ENVIRONMENTAL ASSESSMENT

AMENDMENT OF PROJECT LICENSE TO REROUTE PRIMARY TRANSMISSION LINE

FEATHER RIVER HYDROELECTRIC PROJECT
FERC No. 2100-180
California

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, N.E.
Washington, DC 20426

August 2017

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Advisory Council	Advisory Council on Historic Preservation
APE	Area of Potential Effect
Army Corps	U.S. Army Corps of Engineers
California DWR	California Department of Water Resources
California SHPO	California State Historic Preservation Officer
Commission or FERC	Federal Energy Regulatory Commission
CWA	Clean Water Act
DO	Dissolved Oxygen
EA	Environmental Assessment
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FWS	U.S. Fish and Wildlife Service
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
PG&E	Pacific Gas and Electric Company
Section 106	Section 106 of the National Historic Preservation Act
Section 401	Section 401 of the Clean Water Act
Section 7	Section 7 of the Endangered Species Act
401 certification	Water Quality Certification under Section 401 of the Clean Water Act

ENVIRONMENTAL ASSESSMENT

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Washington, DC

Feather River Hydroelectric Project
FERC No. 2100-180

1.0. APPLICATION

Application Type:	Amendment of Project License
Date Filed:	May 17, June 16, and June 20, 2017
Applicant's Name:	California Department of Water Resources
Water Body:	Feather River
County and State:	Butte County, California
Federal Lands:	The project occupies Federal Lands administered by the U.S. Forest Service and U.S. Bureau of Land Management

2.0 PURPOSE OF ACTION

The California Department of Water Resources (California DWR), licensee for the Feather River Project, requests an amendment to its project license to permanently reroute its primary transmission lines originating from the Hyatt Pumping-Generating Plant. The project's emergency spillway and main spillway at Oroville Dam near the plant were damaged by flooding in February 2017. The relevant segment of the primary transmission lines, which are aligned together, currently crosses the faces of both damaged spillways. The proposed permanent reroute of the transmission lines is necessary to facilitate access to and repair of the damaged sites, and to prevent future damage to the transmission lines by moving them away from the spillway paths. The licensee is currently using a temporary electrical line routed partially around the repair sites to transmit power generated from the Hyatt Pumping-Generating Plant.

3.0. BACKGROUND

In February 2017, abnormally heavy precipitation resulted in high flows in the Feather River basin that caused extensive erosion and damage to the main spillway and

emergency spillway at the Feather River Project's Oroville Dam. California DWR first observed major damage to the main spillway on February 7, 2017. Due to high inflows into Lake Oroville and reduced outflow capacity on the main spillway, Lake Oroville overtopped the adjacent emergency spillway on February 11, 2017, which resulted in back-cutting erosion on the emergency spillway that threatened the stability of the emergency spillway's crest structure. Unavoidable increased operation of the main spillway led to the loss of the lower portion of the spillway chute and caused significant erosion in the vicinity of the spillway failure site.

Since that time, California DWR has implemented numerous emergency recovery actions including temporarily relocating transmission lines, dredging in the diversion pool, removing sediment in the vicinity of the main spillway, establishing site access, and initiating early stages of reconstruction of the spillways. To ensure public safety, California DWR must complete emergency response and recovery activities before seasonal rainfall beginning in November may necessitate the use of the main or emergency spillways.

This environmental assessment analyzes the action of California DWR permanently rerouting its primary transmission line away from the area of the project spillways and ongoing construction activities. California DWR must ensure that the primary transmission lines can reliably and permanently transmit electricity from the Hyatt Pumping-Generating Plant during the repair of the damaged sites. The plant must generate power as it passes flows, and the plant must continuously pass flows out of Lake Oroville while the damaged spillways are out of service. The inability to transmit electricity from the plant, and the resulting inability to pass flows, could lead to rising water levels in Lake Oroville that may necessitate the premature use of the main or emergency spillways before repairs are complete.

3.1 Feather River Project Description

The Commission issued a 50-year license for the Feather River Project on February 11, 1957,[1] which expired on January 31, 2007. The project has been operating on an annual license since February 1, 2007.[2] The project is located on the Feather River in Butte County, California, and encompasses 41,540 acres (Figure 1). The project includes three power plants, two on-river impoundments, and two off-river impoundments. California DWR's proposal to permanently reroute its transmission lines will occur in the vicinity of the 770-foot high Oroville Dam, which impounds the 15,810-acre Lake Oroville. Flows can pass out of Lake Oroville in one of four ways: through the six-unit, 645-megawatt (MW) Hyatt Pumping-Generating Plant; through the gated main

[1] *Dep't of Water Res. of the State of Cal.*, 17 FPC 26.

[2] *See* Notice of Authorization for Continued Project Operation, issued February 1, 2007 in Project No. 2100-000.

spillway; over the ungated emergency spillway; or through the low-level river outlet valve. Flows pass into the 320-acre Thermalito Diversion Pool, which is impounded by the 143-foot-high Thermalito Diversion Dam located about four miles downstream. Other project features include: the Thermalito power canal leading off-river to the Thermalito forebay and forebay dam; Thermalito Pumping-Generating Plant, and Thermalito afterbay and afterbay dam; the Feather River Fish Hatchery and fish barrier dam; the Oroville Wildlife Area; transmission lines, and a number of recreational facilities. [3]

[3] See a detailed description of the project's facilities and operation in the Final Environmental Impact Statement for the Oroville Facilities Project, issued May 18, 2007, in Project No. 2100-052, at pages 13 through 25.

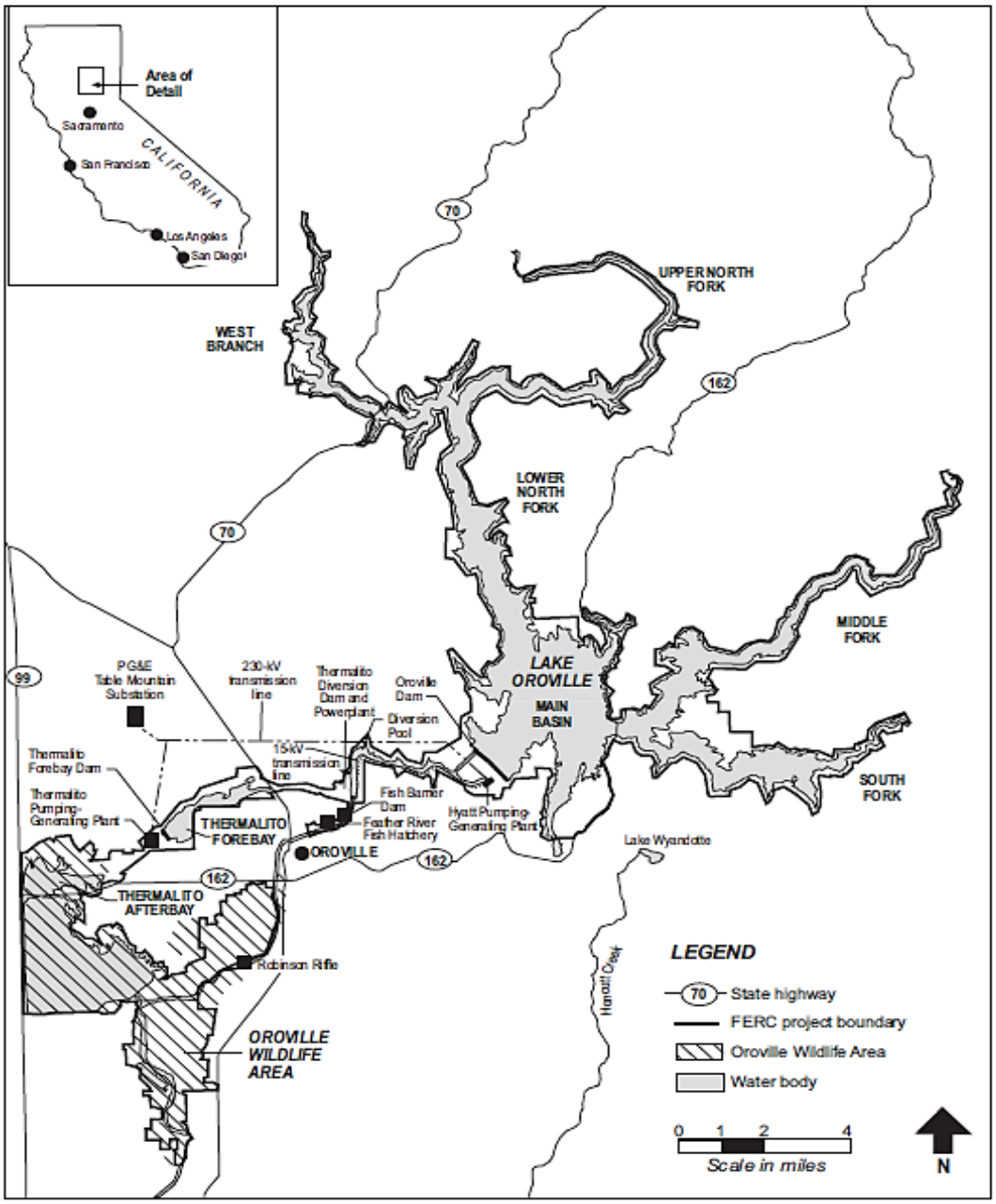

Figure 1. Location of the Feather River Project facilities

4.0 PROPOSED ACTION AND ALTERNATIVES

4.1 Proposed Action

The California DWR requests an amendment to its project license to permanently reroute three primary transmission lines supported by dual towers around the emergency and main spillway areas, which are currently undergoing repair efforts following a February 7, 2017 failure of the main spillway. The original alignment of the transmission lines travelled from the Hyatt Pumping-Generating Plant in a northwest direction across the Feather River (impounded in this area as the Thermalito Diversion Pool) and across the faces of both spillway areas to then turn due west toward the Table Mountain substation, located approximately 7 miles away. The rerouted transmission line would deviate from the existing route at a point approximately 1,300 feet northwest of the power plant after the existing river crossing. The reroute would travel approximately 4,000 feet to the southwest, crossing over the Feather River a second time below the Oroville dam. The reroute would then turn to the northwest to follow the existing non-project Table Mountain–Palermo transmission line roughly parallel to the river for 3,000 feet. Last, the reroute would turn again to the northeast and travel approximately 3,500 feet, crossing back over the river a third time. The final segment would travel approximately 500 feet in a northwest direction, and rejoin the existing route at a point west of the emergency spillway. The new transmission line segment would be approximately 11,000 feet long in total.

In order to construct the proposed lines, the California DWR would need to clear an approximately 300-foot-wide corridor (75 feet on either side of the three circuit lines) along the approximately 2-mile-long reroute corridor from the Hyatt Pumping-Generating Plant to the tie-in point with the existing Oroville–Table Mountain 230-kV Transmission Line. Clearing, vegetation removal, and mulching proposed by the licensee will be done primarily with a track-mounted hydraulic masticator, unless otherwise noted on the plans and specifications. The maximum depth of disturbance for vegetation removal activities will be approximately two feet.

To facilitate the proposed work, California DWR is using existing roads where available, but also proposes to construct 13 new road segments. The new segments will be approximately 15 feet wide and will total 2,003 linear feet. The maximum depth of land disturbance associated with the access roads will be 20 feet. Additionally, California DWR proposes four stringing and staging areas, within 4.11 acres of the right-of-way. The maximum depth of land disturbance for stringing and staging areas will be approximately 2 feet.

To support construction staging at the tower locations, California DWR proposes a total of 16 work pads, measuring approximately 50 feet by 70 feet. California DWR also proposes to use 14 additional crane pads, constructed within 45 feet of each tower, and

measuring 40 feet by 40 feet. Each pad will require cut/fill grading of the surrounding area to account for surface drainage and the crane pads.

The new alignment would contain 22 new permanent steel transmission line structures, which will be located on California DWR and Pacific Gas and Electric Company (PG&E) property. The foundations of each transmission line tower will require surface grading within a 35 radius of the tower center and six-foot-diameter excavations at four locations, with varying depths depending on site conditions but not to exceed a depth of 30 feet. The height of the tower will vary from site to site with a minimum of 100 feet and a maximum of 160 feet.

The licensee states that it would secure the necessary easements for the work from PG&E and file revised project boundary and exhibit maps to reflect the new alignment.

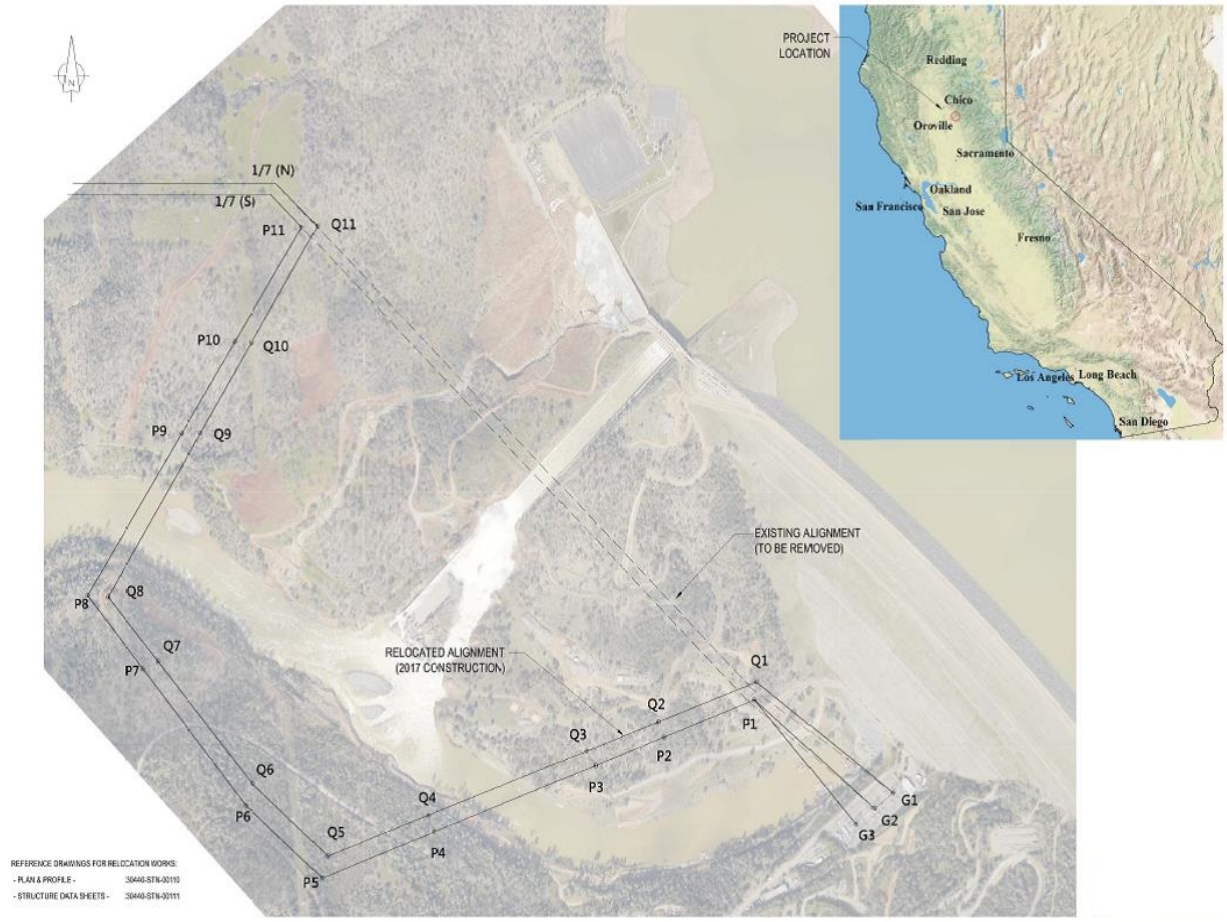

Figure 2. Proposed Realignment of Primary Transmission Lines from Hyatt Pumping-Generating Plant (source: California DWR).

4.2 Other Action Alternatives

No reasonable action alternatives to the California DWR's proposal have been presented by the California DWR or identified by Commission staff. California DWR has selected a reroute alignment that accounts for design constraints associated with the existing topography and limited sites for tower placement and possible interference with other existing electrical lines in the area. An alternative to reroute the transmission lines to run along the crest of Oroville Dam and both spillways will not satisfy the purpose and need for action because planned repairs in the spillway areas include fortifications to the emergency spillway. A transmission line would obstruct these repairs. An alternative to reroute the transmission lines to run upstream of the dam and spillways, over Lake Oroville, is not practical to meet the urgent construction timeline because this alternative would require the complex construction of support pilings and towers in the reservoir. An alternative to reroute the transmission lines to run closer to the Thermalito Diversion Pool's southern bank (i.e., slightly north of California DWR's proposed route) would potentially disturb more sensitive habitat along the bank, threatening specialized plants and wildlife and threatening water quality. An alternative to reroute the transmission lines to run farther from the pool's southern bank (i.e., farther south of the proposed route) would require a longer transmission corridor and possibly more support towers, which would result in more ground-disturbing construction on a larger quantity of crossed (and possibly privately held) lands. This alternative would also interfere with a separate action by PG&E to reroute its Table Mountain–Palermo transmission line in the same area.[4] We therefore conclude that any alternative route alignment would not be feasible due to physical limitations associated with the existing topography, important timelines, additional environmental concerns, and other electrical lines in the vicinity.

4.3 No-Action Alternative

Under the no-action alternative, the California DWR would continue to operate the Hyatt Pumping-Generating Plant using the temporary transmission lines installed following the February main spillway failure. The temporary lines would physically obstruct planned construction activities at the main and emergency spillway sites and would be subject to damage in the event that California DWR activates the emergency spillway in the future. The temporary lines would also need to eventually be replaced, making a long-term solution preferable. Nonetheless, under a no-action alternative, environmental resources in the project area would remain the same as they are described in the Affected Environment sections of the *Environmental Analysis* below.

[4] Order Approving Non-Project Use of Project Lands and Amending License, 160 FERC ¶ 62,118 (issued August 2, 2017).

5.0 CONSULTATION AND COMPLIANCE

5.1 Background

The California DWR developed its proposal in consultation with the U.S. Fish and Wildlife Service (FWS), California Department of Fish and Wildlife, U.S. Army Corps of Engineers (Army Corps), California State Historic Preservation Officer (California SHPO), and the Enterprise Rancheria of Maidu Indians of California (Enterprise Rancheria). The FWS issued a take permit for bald eagle (*Haliaeetus leucocephalus*) under the Bald and Golden Eagle Protection Act on February 17, 2017, that is effective through August 31, 2017. The FWS also issued a permit under the Migratory Bird Treaty Act on June 8, 2017, that is effective through March 31, 2018. Following consultation with the Army Corps, California DWR determined that the proposal would not affect navigable waters and that a permit under section 404 of the Clean Water Act was not necessary. The Commission developed a Programmatic Agreement (PA) with the California SHPO, California DWR, the California Governor's Office of Emergency Services (California OES) and the Federal Emergency Management Agency (FEMA) for the management and protection of cultural resources. The PA was executed on July 5, 2017, by signatures from the Commission and California SHPO. FEMA is an invited signatory and California DWR, the California OES, and the Enterprise Rancheria are concurring parties to the agreement.

5.2 Statutory Compliance

5.2.1 Section 401 Water Quality Certification

Under section 401 of the federal Clean Water Act, an applicant for a federal license or permit to conduct any activity which may result in any discharge into the navigable waters must obtain a water quality certification from the appropriate state pollution control agency verifying that the activity would not violate water quality standards.[5] Here, the proposed reroute alignment will cross above the Thermalito Diversion Pool but is not expected to result in any discharge to navigable waters. Therefore, the proposed action does not require a water quality certification.

[5] 33 U.S.C. § 1341(a)(1) (2012).

5.2.2 Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally-listed threatened or endangered species or result in the destruction or adverse modification of the critical habitat of such species.[6] There is no critical habitat in the proposed work area for any known federally-listed species. Based upon the detailed analysis below in section 6.5-Threatened and Endangered Species, we conclude that the proposed action would have no effect on federally-listed species.

5.2.3 National Historic Preservation Act

Under section 106 of the NHPA, and its implementing regulations, federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.[7] In a letter to the California SHPO dated March 31, 2017, the Commission designated California DWR as its non-federal representative for conducting informal, day-to-day consultations under section 106 of the NHPA for the identification, evaluation, and determination of effects to historic properties arising from the proposed transmission line reroute.

Pursuant to that designation, the California DWR consulted with the California SHPO on June 15, 2017 on its proposal and potential disturbances to known cultural sites. By letter dated June 16, 2017, the California SHPO stated that if California DWR follows several measures during construction to avoid potential adverse effects to historic sites, then California SHPO does not object to the cultural resource determination made by the California DWR within the footprint of the proposed transmission line reroute. The PA mentioned above includes provisions for the identification and management of potential effects to historic properties arising from transmission line relocations. Up until the PA was executed, California DWR had been consulting with the California SHPO as the Commission's non-federal representative under the emergency provision of section 106.

[6] 16 U.S.C. § 1536 (2012).

[7] 54 U.S.C. § 306108 (2012); 36 C.F.R. Part 800 (2017).

6.0 ENVIRONMENTAL ANALYSIS

6.1. Scope of the Analysis

The geographic scope of this analysis is limited to California DWR's proposed 2-mile-long transmission line reroute, beginning at the base of Oroville Dam on the north bank of the Thermalito Diversion Pool, extending to the south bank of the diversion pool opposite the damaged spillway areas, and returning back across the diversion pool to a tie-in point with the existing Oroville–Table Mountain 230-kV Transmission Line just west of the emergency spillway. The temporal scope of this environmental analysis focuses on the period from the start of site preparation in April 2017, followed by construction beginning in August 2017, and continuing through the transmission lines' perpetual existence thereafter. The resources potentially affected by this proposal include water quality and aquatic resources, terrestrial resources, threatened and endangered species, cultural resources, recreation, land use, and aesthetic resources.

6.2 General Description of the Project Area

The project is located on the Feather River in Butte County, California. The area of the proposed transmission line reroute would cross lands owned by California DWR and PG&E. The proposed route would encompass lands within and outside of the current project boundary, and would cross the Thermalito Diversion Pool at two new locations.

6.3 Water Quality and Aquatic Resources

6.3.1 Affected Environment

The proposed transmission line reroute would cross over the Thermalito Diversion Pool at two new locations. Water quality in the diversion pool is generally good, and is a function of water quality in Lake Oroville and its releases. As a result of nearly constant flow releases from Oroville Dam and Hyatt Pumping-Generating Plant, water temperatures are generally cool and undergo very little stratification. Turbidity levels are also generally low, due to the majority of sediments settling out in Lake Oroville, upstream of the diversion pool. Nonetheless, several highly elevated turbidity events have occurred recently, due to severe erosion in the vicinity of the main and emergency spillways, following the February 7, 2017 damage to the main spillway. In addition, dissolved oxygen (DO) and pH levels at the project generally comply with the 7.0 milligrams per liter DO and 6.5 to 8.5 pH objectives of the Basin Plan.[8]

[8] The Basin Plan is a broad water quality control plan created by the California Regional Water Quality Control Board to achieve state water quality standards in conformance with the Clean Water Act.

Historically, the Thermalito Diversion Pool fishery has been a predominantly cold water fishery, consisting of rainbow trout, brook trout, brown trout, and Chinook salmon. The diversion pool also contains several native and non-native species, including common carp, golden shiner, Sacramento pikeminnow, Sacramento sucker, wakasagi, prickly sculpin, bluegill, black crappie, largemouth bass, smallmouth bass, and tule perch. However, the diversion pool fish community and abundance may have been significantly altered by the exceptionally high flows, turbidity levels, and dredging activities following the main spillway failure.

6.3.2 Environmental Effects

As discussed above, the proposed transmission line reroute would cross over the diversion pool at two new locations. The water crossing would not necessitate any in-water work or construction of any in-water structures and the proposed support towers for the lines would be constructed at least 300 feet from the diversion pool, such that no sediment or other construction debris would enter the diversion pool. In addition, most of the proposed staging areas and access roads are located away from streams and the diversion pool. However, the licensee proposes to maintain a vegetation buffer zone near any riparian areas to prevent any potential sedimentation to watercourses. Therefore, the proposed transmission line work would have little to no effect on water quality or aquatic resources.

6.4 Terrestrial Resources

The Feather River Project is located within the Sacramento Valley and Sierra Nevada Foothills. Vegetation in this area differs with elevation changes from the valley floor (elevation 100 feet above mean sea level at the lower end of the Oroville Wildlife Area) to the upper elevation of the mountain range (about 1,200 feet above mean sea level). The vegetation changes from valley grasslands to foothill woodlands (characterized by blue-oak /foothill pine woodlands with varying amounts of chaparral) to mixed conifer forests in the higher elevations. The proposed transmission line reroute corridor is located on roughly 82 acres of land owned by California DWR and PG&E. The transmission line reroute corridor is located within a rural, foothill environment classified as a State Recreation Area.

6.4.1 Affected Environment

The lands around Lake Oroville and the Diversion Pool are mostly composed of open to dense woodland, forest, and chaparral communities consisting of mixed oak woodlands, foothill pine/mixed oak woodlands, and oak/pine woodlands and chaparral. Primary species include interior and canyon live oaks, blue oak, and foothill pine. The open areas within the woodlands consist of annual grassland species. Also found around the Thermalito Diversion Pool is scrub vegetation, consisting of mostly chaparral

vegetation, which is characterized by evergreen, tough waxy leaves. Common chaparral species include whiteleaf manzanita, buckbrush, toyon, and scrub oak. Downstream of Oroville Dam and the Thermalito Diversion Pool, vegetation around open waters of the off-river Thermalito Complex (including a forebay, power plant, and afterbay) include emergent wetland types with annual grasslands on the surrounding slopes.

A total of 219 species of non-native plants were identified within the project boundary during relicensing surveys conducted in 2002 and 2003. Of these species, 39 are target species identified as noxious or invasive plants by the California Department of Food and Agriculture, California Invasive Plant Council, US Department of Agriculture, and the Plumas National Forest. The largest concentration of noxious or invasive species is located within the Oroville Wildlife Area, outside of the proposed transmission line reroute corridor but in close proximity to the proposed project work. However, noxious and invasive species also occur in areas with existing land disturbance near roads, trails, and in the immediate vicinity of the spillway and power facilities. Similar land disturbance will occur within the proposed transmission line reroute corridor.

Terrestrial species in and around the proposed transmission line corridor include mountain lions, raccoons, turkeys, opossums, coyotes, tree and ground squirrels, rabbits, deer, skunks, ringtails, bears, and many species of birds native to the area. The proposed transmission line reroute area supports a diverse number of migratory birds that travel through the area for breeding, migrating, and wintering. The area is also known to provide year-round habitat for several species of migratory birds.

Commission staff accessed FWS' Information for Planning and Consultation system on June 27, 2017, and generated the following list of birds protected under the Migratory Bird Treaty Act that are likely to occur within the proposed transmission line reroute corridor:

Common Name	Scientific Name	Season(s)
Bald Eagle	*Haliaeetus leucocephalus*	Year-round
Black Rail	*Laterallus jamaicensis*	Breeding
Black Swift	*Cypseloides niger*	Breeding
Burrowing Owl	*Athene cunicularia*	Year-round
California Spotted Owl	*Strix occidentalis*	Year-round
Calliope Hummingbird	*Stellula calliope*	Breeding
Flammulated Owl	*Otus flammeolus*	Breeding
Fox Sparrow	*Passerella iliaca*	Wintering
Green-tailed Towhee	*Pipilo chlorurus*	Breeding
Lewis's Woodpecker	*Melanerpes lewis*	Wintering
Loggerhead Shrike	*Lanius ludovicianus*	Year-round

Long-billed Curlew	*Numenius americanus*	Wintering
Nuttall's Woodpecker	*Picoides nuttallii*	Year-round
Oak Titmouse	*Baeolophus inornatus*	Year-round
Olive-sided Flycatcher	*Contopus cooperi*	Breeding
Peregrine Falcon	*Falco peregrinus*	Wintering
Rufous Hummingbird	*Selasphorus rufus*	Migrating
Rufous-crowned Sparrow	*Aimophila ruficeps*	Year-round
Short-eared Owl	*Asio flammeus*	Wintering
Snowy Plover	*Charadrius alexandrinus*	Breeding
Swainson's Hawk	*Buteo swainsoni*	Breeding
Western Grebe	*Aechmophorus occidentalis*	Wintering
Williamson's Sapsucker	*Sphyrapicus thyroideus*	Year-round
Yellow-billed Magpie	*Pica nuttalli*	Year-round

There is an inactive bald eagle nest located within the proposed transmission line reroute corridor on PG&E land in close proximity to the current Feather River Project boundary. California DWR confirmed that neither the adult nor the juvenile eagles are utilizing the nest at this time. This area of PG&E land will be incorporated into the project boundary as part of this application. Bald eagles have been removed from the list of threatened and endangered species since 2007 but are still protected at the federal level under the Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act. As detailed in the Commission's Final Environmental Impact Statement (FEIS) for the relicensing of the Feather River Project, California DWR previously implemented conservation measures as a result of its draft programmatic biological assessment for terrestrial species.[9] These measures, designed to protect bald eagle nesting territories by prohibiting human activity near the nests, include: (1) administrative closure of land and shoreline areas to human entry during the nesting season around the four bald eagle nest territories; (2) signage, patrol, and enforcement of closure; (3) nest and population surveys; (4) habitat improvement measures; and (5) limitations on current and future habitat disturbance. The FEIS also states that California DWR prepared and implemented bald eagle territory management plans for four bald eagle nest territories which were active on or within 0.25 mile of project lands.[10]

[9] FEIS at 174 (citing California DWR, *Programmatic biological assessment for terrestrial and non-anadromous species, Oroville Facilities, FERC Project No. 2100* (May 2004)).

[10] *Id*.

6.4.2 Environmental Effects

Construction of the proposed transmission line reroute would temporarily, and in places, permanently disturb land and vegetation within the footprint of the 2-mile-long transmission line reroute corridor on a total of 82 acres. Construction preparation for the 22 transmission line towers includes grading land within a 35-foot radius of each tower center and creating four six-foot-diameter excavations to varying depths (not to exceed a depth of 30 feet). The proposed construction would temporarily disturb and displace vegetation, wildlife, and avian species. This would occur primarily during vegetation clearing and grubbing activities; constructing work pads, crane pads, staging areas, and access roads; installing poles; and wire-tensioning activities. The construction preparation for the towers is likely to cause noise and vibrations which would cause disturbed local wildlife to temporarily relocate to the surrounding areas. The permanent transmission lines have the potential to affect avian bird species within the project area.

Generally, land-clearing activities have the potential to cause loss of wildlife habitat, noise, vibration, dust, and increased potential for vehicle collisions and other human interactions with wildlife. The construction of additional access roads and vehicular traffic necessary during construction of the transmission line reroute will increase human presence and noise, which may have added effects on local wildlife. The clearing of vegetation both for the right-of-way and the work/crane pads has the potential to disturb nesting birds and disturb or destroy animal burrows and habitat. Disturbance and removal of existing vegetation for any of the proposed construction activities also has the potential to create conditions conducive to the introduction and spread of invasive plant species, which could out-compete and displace native species, thereby reducing biodiversity and altering compositions of existing native communities.

The licensee proposes two vegetation clearing methods. It will couple machinery clearing with prescriptive measure no. 1, which the licensee defines as felling trees over 40 feet tall and removing the timber outside of the right-of-way if necessary. The licensee plans to leave shorter tree and shrub species in place to provide wildlife cover and foraging habitats, wetland protection, and aesthetic relief, provided that these trees and shrubs do not impede right-of-way access or maintenance activities. The licensee also proposes to minimize clearing in riparian areas and to leave a vegetative buffer zone along streams to minimize adverse impacts to these areas.

While it is not possible to completely eliminate all direct and indirect effects on terrestrial resources regarding vegetation clearing and other ground-disturbing activities, there should be an effort to reduce disturbance as much as possible. As discussed above, because the machinery and vehicles used during land-clearing activities have the potential to introduce and spread invasive or noxious plant species, California DWR and its contractors should use best management practices to reduce these potential effects. To mitigate for the loss of vegetation and wildlife habitat, California DWR and its

contractors should evaluate applicable areas post-construction for the introduction of nonnative, invasive species that may have developed within disturbed areas. California DWR and its contractors should remove undesirable plant species and reseed the area with native plant, grass, and tree species that are currently present in the surrounding areas. A Revegetation Plan would allow the licensee to review the effects of the proposed work and return the project area to pre-construction conditions, in particular where the licensee removed all vegetation via machinery and graded the land, such as the work/crane pads and staging areas. California DWR's use of these post-construction mitigation measures would help to alleviate both short- and long-term effects on the vegetative environment and wildlife habitat.

The construction and permanent location of the proposed transmission line reroute may increase avian collision and electrocutions during flight and foraging if measures are not taken to ensure the newly constructed lines include protections to avoid or minimize these effects. Migratory birds may also come into contact with transmission lines and associated structures during flight, foraging, roosting, and nesting.

To minimize the effects of the construction and operation of the proposed transmission line reroute on avian resources, the FWS's June 8, 2017 Migratory Bird Treaty Act Permit includes provisions for California DWR to live-trap and relocate specific avian nests, requirements to place young/eggs into foster nests or to transport them to a licensed wildlife rehabilitator, and measures for preventing nest establishment for the duration of the construction of the proposed transmission line reroute. California DWR's June 20, 2017, filing included plans and specification drawings for the proposed transmission line, which incorporates the requirements of the FWS' Migratory Bird Treaty Act Permit. The licensee has accounted for some effects to birds by integrating visible bird diverters into its transmission line design over water crossings and in the vicinity of a regular bald eagle nesting tree. The review and incorporation of additional measures to protect avian species during and post-construction, such as those found in the FWS' and Avian Power Line Interaction Committee guidelines,[11] would further protect avian species during and after construction of the transmission line.

The FWS's February 1, 2017 Bald Eagle Take Permit authorizes the California DWR to disturb bald eagles within one mile of the Glen Pond Bald Eagle Breeding Territory during emergency repair and construction activities of the Lake Oroville Dam's

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[11] *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*, http://www.aplic.org/uploads/files/2613/SuggestedPractices2006(LR-2watermark).pdf, *Reducing Avian Collisions with Power Lines: State of the Art in 2012*, http://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf *,and the* FWS' *National Bald Eagle Management Guidelines* (May 2007), https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf

emergency spillway for the 2017 breeding season (February through August). The permit requires that California DWR install flight diverters near the known nest and where the line crosses the waterway. The permit also requires that California DWR monitor the bald eagle nest for three years following the emergency activities to determine the disturbance effect to the Glen Pond breeding territory. California DWR provided additional information on August 9, 2017, stating that the tree where the bald eagle nest is located on the south bank of the diversion pool has been identified as a hazardous during a hazard tree analysis conducted for the new transmission line location. As such, California DWR will be submitting an application for a Take Permit under the Bald and Golden Eagle Protection Act from the FWS, for authorization to remove the tree. California DWR states it will not remove the tree until it receives the permit from the FWS. Once California DWR receives the permit it will file a copy with the Commission as part of the records for the proposed transmission line work.

While there will be temporary adverse effects to vegetation and wildlife, sufficient habitat exists in the areas immediately surrounding the project construction area, such that the majority of wildlife and avian species are expected to temporarily disperse to less disruptive locations. Construction-specific effects will be temporary and would not create long-lasting adverse effects. If implemented, the proposed measures listed above would reduce the overall effect on terrestrial resources within the proposed project area.

6.5 Threatened and Endangered Species

6.5.1 Affected Environment

The California DWR's June 15, 2017 filing, as part of its amendment application, includes a list of the potential federally-listed species that may occur in the proposed project boundary as determined during the relicensing proceeding and supplemented with data from the California Natural Diversity Database. Commission staff accessed the FWS' Information for Planning and Consultation system on June 27, 2017, and did not find any additional species known or with the potential to occur within the proposed project area. The table below provides a list of the federally-listed species that may occur in the proposed transmission line area and amended project boundary.

Common Name	Scientific Name	Federal Status
Wildlife		
Vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered
Giant garter snake	*Thamnophis gigas*	Threatened
California red-legged frog	*Rana draytonii*	Threatened
Vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened
California tiger salamander	*Ambystoma californiense*	Threatened
Southern Bald Eagle	*Haliaeetus leucocephalus*	Delisted
Plants		
Butte County meadowfoam	*Limnanthes floccosa* ssp. *Californica*	Endangered
Green's tuctoria	*Tuctoria greenei*	Endangered
Hairy Orcutt grass	*Orcuttia pilosa*	Endangered
Hoover's spurge	*Chamaesyce hooveri*	Threatened
Layne's ragwort	*Senecio layneae*	Threatened
Slender Orcutt grass	*Orcuttia tenuis*	Threatened
Fish		
Sacramento River winter-run Chinook salmon	*Oncorhynchus tshawytscha*	Endangered
Central Valley steelhead	*Oncorhynchus mykiss*	Threatened
Delta Smelt	*Hypomesus transpacificus*	Threatened
Central Valley spring-run Chinook salmon	*Oncorhynchus tshawytscha*	Threatened
Southern Distinct Population Segment – North American Green sturgeon	*Acipenser medirostris*	Threatened
Central California Coast steelhead	*Oncorhynchus mykiss*	Threatened

6.5.2 Environmental Effects

The FWS issued a Biological Opinion on April 9, 2007, that addressed the effects of issuing a new license for the Feather River Project on federally-listed threatened and endangered species.[12] The Biological Opinion states that the Feather River Project is not located within critical habitat for any federally-listed species under the jurisdiction of the FWS. The National Marine Fisheries Service issued a separate Biological Opinion on December 5, 2016, which identified critical habitat for Central Valley spring-run Chinook salmon, California Central Valley steelhead, and the Southern distinct population segment of North American green sturgeon in the Feather River extending upstream to the fish barrier dam, but no farther.[13]

California DWR conducted habitat surveys during the relicensing process for the Feather River Project; California DWR reviewed those surveys to determine the potential for threatened and endangered species' critical habitat to occur within the area of the transmission line reroute. No habitat exists in the proposed project area for any of the federally-listed species, neither terrestrial nor aquatic. Because there are no vernal pools within the transmission line reroute corridor, no habitat exists for the federally-listed vernal pool invertebrates—vernal pool tadpole shrimp, Conservancy fairy shrimp, and vernal pool fairy shrimp. Because there will be no in-water work associated with the proposed transmission line reroute, federally-listed aquatic species would not be affected. Because the transmission line reroute corridor and the surrounding area provides no habitat for the federally-listed threatened and endangered species, the project will have no effect on the 20 species listed above.

[12] The FWS Biological Opinion was filed with the Commission on April 16, 2007, under Project No. 2100-000.

[13] The NMFS's Biological Opinion was filed under Project No. 2100-134.

6.6 Cultural and Historic Resources

A comprehensive overview of cultural resources located within the Feather River Project area, including the prehistory and history of the Feather River and Lake Oroville, along with other supporting documents can be found in California DWR's January 26, 2005 application to relicense the project. Additional information and staff analyses can be found in the Final Environmental Impact Statement for the relicensing, dated May 18, 2007.[14]

6.6.1 Affected Environment

In addition to cultural resources identified during relicensing studies, the California DWR's June 19, 2017 filing includes a draft report addressing cultural resources that could be affected by their proposed reroute of the Oroville–Table Mountain transmission line. Consulting archaeologists with the firm Stantec and tribal monitors from Enterprise Rancheria conducted a new survey between May 1 and 3, 2017, of approximately 24 acres of the proposed transmission line reroute corridor that had not been previously surveyed during the relicensing surveys or during surveys for the recently proposed transmission line reroute by PG&E.

The survey recorded three new resources and one isolate; it also revisited 14 previously recorded resources and documented their pre-construction condition. The 14 previously recorded historic-era cultural resources have not been individually evaluated for listing on the National Register of Historic Places (National Register), but were previously recommended as contributing elements to a proposed Forks of the Feather River Historic District. To maintain consistency with California DWR's treatment of all resources within the corridor as eligible for the National Register for the purposes of section 106 compliance, the three newly recorded resources will be considered to be contributing elements to the proposed historic district. All of these resources are associated with gold mining, water management, transportation, and settlement activities occurring between the late nineteenth and early to middle twentieth century.

6.6.2 Environmental Effects

The Area of Potential Effect (APE) is generally, the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of sites eligible for listing in the National Register. The APE for the overall emergency recovery and repair work at the Feather River Project is larger than, and encompasses the APE for California DWR's proposed transmission line reroute. The APE for California DWR's

[14] The Final Environmental Impact Statement refers to the project as the Oroville Facilities.

new segments of 230-kV transmission line will be within a new permanent right-of-way located outside of the spillway erosion influence zone. Construction of the project will require vegetation clearing of an approximate 300-foot wide corridor under the majority of the new transmission lines' 2-mile length, measured from the Hyatt Pumping-Generating Plant to a tie-in point with the existing Oroville–Table Mountain 230-kV Transmission Line beyond the damaged spillways. The APE includes approximately 130.41 acres in total. California DWR, in light of the emergency nature of the work, is assuming that all cultural resources located within the APE are eligible for listing in the National Register.

Based on review of existing documentation by California DWR, there are 14 historic-era cultural resources within the Project APE. Of those resources, 13 were identified within the APE prior to 2003. Additionally, PG&E recorded a linear cultural resource in 2017 within the APE, the Palermo Canal/ P-04-001945. A segment of this resource was previously recorded by California DWR in 2011 during relicensing.

According to California DWR's 2011 report, the 13 cultural resources within the APE have not been individually evaluated for the National Register, but have been evaluated and recommended as contributing elements to the proposed Forks of the Feather River Historic District. The historic district appears to be eligible for listing on the National Register under all four Criteria for Evaluation (36 CFR § 60.4). The three prevailing themes of the historic district are gold mining, settlement, and other extractive industries related to lime, chromite, pine resin, and timber resources. Periods of significance overlap and span 127 years, 1830–1957. The cultural resources within the transmission line reroute corridor fall under the gold mining and settlement themes of the historic district; however, the integrity of individual resources varies.

For the proposed transmission line reroute, California DWR would conduct ground-disturbing activities at each of the transmission line tower sites, including vegetation removal, excavation, and filling and grading. These ground-disturbing activities would occur within the boundaries of five archeological sites that are contributing resources to the proposed Forks of the Feather River Historic District. These sites are CA-BUT-2152H (historic dirt road); CA-BUT-2226H (historic dirt road); CA-BUT-2380H (historic ditch); CA-BUT-1105H (historic placer mining and occupation complex); and ORO-3 (historic mining site with prospecting pits). California DWR made a finding of no adverse effect for the transmission line reroute, consistent with 36 CFR 800.5(b) and 800.13(a)(2), because the undertaking would not alter the characteristics of the resources that qualify them as contributors to the historic district.

To ensure that there are no potential adverse effects to the five historic sites, California DWR proposes several measures during construction. These include implementing a monitoring and discovery plan; preparing detailed re-recording of site forms, including photographs, archival data, and feature drawings; conducting a post-

construction condition assessment of the sites; and, pursuant to 36 CFR § 800.13(a), implementing a data recovery plan in the event that information-bearing deposits are identified by archaeological or tribal monitors. In a letter to the California DWR dated June 16, 2017, the California SHPO stated that given these measures, they did not object to California DWR's finding of no adverse effect for the transmission line reroute. The California SHPO also stated that should California DWR need to activate the data recovery plan, California DWR and the Commission should follow the notification timelines at 36 CFR § 800.13(b).

We note that design constraints for the PG&E transmission line re-routing forced placement of transmission towers within the boundaries of two of the above sites, CA-BUT-1105H and CA-BUT 2380H. However, field testing in the presence of a tribal monitor determined that there would be no adverse effect to the resource by the tower work. A report summarizing the field testing was submitted to the California SHPO on June 1, 2017. In a letter dated June 5, 2017, the California SHPO concurred with the no adverse effect determination as long as archaeological and tribal monitors were present during construction of the tower. A discussion of potential cumulative impacts to cultural resources from the transmission line re-routes can be found in section 6.8 below.

On July 5, 2017, the Commission, California SHPO, and FEMA executed a PA for the management and treatment of cultural resources related to the response to the February spillway failure. The PA also includes provisions for the identification and management of potential effects to historic properties arising from transmission line relocations, including any future unanticipated discoveries. In addition, California DWR would continue to ensure that all construction and ground clearing is monitored by archaeological and tribal monitors. Last, there would be no mechanical clearing or grubbing within 50 feet of recorded historic resources, only hand tools such as chainsaws, brush cutters, and mobile chipping/mulching equipment would be used. Therefore, with the executed PA, implementation of the monitoring and discovery plan during construction, and hand clearing in sensitive areas, we do not anticipate any significant effects to cultural resources for California DWR's proposed transmission line reroute.

6.7 Recreation Resources and Aesthetics

Recreational activities in the vicinity of Lake Oroville include high- and low-speed boating, non-motorized boating, fishing, swimming, bicycling, equestrian use, hiking, and developed and primitive camping. License-required recreation facilities at the Feather River Project include: Lake Oroville Visitors Center; Bidwell Canyon Boat Ramp and Day Use Area; Lime Saddle Boat Ramp and Day Use Area, Loafer Creek Boat Ramp and Day Use Area; Oroville Dam Day Use Area; Spillway Boat Ramp and Day Use Area, Enterprise Boat Ramp; Thermalito Afterbay Boat Launch and Day Use Areas; car-top boat launch ramps (at Dark Canyon, Foreman Creek, Nelson Bar, Stringtown, and Vinton Gulch); North Thermalito Forebay Recreation Area; South Thermalito Forebay

Recreation Area; Diversion Pool Day Use Area; equestrian, bicycle, and hiking trails (Brad Freeman Trail, Dan Beebe Trail, and Saddle Dam Trailhead); campgrounds (Bidwell Canyon, Lime Saddle, Loafer Creek, North Thermalito Forebay RV, and the Oroville Wildlife Area Afterbay outlet camping area); floating and boat-in campsites, and other miscellaneous day use areas.[15]

6.7.1 Affected Environment

The proposed transmission line relocation corridor is located within the Lake Oroville State Recreation Area, which includes the recreational facilities at Lake Oroville, the Thermalito Diversion Pool, the Thermalito forebay, and the associated land and waters. The Thermalito Diversion Pool and shoreline are used for day-use activities such as swimming, fishing, non-motorized boating, trail use, and picnicking.

The proposed transmission line reroute corridor will cross portions of the Brad Freeman and Dan Beebe trails in locations on the south side of the diversion pool. The Brad Freeman Trail is a multi-use trail providing recreation for hikers, bikers, and equestrian trail riders. The Brad Freeman Trail circles the off-river Thermalito forebay, and Thermalito afterbay, follows the northern shore of the Thermalito Diversion Pool, crosses the crest of the Oroville Dam, and turns back to follow the southern shore of the diversion pool. The full trail is roughly 41 miles long and is predominantly dirt or gravel, with only a small paved section. The original transmission line route crossed the Brad Freeman Trail on the north side of the Thermalito Diversion Pool in at least one location within the general area of the proposed transmission line reroute. The Dan Beebe Trail is a 14.6-mile-long multi-use trail for equestrians and hikers. The previous transmission line route did not cross the Dan Beebe Trail. The Dan Beebe Trail parallels the southern shore of the Thermalito Diversion Pool a short distance upland from the Brad Freeman Trail.

[15] *See* Table 43 and Figure 18 in the FEIS at pages 207-213.

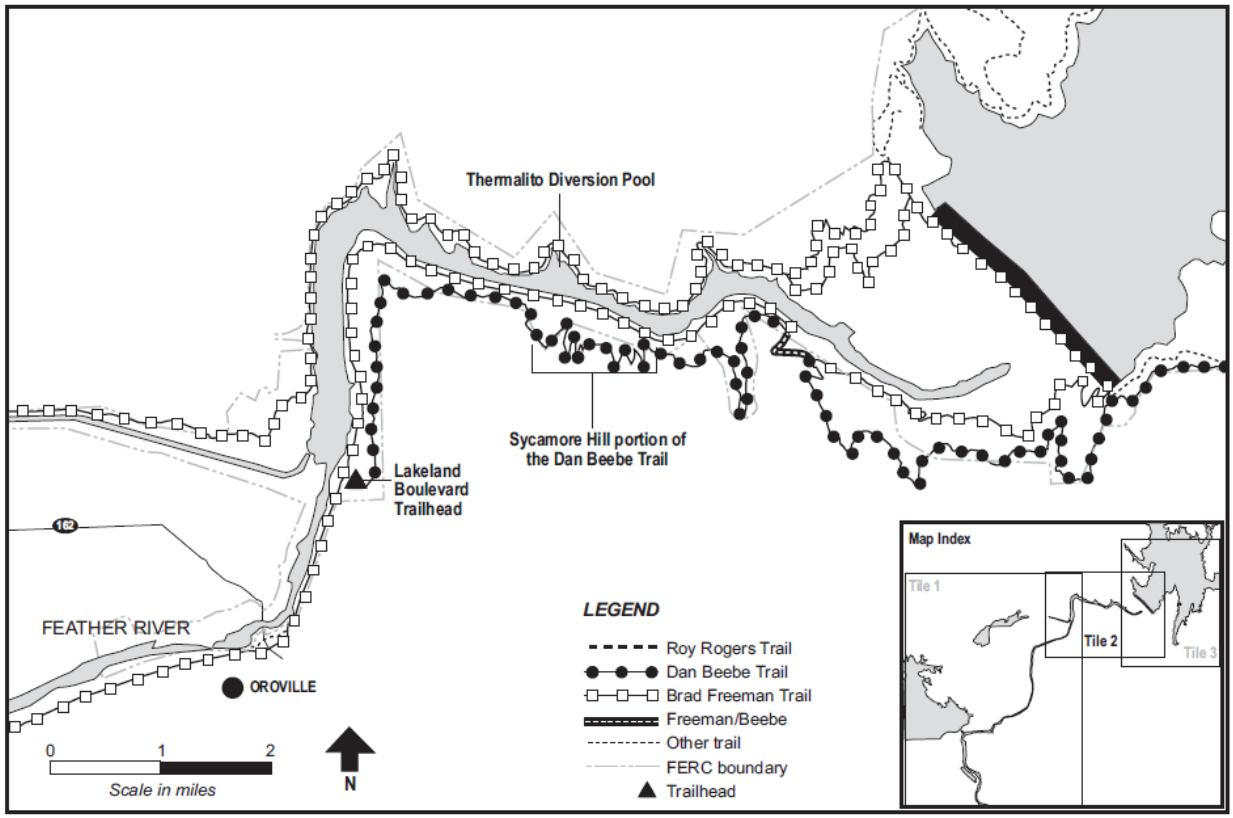

Figure 3. Map of the existing trails within the proposed transmission line reroute corridor (source: California DWR)

6.7.2 Environmental Effects

Following the February 2017 damage to the spillways at Oroville Dam and related downstream impacts, the Thermalito Diversion Pool and trails in the proposed work area were closed (see Figure 4 below), including portions of the Brad Freeman and Dan Beebe Trails. The trail closures were implemented to protect public safety, due to active construction equipment in the area. The trail closures are reported to the public through various avenues including the California DWR's Oroville Spillway Incident webpage as well as on the California Department of Parks and Recreation's Lake Oroville State Recreation Area webpage. [16]

[16] *See* http://www.water.ca.gov/oroville-spillway/ and https://www.parks.ca.gov/?page_id=462 (last visited July 31, 2017).

The proposed transmission line reroute will cross the Brad Freeman Trail at six new locations, will cross the Dan Beebe Trail at four new locations, and will cross the section where both trails merge into the same footprint at two new locations. Each of these crossing are a singular bisection, and the proposed reroute does not run parallel to the trail for any extended length. All trail crossings are located on the south side of the Thermalito Diversion Pool. Both trails are expected to be reopened once all construction efforts associated with the spillway repairs are completed in fall 2018.

The proposed construction work—i.e., clearing and grubbing of the transmission line reroute corridor; construction of laydown, staging areas, and access roads; and the placement of transmission line towers and lines—will not have a direct physical impact on the trails. Once the trails are re-opened to the public after California DWR completes its spillway repairs, the trail routes will return to their previous condition, with minimal effects to the aesthetic environment. Potential temporary effects include the loss of vegetation along the trail cleared for construction as well as temporary displacement of the existing wildlife and avian species in the area.

As discussed in section 6.4.2 above, if California DWR creates and implements a Revegetation Plan, this would allow California DWR to review the effects of the proposed work and restore the recreation areas to pre-construction conditions, where applicable.

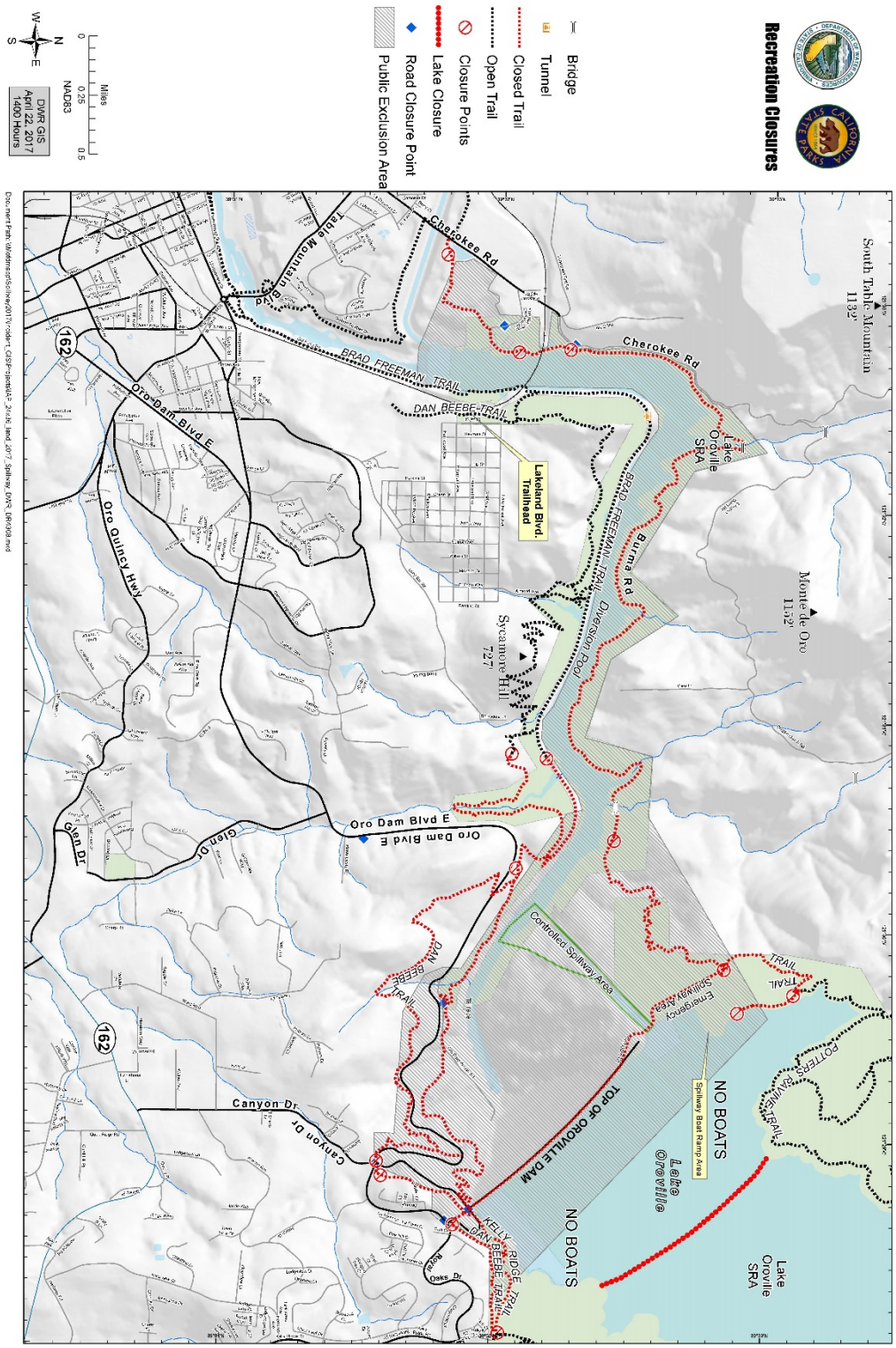

Figure 4. Map of recreation area closures near Oroville Dam (source: California DWR)

California DWR has taken additional steps to offset the impacts of the proposed transmission line reroute to recreation sites and trails by implementing recreation improvements proposed as part of Settlement Agreement negotiations for the relicensing proceeding.[17] On July 12, 2017, Commission staff issued an Order Amending Recreation Plan[18] that authorized improvements to recreation facilities on Lake Oroville to offset the temporary closure of other recreation facilities near the damaged spillways and Oroville Dam. The July 12 order authorized: (1) expanding the Lime Saddle boat ramp parking lot; (2) expanding the Bidwell Canyon boat ramp parking lot and adding a lane to the existing boat ramp; (3) extending the Enterprise boat ramp and providing picnic sites; and (4) providing approximately two acres of gravel parking at the Saddle Dam Trailhead (not previously planned in the proposed 2006 Recreation Management Plan or Settlement Agreement) and new picnic sites. The completion of these facilities will result in a net increase in parking, boat-launching capacity, and other trailhead facilities at Lake Oroville. In addition, on August 3, 2017, California DWR filed an application with the Commission to construct additional parking areas at the Bidwell Canyon and Loafer Creek Recreation areas to further offset the loss of project recreation facilities. That application is currently under Commission review.

6.8 Cumulative Impacts

The Council on Environmental Quality's regulations for implementing the National Environmental Policy Act indicate that an action may cause cumulative impacts on the environment if its effects overlap in space or time with the effects of other past, present, or reasonably foreseeable future actions, regardless of the agency, company, or person undertaking the action.[19] Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

We conclude that the proposed action is not likely to have a cumulative adverse effect on water quality or aquatic resources because construction in the proposed transmission line reroute corridor will occur a significant distance away from the Thermalito Diversion Pool with no expected impact to any navigable water. Similarly, we do not anticipate that the proposed action would have any cumulative adverse effects on threatened and endangered species, due to the absence of listed species and critical habitat in the vicinity of the construction area. Regarding terrestrial resources, we conclude above that the proposed action would have temporary and permanent effects to vegetation and wildlife. However, sufficient habitat exists in the areas immediately surrounding the project construction area such that the majority of wildlife and avian species are expected to temporarily disperse to less disruptive locations. Also, the

[17] See the Settlement Agreement filed on March 24, 2006, under Project No. 2100-052.

[18] *Cal. Dep't of Water Res*., 160 FERC ¶ 62,021.

[19] 40 C.F.R. § 1508.7 (2017).

proposed action's direct and indirect effects will be reduced through required mitigation. Therefore, the proposed action would not result in a cumulative adverse effect to terrestrial resources. For cultural resources, the licensee's ongoing consultation with the California SHPO, the presence of tribal monitors during construction, employment of the PA, and carrying out the agreed upon mitigation and data recovery measures at potentially affected archeological sites would negate any cumulative impacts to cultural resources. Finally, the proposed transmission line corridor will cause a temporary, minimal aesthetic impact to crossed recreational trails. This minimal impact, coupled with the licensee's effort to mitigate recreation impacts by improving and expanding recreation facilities in other locations on Lake Oroville, leads us to the conclusion that the proposed action would not have any significant or lasting cumulative impact to recreation resources.

Taken together, the proposed transmission line reroute will not have a significant cumulative impact on environmental resources.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

We conclude that the no-action alternative—leaving the temporary transmission line in place indefinitely across the uphill portions of the damaged spillways—is not feasible. The no-action alternative would inhibit the spillway recovery efforts both directly, leaving an obstacle to construction, and indirectly, undermining the reliable transmission of electricity from the Hyatt Pumping-Generating Plant so that the plant can continuously pass flows out of Lake Oroville. California DWR and Commission staff have not identified any reasonable alternative to California DWR's proposed reroute of its primary transmission lines that were affected by the damage and substantial erosion at the Feather River Project's main and emergency spillways. The proposed action would result in minor adverse effects to terrestrial, cultural, and recreation resources. However, these effects would be mitigated by the licensee's proposed protective measures, the recommended protective measures are described below, and by the process and measures prescribed in the programmatic agreement with the California SHPO for protection of cultural resources.

7.2 Staff-Recommended Measures

(1) To mitigate for the loss of vegetation, the habitat it provides, and to reduce the spread and introduction of nonnative, invasive species, staff recommends that the California DWR and its contractors use best management practices when clearing and grubbing any vegetation to reduce the impact to the existing wildlife and recreation areas and minimize the introduction of invasive and noxious species. To mitigate for the loss

of vegetation, wildlife habitat, and the aesthetic scenery around the recreation trails, post construction, staff recommends that California DWR develop a Revegetation Plan in consultation with the FWS and California Department of Fish and Wildlife to revegetate applicable areas and return them to their pre-construction conditions. The plan should (a) identify areas disturbed during construction and classify whether these areas could be safely revegetated to simulate pre-construction conditions or would need to be maintained to ensure transmission line safety, with emphasis on areas that would be visible to the public when using project recreational facilities; (b) identify the native species to be planted in the revegetation areas and the methods used, including the type and schedule for assisting the plantings through watering, mulching, or other methods; (c) provide for post-planting monitoring and evaluation of the success of the plantings and presence of undesirable noxious and invasive weeds; (d) provide for the removal of invasive and noxious weeds, if discovered, and enact follow-up plantings of native vegetation in those areas; and (e) establish an implementation schedule for these actions.

(2) In order to provide further protection of avian species from temporary impacts during construction and from potential collisions and mortality resulting from the erected permanent transmission lines, staff recommends that California DWR review and incorporate additional protection measures into both the design of the transmission lines and towers and their construction, such as those found in the guidelines produced by the FWS and the Avian Power Line Interaction Committee.

(3) To keep the Commission appraised of the status of the tree on which the bald eagle nest is located, staff recommends that California DWR file the Bald Eagle Take Permit authorized by the FWS and any relevant consultation.

7.3 Finding of no significant impact

Based on information, analysis, and evaluations contained in this EA, we find that approval of the proposed transmission line reroute would not constitute a major federal action significantly affecting the quality of the human environment.

8.0 LITERATURE CITED

Avian Power Line Interaction Committee (APLIC) (2006). Suggested practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

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