impacts, as well as reduce the potential for equipment malfunction and subsequent loss of data.

- Detectors at each long-term acoustic monitoring site should be placed in open areas, in areas less visible to the public to avoid vandalism, and in areas where ambient sounds (e.g., wind, insects, moving water, powerlines, etc.) can be avoided to the greatest extent feasible. Microphones should be elevated (the higher the better) and camouflaged in the surrounding environment, but oriented to avoid clutter (i.e., tree branches, dense vegetation).

- The Department requests Licensee provide detailed spectrographs or the original data files for all special-status bat species from the original recordings (pre-scrubbed, raw data) collected by the detectors at each long-term monitoring site.

- The Department recommends Licensee include bat calls below 20 kHz in their analysis of the raw acoustic data as spotted bat, which was identified by Licensee and the Department to have the potential to occur in the Project area, echolocates below 20 kHz.

Long term acoustic monitoring may provide information regarding the presence of bats in foraging habitat adjacent to Project facilities, but it may not provide the information needed to determine if bats are roosting in the Project area as the detectors will be placed in foraging habitat and not directly next to potential roosts (Project facilities). Thus, in addition to long-term acoustic monitoring, the Department requests Licensee conduct nighttime emergence surveys for two consecutive days in late April or early May and in late July or early August at four locations: the powerhouse, the bridge, Restroom 4 at the NRA, and Restroom 2 at the SRA. Emergence surveys should be conducted one half hour prior to sunset and continue for a minimum of one hour. There should be at least one surveyor per Project facility. The surveyors should be positioned so that emerging bats will be silhouetted against the sky as they exit the facilities. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Surveyors should be close enough to the facility to observe exiting bats, but not close enough to influence emergence. Surveyors shall not stand in front or underneath the facilities, make noise or carry on a conversation, or shine a light on the facility (the use of lights should be minimized to the greatest extent feasible during the survey). Surveyors should use an infra-red, night vision, or thermal-imaging video camera or spotting scope to assist in emergence counts (USFWS 2013).

The Department requires all persons conducting surveys for special-status bats in the Project area are: 1) able to identify bat species in the field; 2) knowledgeable of the life history, behavior, and habitat requirements of the bat species being surveyed; 3) experienced in bat emergence surveys and using the equipment to conduct surveys; and 4) experienced in setting up and operating acoustic bat detectors and utilizing the specialized software to analyze bat echolocation data.

The modifications requested by the Department for *Study 4.3* are similar to, but require less study effort and are lower in cost than, other bat studies approved by FERC for other projects (see *Study 4.2 – Special Status Wildlife – Bats* for the relicensing of the Yuba River Development Project, FERC No. 2246 and *Study RTE-S4 – Special-Status Bat Species* for the relicensing of the Bucks Creek Hydroelectric Project, FERC No. 619). The Department believes the requested modifications to *Study 4.3* described above will provide the information needed to determine the presence of special-status bats in the Project Area and how special-status bats may be affected by Project operations and maintenance activities or recreational use.

REQUESTS FOR NEW PROJECT LICENSING STUDIES

New studies requested under the TLP process are subject to guidelines specified in 18 CFR § 4.38(b)(5). Given this requirement and the recommended study request guidelines, the Department submits the following study requests in addition to the studies provided by the Licensee.

1. Vegetation Mapping Study Plan

Identification of necessary study to be performed or information to be provided by the Licensee: The Department is requesting for Licensee to conduct a vegetation

mapping study within the FERC Project Boundary and adjacent affected areas. The goal of this study plan is to obtain the most current and accurate information to map and classify vegetation types within the FERC Project Boundary and adjacent affected areas to determine if Project operations and maintenance activities and recreational use have an adverse effect on these vegetation types and corresponding fish, wildlife, and plant habitats and species that utilize these habitats.

The Department's VegCAMP develops and maintains California's expression of the National Vegetation Classification System. VegCAMP is the state standard vegetation classification and mapping program implemented by the Department. VegCAMP implements a 2007 State Legislative requirement for the Department to develop and maintain a vegetation mapping standard for the State. Through VegCAMP, the Department worked collaboratively with the CNPS and AIS to produce a fine-scale vegetation map of the northern foothills of the Sierra Nevada. To validate the map, 1,295 accuracy assessment field surveys were conducted by CNPS and Department staff. Camp Far West Reservoir and adjacent areas are included in this map.

For this study, the Department recommends Licensee utilize VegCAMP classifications and vegetation layers for the Northern Sierra foothills to classify and map the vegetation types in the Project area. Additionally, the Department requests Licensee ground-truth vegetation types subsequent to mapping and classifying with VegCAMP; and map and describe any riparian vegetation identified during ground-truthing along the shoreline of Camp Far West Reservoir, within any stream, creek, and other drainage inlets to the reservoir, within the Bear River upstream of the reservoir, within the Bear River downstream of Camp Far West Dam (including the channels extending from the spillway, low level outlet, and powerhouse), extending 100 feet from the FERC Project Boundary.

Basis for the Department's determination the study is necessary: The Department has determined that this study plan is needed to assess the most current and accurate vegetation typing information within the FERC Project Boundary and adjacent affected areas. Current and accurate vegetation mapping and classification is important to determine which fish, wildlife, and plant habitats occur within the FERC Project Boundary and adjacent affected areas and how these habitats and the species that utilize these habitats may be affected by Project operations and maintenance activities and recreational use. Vegetation mapping and classification conducted in this study will inform the occurrence of different types of fish, wildlife, and plant habitat that occurs within the FERC Project Boundary and adjacent affected areas. Information obtained from this study will be utilized along with the data collected from other relicensing studies to determine if Project operations and maintenance activities and recreational use adversely affect the vegetation types within the FERC Project Boundary and adjacent affected areas and the corresponding fish, wildlife, and plant habitats and the species that utilize these habitats.

The vegetation mapping and classification provided by Licensee in the PAD is based on data from the Forest Service CalVeg system. The Department is concerned the federal mapping system does not provide the accuracy of the State VegCAMP system. Without

current and accurate vegetation mapping and classifications, it will be difficult for the Department to determine which vegetation types occur within the Project area and how corresponding fish, wildlife, and plant habitats and the species that utilize these habitats may be adversely affected by Project operations and maintenance activities and recreational use. VegCAMP is the State standard vegetation classification and mapping program implemented by the Department and develops and maintains California's expression of the National Vegetation Classification System. The Department worked with CNPS to develop a fine-scale vegetation map of the northern foothills of the Sierra Nevada and conducted accuracy assessment field surveys were to verify the map. The Department believes the utilization of the VegCAMP system for this study will provide the information needed to meet the study goal of mapping and classifying vegetation types within the FERC Project Boundary and adjacent affected areas to determine if Project operations and maintenance activities and recreational use have an adverse effect on these vegetation types and corresponding fish, wildlife, and plant habitats and species that utilize these habitats.

Department's understanding of the Resource Issues involved and its goals and objectives for these resources: The vegetation types within the FERC Project Boundary and adjacent affected areas provide habitat for numerous fish, wildlife, and plant species, many of which are special-status. Special-status species that may occur within the FERC Project Boundary and adjacent affected areas that may be adversely affected by the Project include, but are not limited to: Chinook salmon, steelhead, hardhead, bald eagle, Swainson's hawk, golden eagle, white-tailed kite(*Elanus leucurus*), pallid bat, Townsend's big-eared bat, spotted bat, western mastiff bat, western red bat, Mexican mosquito fern (*Azolla mexicana*), and Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*). Mapping and classifying vegetation types within the FERC Project Boundary and adjacent affected areas will help Licensee determine where suitable habitat may occur for special status species and other species of concern. This information will facilitate Licensee in implementing other Project relicensing study plans. Additionally, this information will assist Licensee and the Department and other Project relicensing participants in determining if Project operations and maintenance activities and recreational use adversely affect the vegetation types identified in the study that provide habitat for special-status species and other species of interest.

The Department is a trustee agency for the State's fish and wildlife resources and has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish and G. Code § 1802). Among others, the Department's resource objectives as related to vegetation mapping and classification for this Project are:

1. Avoid and minimize existing and future Project impacts to fish and wildlife species and the habitats they depend on.

2. Protect, strengthen, and rely more on natural processes for the production and sustainability of fish and wildlife species and the habitats they depend on.

3. Implement adaptive management of resource actions so as to maximize benefits for fish and wildlife species.

4. Improve conditions for fish, wildlife, and their habitats by modifying the Project's operations and maintenance activities and recreational uses, improving habitat availability.

5. Ensure fish and wildlife species fully utilize available habitat in a manner that benefits all life stages, thereby maximizing natural production and full use of the ecosystem's carrying capacity.

6. Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.

Justification of recommended study methodology: The Department's VegCAMP develops and maintains California's expression of the National Vegetation Classification System. VegCAMP is the State standard vegetation classification and mapping program implemented by the Department. VegCAMP implements a 2007 State Legislative requirement for the Department to develop and maintain a vegetation mapping standard for the State. Through VegCAMP, the Department worked collaboratively with the CNPS and AIS to produce a fine-scale vegetation map of the northern foothills of the Sierra Nevada. To validate the map, 1,295 accuracy assessment field surveys were conducted by CNPS and Department staff. Camp Far West Reservoir and adjacent areas are included in this map.

Documentation that use of the recommended study method is generally accepted practice: As stated above, VegCAMP is the state standard vegetation classification and mapping program. VegCAMP is a result of a 2007 State Legislative requirement for the Department to develop and maintain a vegetation mapping standard for the State.

Explanation of how the requested study and information will be useful to the Department and other stakeholders to further resource goals and objectives as related to the proposed Project: Mapping and classifying vegetation types within the FERC Project Boundary and adjacent affected areas will help Licensee determine where suitable habitat may occur for special status species and other species of concern. This information will facilitate Licensee in implementing other Project relicensing study plans. Additionally, this information will assist Licensee and the Department and other Project relicensing participants in determining if Project operations and maintenance and recreational use adversely affect the vegetation types identified in the study that provide habitat for special-status species and other species of concern. The results of this study and other Project relicensing studies along with an analysis of the Project's effects on the biological resources within the FERC Project Boundary and adjacent affected areas will assist Licensee, the Department, and other Project relicensing participants in the collaborative development of protection, mitigation, and enhancement measures (PM&Es) for the new License.

2. Sturgeon Study Plan

Identification of necessary study to be performed or information to be provided by Licensee: The Department is requesting for Licensee to conduct a sturgeon study on the lower Bear River from the non-Project diversion dam to the confluence with the Feather River. The goals of this study plan are to: 1) document the occurrence, temporal and spatial distribution, and movement of green and white sturgeon in the lower Bear River; 2) identify changes in the availability of habitat for holding and spawning adult sturgeon under different flow conditions; and 3) determine whether Project operations and maintenance activities adversely affect sturgeon in the lower Bear River.

Methods necessary to complete this study involve data collection within the lower Bear River from the non-Project diversion dam to the Feather River. To increase the likelihood of detection of sturgeon during data collection, the study should be designed to occur within the known time periods of green and white sturgeon migration, spawning, holding, and rearing. Green sturgeon adults begin their upstream spawning migrations into freshwater during late February, spawn between March and July, with peak spawning believed to occur between April and June (Adams et al. 2002). White sturgeon spawn between mid-February to late May, with peak activity during March and April.

The specific methods recommended by the Department for this study include:

- Conducting deep water surveys to document the occurrence of sturgeon in the lower Bear River downstream of the non-Project Diversion Dam.
- Collecting larval and juvenile sturgeon during early spring through summer utilizing rotary screw traps, artificial substrates, and larval nets deployed at multiple locations (Seesholtz 2003).
- Conducting snorkel surveys.
- Conducting surveys to identify potential spawning habitat.
- Collecting and analyzing eDNA.

The Department would like to work collaboratively with Licensee and other Project relicensing participants to develop a study plan with the appropriate methodologies to ensure sufficient data is collected to inform the study goals.

Basis for the Department's determination the study is necessary: Although the Department acknowledges both green and white sturgeon have been documented in the lower Bear River, little is known regarding the distribution and spawning and rearing activities of sturgeon in the river. This information is needed to determine whether Project operations and maintenance activities adversely affect sturgeon in the lower Bear River.

Department's understanding of the Resource Issues involved and its goals and objectives for these resources: Green sturgeon are listed as threatened under the ESA. Additionally, both green sturgeon and white sturgeon are California Species of Special Concern. Not enough information is known regarding the spatial and temporal distribution of sturgeon in the lower Bear River. It is also unclear to the Department which periods of green and white sturgeons' life histories are spent in the lower Bear River. Project operations and maintenance may have an adverse effect on sturgeon, specifically, the amount and timing of flow released from Camp Far West Dam may influence the distribution of sturgeon and impact stream conditions (i.e., temperature, velocity, etc.) for sturgeon migration, holding, spawning, and rearing. Without current information regarding the presence, distribution, and behavior of sturgeon, the Department cannot determine how Project operations and maintenance activities may affect sturgeon in the lower Bear River.

Pursuant to Fish and Game Code Section 5937, the owner of any dam shall allow sufficient water at all times to pass through a fishway, or in absence of a fishway, allow sufficient water to pass over, around, or through the dam, to keep in good condition any fish that may be planted or exist below the dam. This study plan will also assist Licensee during *Study 3.3 – Instream Flow Study* for determining which HSC curves to utilize during data analysis and determine which minimum instream flows are appropriate for Project operations for all fish species in the lower Bear River.

The Department is a trustee agency for the State's fish and wildlife resources and has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish and G. Code § 1802). Among others, the Department's resource objectives as related to green and white sturgeon for this Project are:

1. Avoid and minimize existing and future Project impacts to fish and wildlife species and the habitats they depend on.

2. Protect, strengthen, and rely more on natural processes for the production and sustainability of fish and wildlife species and the habitats they depend on.

3. Implement adaptive management of resource actions to maximize benefits for fish and wildlife species.

4. Improve conditions for fish, wildlife, and their habitats and improving habitat availability.

5. Design and implement instream flow regimes below Project facilities that are sufficient to keep aquatic resources, including planted or native fish, in good condition, in accordance with Fish and Game Code §5937.
6. Ensure fish and wildlife species fully utilize available habitat in a manner that benefits all life stages, thereby maximizing natural production and full use of the ecosystem's carrying capacity.

7. Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.

Justification of recommended study methodology: The methodologies recommended by the Department for this study are tailored to specifically evaluate the subject species of the study, green and white sturgeon, and the potential adverse effects on these species due to Project operations and maintenance activities. Study methodologies recommended by the Department in this study plan are consistent with methodologies in peer-reviewed literature.

Documentation that use of the recommended study method is generally accepted practice: The methodologies recommended by the Department for this study have been implemented in other FERC Project relicensing studies (see *Study 7.9 – Green Sturgeon Downstream of Englebright Dam* for the relicensing of the Yuba River Development Project, FERC Project No. 2246).

Explanation of how the requested study and information will be useful to the Department and other stakeholders to further resource goals and objectives as related to the proposed Project: The specific information obtained during this study will provide information to the Department, Licensee, and other Project relicensing participants needed to understand the distribution and life stages of green and white sturgeon in the lower Bear River. This information will assist the Department, Licensee, and other Project relicensing participants in determining how Project operations and maintenance activities affect sturgeon in the lower Bear River. The results of this study and other Project relicensing studies (specifically *Study 3.3 – Instream Flow* Study) will assist the Department, Licensee, and other Project relicensing participants in the collaborative development of PM&Es for green and white sturgeon for the new FERC license.

3. Benthic Macroinvertebrate Study Plan

Identification of necessary study to be performed or information to be provided by the Licensee: The Department is requesting that the Licensee conduct a benthic macroinvertebrate study on the lower Bear River from Camp Far West Dam to the confluence with the Feather River. The goals of this study plan are to: 1) assess the BMI community structure to evaluate overall stream health in the lower Bear River; and 2) determine whether Project operations and maintenance adversely affects BMI community structure in the lower Bear River.

The study area should include the lower Bear River from Camp Far West Dam to the confluence with the Bear River. Sample sites for this study should be collocated with sampling sites for *Study 3.2 – Stream Fish Populations Study*. Specifically, four total sample sites should be included in this study at Reach 1 (Camp Far West Dam downstream to the non-Project diversion dam, Reach 2 (within one mile downstream of the diversion dam), Reach 3 (within 0.5 miles of the Highway 65 Bridge), and Reach 4

(within 0.5-mile of the Highway 70 Bridge). The BMI study sampling site in Reach 1 should be located in the stream portion of the Bear River immediately downstream of Camp Far West Dam and not in the pool located directly upstream of the non-Project diversion dam.

BMI sampling for this study plan should be conducted using the reach-wide benthos (RWB) method for documenting and describing benthic macroinvertebrate assemblages and physical habitat described by the SWRCB Surface Water Ambient Monitoring Program's (SWAMP) *Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California* (Ode 2007).

Physical habitat and water quality should be characterized at each BMI sampling site utilizing methods described by SWAMP (Ode 2007).

The following list of quantitative measures of chemical and physical/habitat characteristics should be collected at each site:

- Reach-Wide Parameters
  - GPS coordinates at each site.
  - Water temperature, specific conductance, pH, and dissolved oxygen using approved standardized procedures and instruments.
- Transect-Specific Parameters
  - Aquatic habitat characterization including average depth, wetted width, bankfull dimensions, percent slope, sinuosity, and average canopy cover.
  - A pebble count using the approach described by Wolman (1954) as adapted for use in the SWAMP protocol (Ode 2007).
  - Evaluation of embeddedness and course particulate organic matter evaluation. Estimates should be obtained while collecting BMI samples by noting whether substrate is loosely, moderately, or tightly cemented and whether substrate is lightly, moderately, or heavily surrounded by fine sediment.
  - If field or analytical methods deviate from SWAMP protocols, reasons for the deviation and alternate methods will be explained and documented.

Data collected during the study should be scored utilizing the California Stream Condition Index (CSCI) to translate BMI metric data into a measure of overall stream health (see Rehn, Mazor, and Ode 2015).
Basis for the Department's determination the study is necessary: The PAD provides very limited information regarding BMI community in the lower Bear River in the PAD. The BMI study conducted in 2014 referenced in the PAD was not a complete study following standard State protocols and did not include an analysis of stream

health utilizing BMI metrics. The 2013 BMI sample was collected in the Bear River upstream of the Project. Thus, the Department does not have enough information from the 2014 BMI study and 2013 BMI sample to determine the current BMI community structure in the lower Bear River downstream of the Project and determine how Project operations and maintenance activities affect this BMI community.

Department's understanding of the Resource Issues involved and its goals and objectives for these resources: BMI are indicators of water quality and overall stream health. BMI are an important part of freshwater food webs as they: increase the rate at which organic matter is decomposed; release nutrients into the stream while feeding, excreting, and burrowing into sediments; control the numbers, locations, and sizes of their prey (e.g., BMI and algae); and provide a food source for fish, turtles, birds, and other aquatic and terrestrial organisms (Covich, Palmer, and Crowl 1999). The purpose of this study is to characterize existing BMI assemblages (including community structure and habitat) within Project-affected reaches in the Bear River and to evaluate Project effects on BMI community composition and distribution of BMI downstream of Camp Far West Dam on the lower Bear River. Using the SWAMP protocol, current conditions of stream health in the lower Bear River will be assessed and a baseline condition will be established which will serve as a tool for use in monitoring status and trends of BMIs over time.

The Department is a trustee agency for the State's fish and wildlife resources and has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (Fish and G. Code § 1802). Among others, the Department's resource objectives as related to BMI communities for this Project are:

1. Avoid and minimize existing and future Project impacts to fish and wildlife species and the habitats they depend on.

2. Protect, strengthen, and rely more on natural processes for the production and sustainability of fish and wildlife species and the habitats they depend on.

3. Implement adaptive management of resource actions so as to maximize benefits for fish and wildlife species.

4. Improve conditions for fish, wildlife, and their habitats and improving habitat availability.

5. Design and implement instream flow regimes below Project facilities that are sufficient to keep aquatic resources, including planted or native fish, in good condition, in accordance with Fish and Game Code §5937.
6. Ensure fish and wildlife species fully utilize available habitat in a manner that benefits all life stages, thereby maximizing natural production and full use of the ecosystem's carrying capacity.

7. Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.

Justification of recommended study methodology: The methodology recommended by the Department for this study, Ode (2007), is the State standard protocol for conducting BMI assessments for California streams.

Documentation that use of the recommended study method is generally accepted practice: As stated above, the study methodology proposed by the Department for this study is the State standard protocol for conducting BMI assessments for California streams. This protocol has been utilized for other FERC Project relicensing studies (see *Study 3.1 – Aquatic Macroinvertebrates Upstream of Englebright Reservoir* and *Study 3.2 – Aquatic Macroinvertebrates Downstream of Englebright Reservoir* for the relicensing of the Yuba River Development Project (FERC No. 2246) and *Study Description FA-S3 – Benthic Macroinvertebrate Study*.

Explanation of how the requested study and information will be useful to the Department and other stakeholders to further resource goals and objectives as related to the proposed Project: The specific information obtained during this study will provide information to the Department, Licensee, and other Project relicensing participants needed to understand the BMI community structure and overall stream health in the lower Bear River. This information will assist the Department, Licensee, and other Project relicensing participants in determining how Project operations and maintenance activities affect BMI in the lower Bear River. The results of this study and other Project relicensing studies will assist the Department, Licensee, and other Project relicensing participants in the collaborative development of PM&Es for BMI for the new FERC license.

The Department appreciates Licensee's consideration of the study requests provided above. The Department looks forward to working collaboratively with Licensee and other Project relicensing participants to develop the study plans proposed by Licensee as well as those proposed by the Department. Additionally, the Department appreciates the opportunity to provide comments on the PAD.

If you have questions regarding our comments or study requests or would like to discuss the contents of this letter further, please contact Anna Milloy at Anna.Milloy@wildlife.ca.gov or (916) 358-2384.

Sincerely,

Tina Bartlett

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Regional Manager

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